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Powai, Mumbai

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Bunts Sangha's S.M. Shetty College of Science, Commerce and Management Studies was established in 2008 by Bunts Sangha, Mumbai. The college is affiliated to University of Mumbai. Bunts Sangha's S.M. Shetty College of Science, Commerce and Management Studies is committed to the promotion and propagation of quality education with excellence. Currently the college offers B.Com, B.B.I., B.A.F., B.M.S., B.M.M., B.Sc.IT. M.Com and M.Sc.IT. programmes with more than 2,300 students on roll. College has approved Ph.D. centre in Commerce leading to Ph.D. degree. College looks forward eagerly to a continuing and creative engagement in the field of education with the challenges of time. It has been accredited by NAAC with 'A' grade in the very first cycle and is ISO certified 9001: 2015.

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The curriculum is well defined to cater to the needs of both society and industry. The learner during their three-year under graduate course would gain a comprehensive and extensive understanding of the various nuances of Information Technology. Apart from curriculum, various certificate courses are organized to deepen the students' understanding of various IT relevant concepts, and also courses aimed at kindling the students' independent thinking and creativity in relevance with the discipline. The students are closely assisted by the faculty in every step of this intellectual journey.

B.Sc.IT. program of Mumbai University is designed to provide basic inputs for a broad understanding of IT and its interfaces. It is a three year programme comprising of six semesters with a total of 30 courses and a project. The programme includes various courses like Communication skills, Programming from basic to advanced level, Electronics, Networking and Embedded Systems. The program takes the students beyond computer skills to Telecommunication Systems and Networking to E-Commerce, Internet Security and Enterprise Resource Planning (ERP). The course consists of theory and practicals together with tutorials, assignments, case studies, projects, seminars and field trips. In the Third Year (Semester V & VI), electives are offered. There is an ample job opportunity after the completion of the programme. On completion of the programme the student can join the master's programme of M.Sc.IT. offered by the college.

The department has faculty members specialized in various IT areas. The department is committed to build young professionals with a strong sense of intellectual curiosity, leadership skills, ethics and integrity. The department conducts a continuous and rigorous placement development programme that shapes every learner to be employable and industry ready individual at the end of the programme.

About IARA

Indian Academicians and Researchers Association (IARA) is an educational and scientific research organization of Academicians, Research Scholars and practitioners responsible for sharing information about research activities, projects, conferences to its members. IARA offers an excellent opportunity for networking with other members and exchange knowledge. It also takes immense pride in its services offerings to undergraduate and graduate students. Students are provided opportunities to develop and clarify their research interests and skills as part of their preparation to become faculty members and researcher. Visit our website **www.iaraedu.com** for more details.

Key Note Speaker

Mr. Suresh Mhatre

Ex. Vice President TCS,
Professor Emeritus, Engineering school of NMIMS University
Member, EEAC, National Board of Accreditation, New Delhi
Board of Governors, SPIT, Mumbai
Board of Advisors, Allana Institute of Management, Mumbai

Mr. Suresh Mhatre is amongst the first of the new generation managers in the IT industry who has specialized in IT Consulting. During his graduation days, Mr. Suresh was elected Chairman of the Bombay University Students Council and was a member of the University Senate. After graduation in Mechanical Engineering in 1977, Mr. Suresh went on to complete his Masters in Industrial and Systems Engineering from the University Of Florida, USA. He then joined TCS in January 1979 and spent his initial years developing software before going on to head the Management Consultancy Division in TCS - Bombay. He also went on to become the National Vice-President of the Institute of Management Consultants of India. Mr. Suresh is also a Fellow of the Institute of Engineers and a Fellow of the Institute of Management Consultants of India.

In 1989, Mr. Suresh was shifted to HR and appointed the youngest Head of Manpower Allocation Committee of TCS. In 1992, he went on to head the Branch Level Review team in Bombay, he also was member of the JRD-QV award winning team, which introduced world-class values to TCS. In 1998, Suresh was appointed Head of HR Sourcing with a view to attracting the best possible talent within TCS. In 2001, he was shifted to the Strategic Planning Group. In 2003, Mr. Suresh went back to Management Consulting and worked in the area of e-Governance. He was the Chief Technical Architect for the National Rural Employment Guarantee Scheme. He was also the Project Director of the MCGM Project for a period of 5 years during which he implemented 12 modules of SAP for over 4,500 users. From 2010, he led the IT Strategy team for e Governance, Ports and Academic Institutions. In Oct 2014, Mr. Suresh retired from TCS and is currently an Independent consultant in the area of IT Strategy and HR. He is also the former National President of the Institute of Management Consultants of India and the current President of the Bombay Management Association.
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Technical Sessions Chaired by:

1) Dr. Pooja Raundale
Head of MCA Department at SPIT, Mumbai

Dr. Pooja Raundale working as professor at SPIT, Mumbai, possesses 16 years of teaching and 5 years of industry experience. She is approved professor for MCA in Mumbai University, recognized PG teacher for MCA & recognized Ph.D. guide for MCA. Her Ph.D. students are working in the area of AI and Big data. She received guidance from Dr. Mantha, Chairman AICTE for her Ph.D. in (Comp. Sci. & Tech.) from SNDT Women's University in 2012. She has an excellent academic record with 4th ranking in M.Sc.(Computer Sci.) & first in B.Sc.(Comp. Sci.). Currently she is a vibrant member of Board of Studies (BOS) for MCA (University of Mumbai) and Member of Academic Council for SPIT. In her tenure as a chairman of BOS, she instituted Ph. D. in Computer Application in University of Mumbai and started Credit based Grading System for MCA. She worked as Member, Academic Council, Member, Research and Recommend committee, Member, Syllabus Committee (2007 revision) Member, Teachers approval committee, CAP Co Coordinator, Trainer, for Credit Based Grading System for the MCA Faculties, Subject Expert Committee, in University of Mumbai,

Mumbai. She is also associated with North Maharashtra University as a subject expert, paper setter and examiner on panel of selection committee. She is also on the editorial board of YMTCOM research journal, has chaired technical sessions, and was invited as key note speaker and as reviewer for research papers in various national & international conferences. She has 11 national and 15 international papers to her credit. She is a resource person for several STTP / FDPs. She has received the research grant from Computer society of India and University of Mumbai. Her research interests are AI, machine learning and data science.

2) Dr. Hiren Dand
Head, Department of Information Technology, Mulund College of Commerce, Mulund, Mumbai

Dr. Hiren Dand is the Co-ordinator of Department of Information Technology at Mulund College of Commerce. He is adjunct professor and guide at Shri JJT University, Rajasthan and Pacific University, Rajasthan. He has worked with Computrain I.T. (India) Pvt. Ltd as Vice President, Technology. He has over two and a half decades of teaching, research and industrial experience. He has obtained his B.E. in Electronics Engineering, Mumbai University, and M.Tech in Information Technology from AAIDU, Allahabad. He has completed his Ph.D. in Computer Engineering on the topic 'Increasing Energy Efficiency of Mobile Phones by offloading tasks to Cloud'. Dr. Hiren Dand has published over 30 research papers on various topics in national and international journals. He has authored several books on topics like PL/SQL, R, Web Programming, OOPs, Internet Technologies, Software Quality Assurance, Applied Mathematics and more. He has conducted workshops on different subjects and has been invited as resource person at various workshops and conferences. He has worked in various capacities at University of Mumbai. Presently he is the member of Adhoc BOS in IT and syllabus committee of B.Sc IT and M.Sc. IT, University of Mumbai. He has been awarded 'Lifetime Education Achievement' award for his outstanding achievements and remarkable role in the field of education.

3) Dr. Rajendra B. Patil
Head, Department of Information Technology, S.K.Somaiya College,Vidyavihar,Mumbai

Dr. Rajendra Patil completed his undergraduate and Post Graduate education in Computer Science from North Maharashtra University, Jalgaon. He qualified a State Eligibility Test for Lecturer ship (SET), in the subject of Computer Science and Applications. He has completed Ph.D. at the North Maharashtra University, Jalgaon. His topic of research was 'Design and development of a tool for automatic donor matching in sperm banks and IVF Centres using data mining techniques'. He is currently teaching Information Technology related subjects to UG and PG students. He is associated with various reputed colleges in and around Mumbai as a visiting faculty for Post Graduate programmes under university of Mumbai. His area of interest is Machine Learning, Data mining, and Artificial Intelligence. He has written several reference books in national level publications. He has also published more than 25 research paper in the field of Information technology and also received 'Best Paper Award' in 7 national and international conferences. For his contribution in education field he has also received 4 awards from various organizations. He has worked as member of selection panel at RUSA Maharashtra State Project Office, Mumbai, for the selection of Information Technology Developer, on 29th October 2018. He is also member of training and development committee, Maharashtra State Cyber Crime, under Home Ministry, Govt. of Maharashtra from October 2018 to till date. He has also filed a patent titled 'Patent for innovation: Method for Selecting Gamete Donor', Application No: 201621026217 Reference No.: E-2/1944/2016-MUM, has been filed on August 2016. Examination: 26th October 2017'. He is currently member of Ad-Hoc Board of Studies in Information Technology and convenor of the syllabus committee of Information Technology for UG and PG Courses.

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ARTIFICIAL INTELLIGENCE IN AGRICULTURE: A REVIEW

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ABSTRACT
This paper represents the review of latest technology in computer science era i.e. artificial intelligence and its applica- tion in agricultural sector. The challenges faced in this domain are infestation of pest, irregularities in treatment of soil, improper drainage system and inconsistent irrigation. The following leads to environmental hazards and also there is loss of crop due to more use of chemicals in fields. The researchers have done lot of work and more is yet to be done. The different problems in the field of agriculture can be solved using soft computing techniques, artificial intelligence and various continuous learning algorithms. The agricultural system are being developed for maximum output with the help of latest technologies. The paper covers a review of different research work contributed to overcome the difficulties and challenging problems in the field of agriculture. The paper covers detailed analysis of the work done recently in artificial intelligence of agricultural sector.

Keywords: Agriculture, Soil and Irrigation, Weed, Artificial Intelligence, Soft Computing, Crop Management

I. INTRODUCTION
The intelligent techniques, soft computing is trending area of research these days. The artificial intelligence is capable of handling problems with fast and dynamic solutions in many applications. The traditional systems and humans of computing are also failed to solve these problems [1]. The artificial intel- ligence gave a new direction to the agricultural sector. In India, agriculture is most important sector and whole population is dependent on it. It is backbone of the economy and whole country gets affected when its productivity is changed due to uneven reasons. The country has almost 3000 hectares of land which is divided into 30% of world population. Therefore, such field require more efforts from process of sowing to harvesting. The problems faced are due to use of extensive chemicals, irrigation problems, controlling of weed and prediction of yield etc. The agriculture was first discussed in computer engineering around 30 years ago[2]. The decision based systems and database solved many agricultural prob- lems[3]. Among all of them, AI leads in terms of robustness and accuracy. The generalized solution to the problem doesn't exist as the agricultural field is dynamic in nature. The minute details are also handled by AI and provide solution which fits to every situation. The problem complexity are made simple using artificial intelligence. This review covers the previous research papers that were implemented in field of agriculture to tackle all challenges. The various management of agriculture are discussed in following subsections.

II. INTELLIGENT CROP MANAGEMENT
The management of crops from each domain of agriculture is done using smart computing systems. This idea was first put up by following researchers in forms of expert system employed for agriculture [5]. The protection of corn crop was mentioned by [6]. The apple crop management was discussed and implemented by Roach in [7]. The COTFLEX was discovered by some more researchers which discussed about management of crops [8]. The rules based system was suggested by COMEX for management of cotton [9]. The following paper discussed the protection of citrus crops which got affected by frost in Italy [10]. The binary form was uses in the input and output initialization of parameters to train network. The author used different models to obtain accurate results.

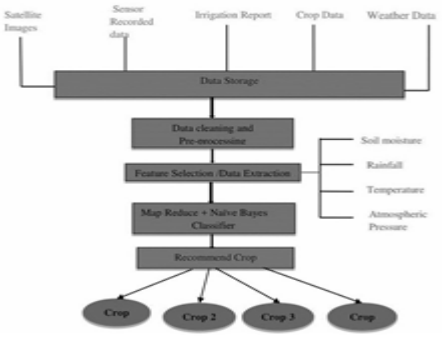

Fig-1: Crop Management and Prediction Model

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The combination of six inputs and two no. of outputs gave best accuracy. The wheat crop management image technique approach was discussed by Li, in [11]. The image informa- tion was strengthen using the methods of Laplace transform. A pixel label code was designed to overcome the image challenges. A network with five hidden layer of neural was proposed and trained to obtain accuracy. The researchers also introduced fuzzy logic which decided the selection of crop, fertilization and irrigation related issues [12]. The crop pre- diction in several region of belts in india was done by Rashmi Priya [13]. A solution of crop management was advised in a specific environment as shown in Fig.1.

The latest techniques and steps are suggested in paper for crop prediction. The technologies like big analytics and learning algorithm have increased output of crop from same area of land to a high extent. The evolution of big data has helped to provide large storage , processing of data and its analysis. The following has helped in nation's economical growth as well. A precision model on basis of Naives Bayes classifier was represented. The temperature also effects the growth of certain crop and it production [14]. The both cases of long and short term were discussed by the researcher [15]. The climate change in the agriculture may lead to poverty in India under worst cases [16]. The researcher used genetic algorithms to obtain optimal productivity of crops. The planning and monitoring of crop is dicussed in the paper [17]. The monitoring of agricultural crops across the world was discussed [18].

III. INTELLIGENT PEST MANAGEMENT

The next area is pest control in agricultural field. The image processing methods are used to solve and identify pest in crop. The pattern recognition and computer vision methods are used to control the disease in agricultural crops [19]. The medicinal values of plants are identified using the latest technology of computing. The pest in mango leaf was detected and solved by the researches using intelligent algorithms [20] . The thermal light imaging technique was used for identification of disease in brinjal leaf [21]. The wireless sensor network was presented for pest management [22]. The integrated pest management using internet of things is implemented in [23]. The tools involved in iot for pest management are related to chemical and biological areas. The pest information can be stored as ontology and can be automated using intelligent systems. The web services can be used to make these data available in internet. The following will help farmer to know about pest and increase their production. Yang proposed an online system for ontology of agricultural services [24]. Karaydis has suggested control in life cycle of pest and its simulation is developed [25]. The integrated pest management is the new word emerging in research field. The impulsive models are being presented for analyzing effect of pest on the crops. The optimization algorithms are used which provides optimal cost by minimizing the cost function which depends on impulsive models. The minimum pesticide is released and population of crop is decided and overall model is optimized using genetic algorithms. The optimal dosages are obtained which do not't effect human being health after being used in the crop in a particular season [26]. The pest identification and no. of count is addressed in figure below by A Martin [27]. The region grey algorithm is used in image processing for accurate pest count results. The algorithm gave best results as compared to conventional algorithms. The researcher X G Jou implemented a processing system to look agricultural pest using DSP kit [28]. The digital image of moths was presented by the researcher Y P Li [29]. An autonomous pest control robot was also devlopment and proposed by chung [30].

Fig-2: Grey algorithm Pest Count

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IV. SOIL AND IRRIGATION INTELLIGENCE

Several problem related to soil and irrigation sector have come in the past and need a focused technology to tackle them. The quality of crop should be increased with better soil profile and work on it is being done by eminent researchers. The parameters like moisture of soil are important to analyze for better performance. An automatic system to sense the moisture of soil was discussed in [31]. The paper discusses performance of robot and Fig.3 shows the cycle and work profile of robot as mentioned in paper. The automatic control of irrigation using GSM bluetooth was discussed by S. R. N Reddy[32]. The fuzzy logic was used to make decision in sugarcane farming to calculate amount of moisture in soil. The technique to monitor the soil moisture consider the aspect that how much depletion of water has occurred. The two methods that are basically employed in monitoring of soil moisture are by hand method. The hand method is also known as Feel Method, while the other method is by inserting instruments in the soil using latest technology. The weather forecasting, dew and other related parameters are sensed and transferred online monitoring of each location and its moisture can be analyzed. The optimized fertility levels were obtained by Alfin [33]. A solar power based smart control for irrigation was suggested using IOT [34]. The internet of things was also implemented for farm monitoring with the help of bot for the farm [35]. A soil monitoring was also implemented by IOT for better results in real time [36]. The smart system for prediction of disease in irregular irrigation was discussed in [37].

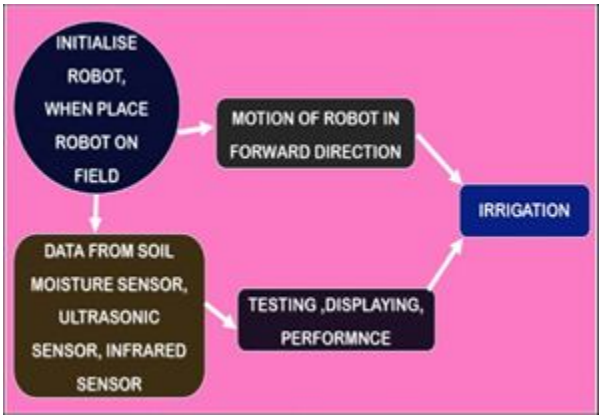

Fig-3: Automatic Robot Process for Soil Moisture

Ananthi also implemented internet of things in soil monitoring system[38]. The IOT was aplied by R Mulenga. for sustainable agriculture and soil monitoring for small scale farmers. The various natural calamities that lead to drought effected farmers of rural areas. The figure below shows dry conditions that effect the farmers irrigation and productivity at large scale. A cost effective solution is proposed in the paper by implement- ing internet of things in soil and irrigation after the natural calamity [39]. The IOT has helped a great in rural development and moves toward better soil and irrigation systems.[40]. The various parameters like moisture, temperature and humidity of soil was considered in order to get best results using a Zigbee module by Chavan [41]. The automatic irrigation scheduling of tomatoes was suggested by LeBoeuf [42]. The optimal solution to minimize the water consumption was presented in the paper [43] by Lopes.

Fig-4: Drought Condtion in Rural

V. WEED INTELLIGENT MANAGEMENT

The herbicides in crop like oats, barley effect human being health. A precise and accurate weed management is important using AI methods. The Pascal proposed method to eliminate weed from different types of crops [44]. A neural network using backropogation method in barley and other crops were done to enhance the quality of

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crops [45]. The same approach using color image texture was implemented in [46] by T F Burks. The weed species discrimination was done to min- imize their use and provide better results [47]. The real time identification of weed using neural was proposed by Y. Shi [48]. A multimodal algorithm for controlling weed for organic farming is discussed in the paper [49]. The map of crop is made to detect weed accurately and results are proposed. The earlier systems used to have mechanical weed control as discussed with their challenges in [50]. The robotic weed control methods have been came by researchers now [51]. The unmanned aerial vehicles have been arrived using deep and machine learning techniques. The paper [52] discussed how images are partitioned and divided into more tractable ones. The vegetation indexes are used and pixels are classified to detect whether it is of weed, crop and soil. The broad leaf weed are also being detected in pasture with accuracy of 96.88% by W Zhang [53]. A new approach for survey of weed and vegetation using artificial intelligence is proposed by J Sandino [54]. The weed detection of rice field using aerial images has also arrived by O barrero [55]. The high resolution images are used and detection of weed is done at high accuracy. The figure below shows the image and weed sign detected by the latest algorithms and deep learning.

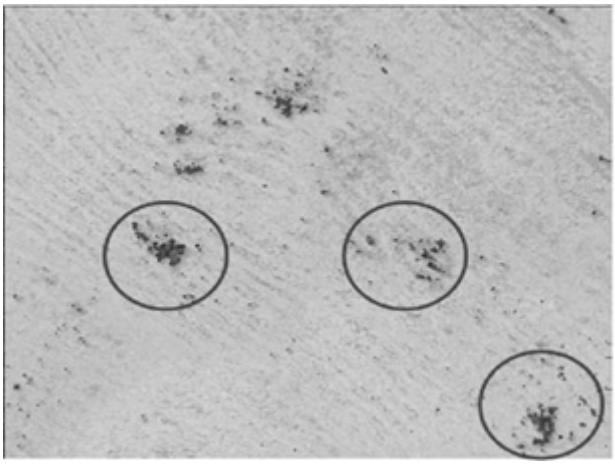

Fig-5: Detection of Weed by Arial Images

VI. CONCLUSION

The paper discussed various sections related to crop, pest, soil, irrigation and weed management in agricultural sector. The impact of artificial intelligence and work done in past years from 2018 to earlier is discussed. The paper gives glimpse of various steps taken by our researchers for benefit of our farmers. The climate change, weed detection, pest control and automatic robotics, flying drones have increased the output of agriculture many times. The optimization techniques like genetic algorithms have provided cost effective solutions to agriculture. The paper has showed how interdisciplinary areas are taking edge in current era and artificial intelligence will be boom in future for human mankind.

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AN EMPERICAL STUDY TO ANALYZE THE IMPACT OF SOCIAL MEDIA ON RELATIONSHIPS AND HEALTH

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ABSTRACT
As, we as a society have accepted social media as an integral part of our life, we need to understand its role and effects on our relationships and physical as well as mental health. Social networking activity is becoming more spearheading in society and yet little is known about how the social comparisons, involvement occurring in this process, affects perceptions, psychology of relationships and overall health of an individual. What's interesting is social media is changing the foundation of the ways we relate. This paper will examine how social media is changing our interpersonal psychology and what we can do about it. According to Maslow's hierarchy theory man always like to build up relationships, develop social linkages, promote networking through interactions which improves his Self-esteem which is an important part of its personality , But in the quest of becoming more popular or having surge of followers we are indirectly getting addicted towards it and which is indirectly having a deep impact on our relationships and health with depression, anxiety, fear, loss of appetite etc. emerging as common health issues. As every coin has two sides, in similar way this addiction can also be consciously converted into a healthy way of managing social life e.g. by reducing the number of hours we spend on social media, scheduling our work and leisure and have a positive impact on our life. The above research paper is an attempt to understand the impact of social media on relationship and health, the findings of which can help us developing and designing techniques and corrective measures to find equilibrium between our social life and personal life.

Keywords: sociology, social media, technology

OBJECTIVES
1. To study and analyze the impact of social media on human relationships and health.
2. To derive solutions and discuss about the corrective measures to be followed for reducing the negative impact of Social Media on human relationships and health.
3. To create awareness amongst people about the serious problems related to excessive use of social media and its repercussions.

RESEARCH METHODOLOGY
Major research analysis was based on primary data which we collected through online questionnaire method where our sample size was 200 out of which we got 133 respondents. The sample audience were from different background viz-a-viz students, teachers, housewives, professionals, Doctors etc. In order to get a holistic view of things we did a lot of literature review and referred to various published articles and research papers for secondary data.

INTRODUCTION
Recent Study on social media shows the scary picture or the other side of immensely popular media amongst all. It says that social use has been linked to depression, especially in the teenage girls. The research involved interviews with almost 10000 children between the age group of 13 to 16. Researchers found that social media may harm girls mental health by increasing their exposure to bullying and reducing their sleep and physical exercise. Though the research result, look that simple but in reality they are quite complex. This was the trigger point for our research study on the effects of social media on relationship s and health.

Sociology is the study of society, patterns of social relationships, social interaction and culture of everyday life using the principles of psychology neuroscience and network science. The quest to understand society is urgent and important, for if we cannot understand the social world, we are more likely to be overwhelmed by it. We also need to understand social processes if we want to influence them. Sociology can help us to understand ourselves better, since it examines how the social world influences the way we think, feel, and act. It can also help with decision-making, both our own and that of larger organizations. Sociologists can gather systematic information from which to make a decision, provide insights into what is going on in a situation, and present alternatives.

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As we say "Man is Social Animal", the very basic existence of mankind lies in social interactions or symbiosis where there is mutual give and take of various things. Human being can never live in isolation, since time and again it is proved that different human colonies were the reason for the basic development in different areas of human life. With the invention of computers or extreme use of information technology is our everyday life has changed the whole way of communication as well as relationship building. The need of meeting a person in "reality" has been replaced by meeting him or her in "Virtual reality". The human psychology plays a very crucial role here where human mind is deriving satisfaction from inhuman (IT) ways and means. The reasons or motivating factors behind people using social media will give the real **picture of the alarming situation.**

We all use social media nowadays. Well, maybe not everyone, but at least a huge amount of the population does. The question is no longer if we use it, but why. And this is exactly what Global Web Index looked into. So what is your main reason for being active on Facebook, Twitter, Instagram or any other social network?

The Top 10 Reasons for Using Social Media are as follows:

1. To stay in touch with what friends are doing (42%)
2. To stay up-to-date with news and current events (41%)
3. To fill up spare time (39%)
4. To find funny or entertaining content (37%)
5. General networking with other people (34%)
6. Because friends are already on them (33%)
7. To share photos or videos with others (32%)
8. To share my opinion (30%)
9. To research new products to buy (29%)
10. To meet new people (27%)

FINDINGS AND SUGGESTIONS

"Our results suggest that social media itself doesn't cause harm, but that frequent use of many disrupt activities that have a positive impact on mental health such as sleeping and exercising while increasing exposure of young people to harmful content, particularly the negative experience or cyber bullying"**.** This research paper is an attempt to understand how excessive use of social media is changing the lifestyle of human beings which is indirectly related to causes of various life threatening diseases and disorders. It has turned into a serious problem of addiction where the user though aware of the different side effects of using excessive social media is getting entangled in it like an irreversible route. This survey projects data of round about 133 respondents from various age groups and professions.

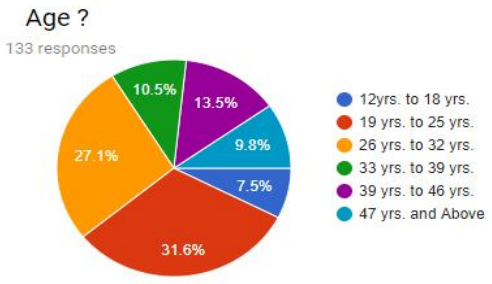

Fig-1

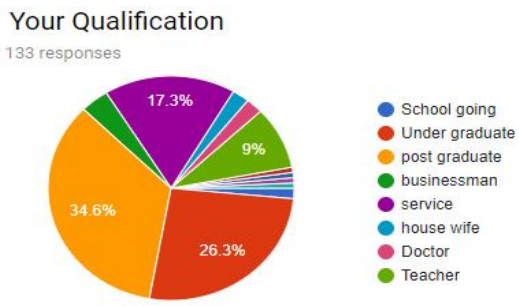

Fig-2

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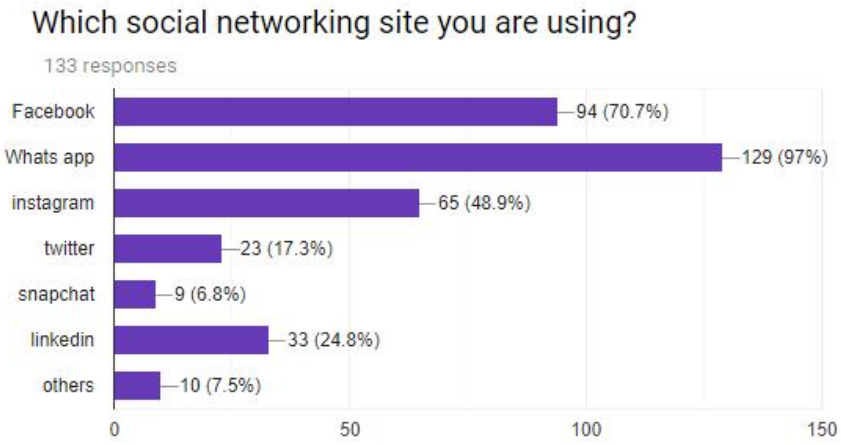

Fig.-3

According to the Fig.3, the research shows that most popular social media sites are Whats app and Facebook ,with Instagram, Linkedin, Twitter, Snapchat following them in popularity index.

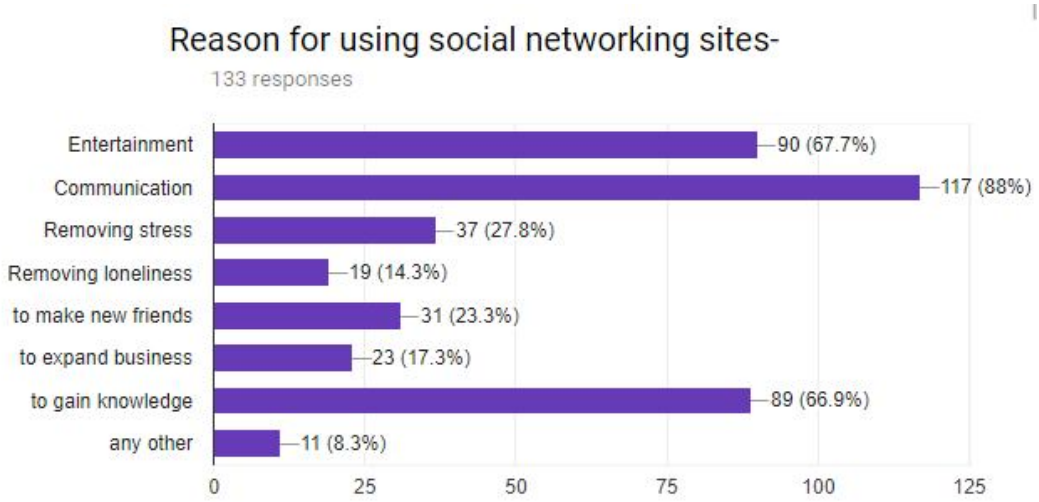

Fig-4

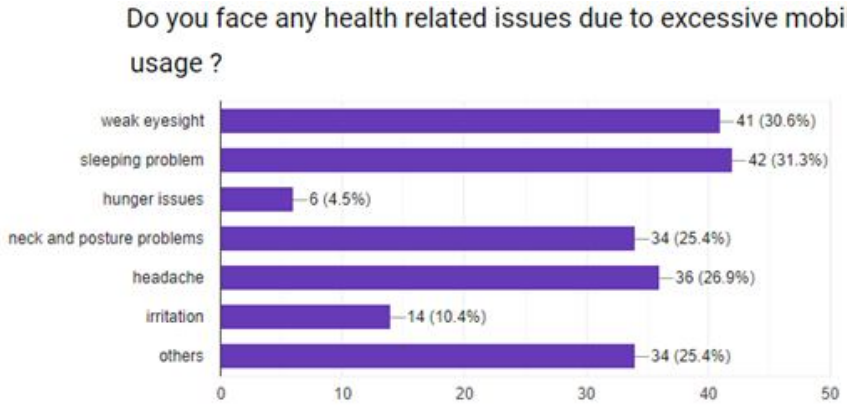

Fig-5

Though the Global web index shows apparently, most of the people use them to stay in touch with others, but also to stay updated on what is going on in the world around us. The primary study we conducted shows a little different picture and shows that in rural areas like us (palghar district) the main usage of social sites is for communication, Entertainment and to gain knowledge. Here while doing survey an interesting element was highlighted (fig.4) where we found out that many people were using social media not only for the above mentioned reasons but also to remove stress or loneliness from their lives. Few are using it for making new friends, acquaintances and to expand business.

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Social media addiction is a real phenomenon. As more people carry around smartphones and other devices wherever they go, it becomes harder to escape the internet. And people increasingly spend their online time on social media sites such as Facebook, Twitter and Instagram.

From the Fig.5 we can see the actual statistic of various problems related to excessive mobile usage, people who are addicted to these sites, it can have a harmful effect on their lives and even their health. Any addiction is potentially harmful if it saps your energy away from other activities, such as work, physical activity and offline relationships. There are various ways that social media addiction harms your mental health. Majority of people are facing problems related to weak eyesight, sleeping problem, headache, neck and posture problems.

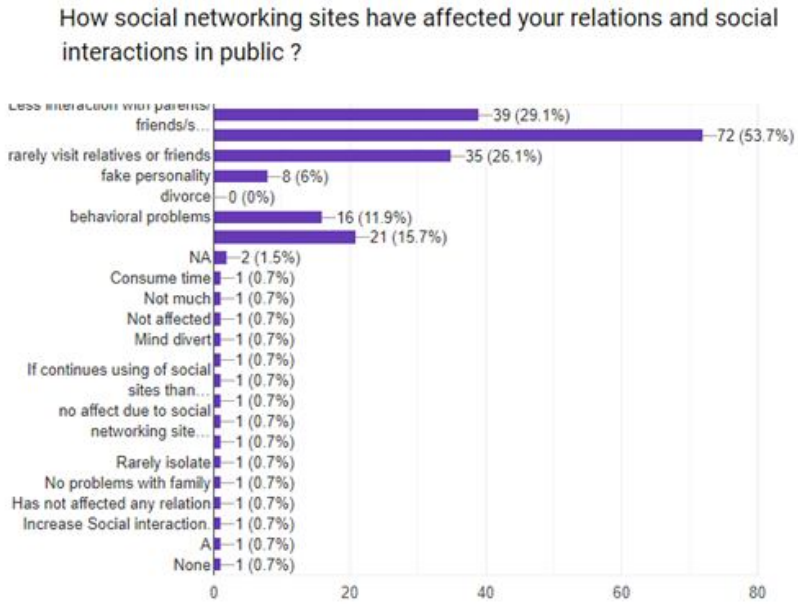

Fig-6

Figure 6 shows or reveals a shocking outcome where majority of people have become less physically active which is indirectly increasing the risk of various health diseases. Social media has marginally reduced the amount of interaction with family, friends, spouse and children. Also the frequent or yearly basis visits to relatives and friends has also reduced remarkably. Inability to perform your duties and responsibilities as less attention also turns out to be a major contributor in hampering ones relations with the family members.

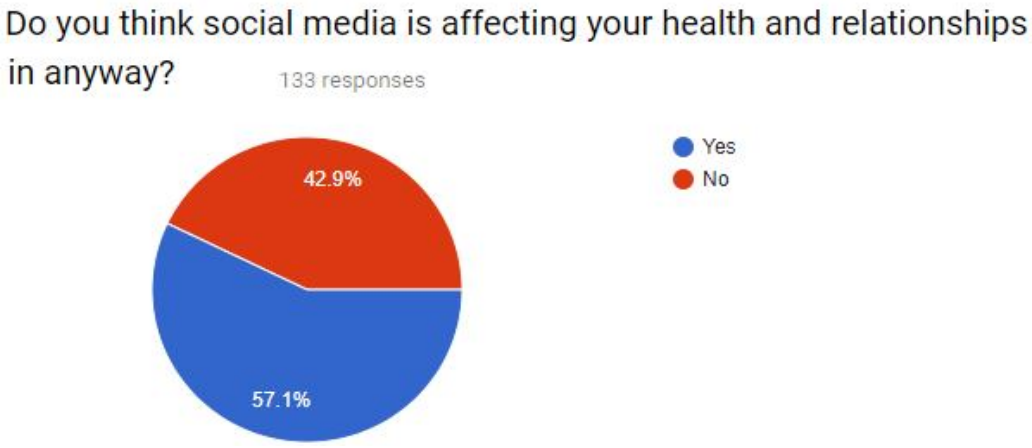

Fig-7

Fig. 7 shows that It's hard to deny the growing presence of social media in our lives and brands have been quick to recognize the benefits. Given the huge effect social media is having on our lives, it's unsurprising that evidence indicates it could be affecting our health. But are these claims fact or fiction?

One of the Research on Social media shows that it can contribute to the development of heart disease and diabetes. Technically the real problem is the amount of time you spend sitting at your computer, but given that social media is one of the most popular activities on the web, you've got good cause to be worried. Just two hours a day sitting in front of the computer [increases] your risk of developing type 2 diabetes by 20%, and your risk of getting heart disease by 15%.

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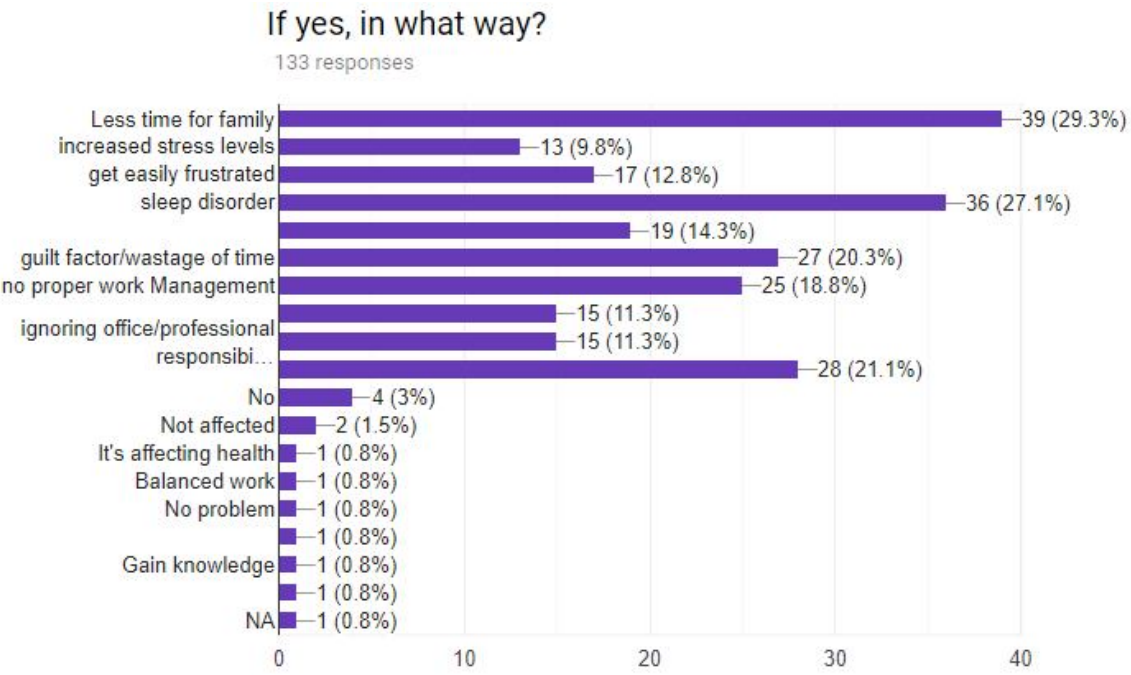

Fig-8

SUGGESTIONS

As we know that social media has become an evitable part of our life and will stay with us for years to come, we need to find a permanent solution in order to reduce the negative impact of social media on our relationships and health. As every coin has two sides the negative aspects are quite empowering the positive aspects of social media. We have heard lot in the recent months about the dark side of social media – excessive use to the point of addiction, lack of privacy and data capture without informed consent but in all of this melee, now is the time to remember that the way of use social media is up to us. In other words, it may be convinent to believe that social media applications are thrust upon us and we do not have much choice in the matter- but that is not entirely true. It is time we should remember why we use these application in the first place – to enrich our relationships and not to have them our lives in a dysfunctional way. Here are some of the suggestions, we will like to give:

1. Accepting the fact that we are using social media excessively without setting any usage limits to it, which in turn converts into social media addiction.
2. Setting time limits
3. Discipline yourself by taking enough breaks while surfing on various social networking sites, which will not induce health related issues like neck stiffness, eyesight problems etc.
4. Remember reality that social media is fine for sharing picture and brief updates but when you want to share really important in your life with those you care about, there is hardly a substitute for real one-to-one conversation. Human empathy is very important aspect of social life but a lot is lost between you and your family or friends when social media is primary or only means of communications.
5. Spending quality time with family and friends by going for a walk or a run, having a meal together, watching a movie, talking about your jobs and kids, seeking support in difficult life situations- all these things are what make your relationships warm, alive and real.
6. Be selective about the post you respond to. If a friend is posting 100 times a day you don't have to respond to all or any of them because anyone who is doing that amount of posting is not keeping tabs on who is responding any way.
7. According to the various reports many persons has been killed and incidents of mob lynching spark by rumors spreaded through social media and networking sites. As a responsible citizen we should not forward messages or rumors which are sensitive and can create unstable environment in the society.
8. Stop worrying about missing out. It's a human nature to check frequently messages and posts by your friends and family in the fear of FOMO (fear of missing out) which is pointless. One should understand that there will always be things one will miss no matter how frequently he/she checks.

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CONCLUSION

From the about research study we can conclude that social media has taken over our life like a storm creating a havoc in everybody life unless and until we acknowledge it. Too much usage of social media can lower down our self esteem and can induce depression which can negatively impact your life. Through research we have already proved that it is definitely affecting our relationships and health which should be major cause of concern in longer period of time. If one implements the above suggestions we have given as rescue measures one can definitely enjoy the positive side or the advantages of social networking sites.

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BLEND OF DATA SCIENCE STRATEGIES IN INTERNET OF THINGS

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ABSTRACT
The commutation of data and information from being less important to valuable has been possible due to different substantial analytic tools and platforms. Various Organizations have realized the potential of data and they are thus looking far ahead to an unstructured as well as semi-structured data generated from non-homogeneous sources. With the large amount of devices and sensors around our ecosystem, IoT has become a reality check, and with the use of data science, IoT analytics has become a tremendous opportunity to provide incredible insights. In this research, I have discuss the opportunities and concerns of IoT analytics. Moreover, I propose a data science strategy for IoT data analytics named as Plan, Gather and Analytics for Internet-of-Things (PGA-IoT). The proposed strategies could be applied in IoT scenarios to perform data analytics for effective and efficient decision-making.

Keywords: Internet of Things (IOT), Data Science, Big Data Analytics, Blend.

1. INTRODUCTION
Earlier the greatest challenge between human beings was "Data Communication". This challenge was eliminated with the help of revolutionized development in the world of standards and protocols, which made data communication and data exchange possible even among the devices/sensors. These devices represents anything from our surrounding such as a wearable accessories, automobiles, keychain, air-conditioner, refrigerator, projector, boiler, smartphone, plants, animals, application platforms, humans beings, and any bots that are connected with smart sensors.

The communication and data generated using these devices (or things) comes under the scenario of Internet-of-Things (IoT).

The term "Internet of things" was likely coined by Kevin Ashton in the year 1999.Internet of things refers to network of things, each of which has an unique IP address & can be connected to internet. These objects can be people, animal and day to day devices like your refrigerator and your coffee machine.

Basically IoT is a "Connected Life".

According to Gartner report, by 2020 connected devices across all technologies will reach to 20.6 billion and those devices will generate data that could be collected, prepared and analyzed to undertake intelligent decisions.IoT platforms have been implemented in various domains including healthcare, agriculture, military, food processing sector, energy, security surveillance monitoring . The data generated in an IoT environment are processed instantly to produce and improve the efficiency of the entire service domain. For Example, the electrical appliances including refrigerators and washing machines can be controlled remotely using IoT. The surveillance cameras installed for security purpose could be monitor remotely from anywhere with the help of IoT technique.

Since data plays an integral role in an IoT environment, IoT data could be considered both as a "Pure water" and as "Mud". Pure Water if it is effectively treated using data science methodology, tools, algorithms and techniques whereas Mud if it is improperly or inappropriately analyzed. .

The field of data science could make IoT platforms more intelligent and efficient. Data science is a combination of different scientific domains. It uses techniques such as mining, machine learning, statistical and Big Data Analytics (BDA) to identify new insights and patterns from data. Therefore, IoT BDA aims to guide organizations in perceiving a better understanding of data, thus leads to effectual results that could benefit their business processes. However, likewise any technology, IoT also has limitations. This can be in term that IoT devices generate and collect a huge amount of personal data whose management poses severe legal and ethical issues related to security and privacy. It provides deep analysis of large data that can help your business to have a competitive edge over other businesses. You can leverage predictive analytics report to grab upcoming market opportunities before competitors.

The objective of this paper is to enlighten and focus on the role of data science in IoT. In order to contribute to the domain of data science and IoT , I have proposed a data science strategies. The proposed strategies will guide and assist the data scientists to perform an accurate analysis of recording and transmitting the readings of an devices to seek effective insights and undertake smart decisions.

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This paper is structured as follows
The relationship between IoT and data science is discussed in Section 2. Section 3 contains the discussion on the Opportunities with application of data science and IoT. The Security and Privacy concerns of IoT are discussed in Section 4. I have discussed the stages of the proposed strategies with details in Section 5. Finally, I have discussed the future direction of this research in Section 6.

2. THE BLEND OF DATA SCIENCE AND IOT

IoT devices such as RFIDs, sensors, satellites, business transactions, actuators (such as machines/equipment fitted with sensors), lab instruments , smart consumer appliances (TV, phone, etc.), and social media as well as clickstreams generates a huge amount of data.

Figure 1 illustrates the land-scape of IoT and Data Science, in which various applications such as smart transportation, smart home and smart grid, generate data using embedded sensors and objects. These generated data are transferred via networks and stored in the cloud for processing using numerous big data technologies.

The data scientists use BDA applications with well-defined data science methods to analyze volumes of structured and unstructured data with various characteristics generated from IoT devices. However, since IoT data is mostly collected from sensors, it is different from normal big data regarding characteristics such as extreme noise, heterogeneity, and express evolution.

Fig-1: Blend of Data Science and IoT

3. OPPORTUNITIES WITH APPLICATION OF DATA SCIENCE AND IOT

IoT is one of the most important domains of next-generation technology that is obtaining great attention from the industries. IoT technologies offers enhanced data collection, thus enabling real-time responses, improving the access of devices, increasing efficiency. IoT can be considered as act of bringing of smart devices into effective action. The devices are connected and communicated with each other, and the IoT technologies integrate the collected data from the devices with customer support systems, vendor-managed inventory systems, business intelligence applications with business analytics tools and techniques. The integrated IoT devices produce a huge amount of data rapidly. Hence, data science can play an important role in IoT to extract useful information for pattern recognition, trend prediction, and decision-making.

Following are some of the opportunities that require IoT and data science to develop more benefits for industry and academia.

3.1 Monitoring and Control System

Monitoring the environmental conditions, the level of energy consumption, and even the performance of equipment require IoT technologies to collect data from available sources and data science to extract useful information for automated controller and managers to monitor the performance and changes of the related objects. Advanced technologies such as smart grid and smart metering offer higher productivity and lower costs by exposing operational patterns, optimizing operations and predicting future changes and trends.

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One of the well-known IoT monitoring and control Systems is a smart home technology. In this technology, the main intentions are to save energy and also to protect family and property. For instance, the Verizon Home Monitoring and Control network developed remote control applications for home automation using a special wireless communications technology. Users of the applications can monitor and control IoT enabled devices via smartphone, tablet or a computer. They can control the climate, adjust the lights, lock and unlock the doors, manage security systems.

The applications also send event notifications to the users automatically. All these functionalities are not possible without analyzing the received data from IoT devices. Another edition of this story is happening in smart cars where IoT technologies are used to monitor and control various parts of smart cars.

3.2 Big IoT Data and Business Analytics

Huge volume of data is generated by actuators and sensors embedded in IoT machines and devices. This huge amount of data can be moved into business analytics and intelligence tools to improve the accuracy of decision-making outcomes. Business analytics technologies can be integrated with IoT devices such as wearables health monitoring sensors. This integration provides real-time decision-making possibilities at the source of data.

For example, Remote monitoring system which reports changes in normal activities of its members using in-home sensors can provide opportunities for healthcare providers to analyze the collected data and monitor patients at every available time and place far more regularly and efficiently.

3.3 Industrial Internet

Industrial Internet is the new buzz in the industrial sector, also termed as Industrial Internet of Things (IIoT). It is empowering industrial engineering with sensors, software and big data analytics to create brilliant machines.

IIoT is a “beautiful, desirable and investable” assets. The motivating philosophy behind IIoT is that, smart machines are more accurate and consistent than humans in communicating through data. And, this data can help companies pick inefficiencies and problems sooner.

IIoT holds great potential for quality control and sustainability. Applications for tracking goods, real time information exchange about inventory among suppliers and retailers and automated delivery will increase the supply chain efficiency.

3.4 Smart Learning

Activities and behavioral data can be collected from digital sources using IoT devices in various platforms such as social media and online shopping systems. These web-based behavioral data are recorded in different forms such as transactional purchase information or cookies data. IoT devices can observe consumers’ habits, preferences, tendencies, and their environments using data science. These IoT enabled devices can learn from the patterns and outcomes extracted from the analytical processes that data science can apply to IoT data. It offers opportunities to markets, providers, and websites to learn more about consumers’ needs and interests.

3.5 Energy Engagement

Power grids of the future will not only be smart enough but also highly reliable. Smart grid concept is becoming very popular all over world.

The basic idea behind the smart grids is to collect data in an automated fashion and analyze the behavior or electricity consumers and suppliers for improving efficiency as well as economics of electricity use. Smart Grids will also be able to detect sources of power outages more quickly and at individual household levels like nearby solar panel, making possible distributed energy system. These IoT enabled devices can thus bring energy efficient environment.

4. CONCERNS OF IOT : SECURITY AND PRIVACY

As an accurate analysis of recording and transmitting the readings of an devices travels via several jumps and hops in a network, a strong encryption process is essential to guarantee data confidentiality, integrity, and availability (CIA). IoT can bring opportunities for major industries such as healthcare, military, energy, and e-commerce, etc.

These opportunities for IoT could also be an encouragement for the hackers to steal a wealth of data generated from IoT sensors due to political and commercial interest. The security of IoT sensors could be violated that could lead to theft of service integrity. The IoT sensors could retrieve numerous data including the personal information of the users because those sensors can be integrated into a wide variety of things in our entire ecosystem. The hackers could launch a variety of identity theft attacks on the vulnerable IoT devices for malicious purposes.

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The ownership of personal data is another concern especially when data is collected without the awareness of the users or with their awareness but without the knowledge of how the data related to them. These challenges related to IoT security and privacy remain the open areas of research.

However, efforts have been reported in research and industry standards to make IoT a secure, reliable and trusted platform. Standardization organizations such as IETF and IEEE are also focused on strengthening IoT security by developing necessary communication technologies. These technologies are used to enhance IoT reliability and power efficiency. IoT has an extraordinary capability for flexibility and scalability.

One of the main goals is to ensure the availability of authentication mechanisms to thwart any attacks, which could compromise the integrity of data and services.

5. PGA-IOT: DATA SCIENCE STRATEGIES FOR IOT ANALYTICS

Although the IoT and data science are frequently discussed research topics nowadays, to the best of our knowledge and findings, I cannot find any paper with the systematic description and application of a data science approach to performing analytics on telemetry. To fulfill the gaps, in this paper I have provided a data science strategy named as Plan, Gather and Analytics for Internet-of-Things (PGA-IoT) as shown in Figure 2. The proposed methodology could be applied in IoT scenarios to perform data analytics for effective and efficient decision-making results.

PGA-IoT initiates with the planning of the project, and it travels through the collection and analysis of devices and ends with the reporting of analytical insights and actions. However, the entire methodology is completely iterative, i.e., there is a possibility to switch backward and forward from one stage to another. For example, a data scientist could switch from analytics to plan stage to modify the initial strategy after the preliminary visualization results.

The detailed steps of each stage of the methodology are discussed in the following sub-sections.

5.1 Plan

As every project has a some set of goals to achieve, it is necessary for the project to start with the analysis of the requirements. All the key stakeholder of an IoT project especially those who require an analytical solution must be involved in the planning stage to ensure that their requirements are being properly understood and analyzed. Furthermore, the main stakeholders such as the domain experts must be involved in every cycle stage of the project to provide domain information and review and revise the continuous progress of the project to attain valuable insights and to obtain the desired solutions

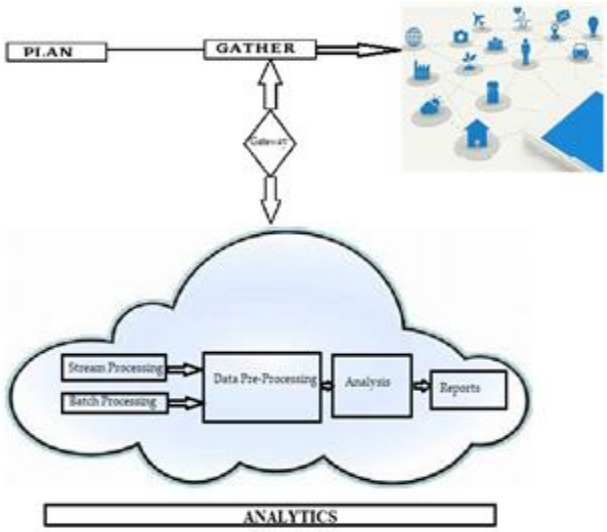

Fig-2: Data science methodology for IoT analytics (PGA-IoT).

After the successful gathering and analysis of the requirement, a data scientist can formulate the preliminary analytical approaches using statistical techniques and machine learning algorithms to address the problem.In the planning stage, it is also important to identify the sources of IoT data because telemetry generated from unknown or unreliable sources may lead to inaccurate and invalid analysis of data.

5.2 Gather

Due to rapidly expanding volume and velocity of devices, it would be feasible to perform IoT analytics using third-party cloud services such as Amazon IoT core, IBM Watson IoT, and Azure IoT hub. The gathering of

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telemetry could be initiate after the proper and successful completion of the activities that has been defined at the planning stage. The communication between the IoT hub, i.e., IoT data sources takes places via the gateway which manages all active device connections and implements semantics for multiple protocols to ensure that devices can securely and effectively communicate using various protocols such as MQTT, CoAP, WebSockets, and HTTP.

5.3 Analytics

The data scientist would apply two major best fit processing techniques - Batch processing and Streaming processing technique to analyze the readings of an devices when analytics takes place on blocks of data that have already been stored over a period. However, stream processing will be feasible if real-time analytics is required such as fraud detection and live application monitoring.

In an IoT environment, both types of the processing could be useful depending on the requirements and nature of the project especially related to the type of analytics required.

Batch processing best fits in the situations where generating real-time analytics results are not the priority and more importance is given to the processing of large volumes of data than to getting fast analytics results.

Streaming processing of analysis of recording and transmitting the readings of an devices can be performed using platforms such as Apache Kafka, Apache Storm, etc. whereas batch processing could be performed using Hadoop.

Since the sensors can generate inappropriate or null data values, the next step would be to preprocess the devices using typical data science approaches such as removing duplication, filter unwanted data and outliers, handling missing data, etc. In an IoT analytics environment, data processing is fast and automated by writing well-defined program codes. During the analysis of data, if data scientists identified that the data needs to further pre-processed, they will switch to pre-processing before performing the analysis. The prepared data is then analyzed using various machine learning and statistical techniques to generate models by considering the steps decided in the project plan. Finally, the models are visualized to perform various analytics such as descriptive, predictive and prescriptive.

6. FUTURE DIRECTION

Likewise, any technology, IoT too has a bright and dark side. However, the research world is currently focused on eliminating the concerns related to IoT. The research in the field is rapidly increasing, and we could predict that it will continue because data is of high value for the organizations and IoT is the major source for gathering and generating volumes and variety of data. The relationship between the IoT and data science is eternal and indeed because to convert data into pure water, an appropriate analytical approaches are required. However, there are several opportunities to contribute to the areas of IoT and data science. New systems, New policies, standards, and guidelines for the entire IoT ecosystem are required to guarantee the security and privacy of users' data and trustworthiness of IoT sensors.

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IMPACT ANALYSIS OF MOBILE TECHNOLOGY ON AGRICULTURE IN RURAL AREA

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ABSTRACT
Mobile Technology is increasing day by day in various sectors like education, health, agriculture etc. Agriculture is one of the most important sectors of Indian economy where more than 50% of population is dependent on agriculture directly or indirectly. Mobile technology has given new approach to farmers to communicate each other and share knowledge and discuss agriculture issues with concern government authorities.With the help of mobile technology, farmer can update their knowledge about land preparation, water management, harvesting, inter mixer of cropping, market information and many other farm related activities. Nowadays the mobile phone has generated an opportunity for the farmers to increase the productivity and profitability of their business. This technology builds the bridge between business, farmers and customers to lead the overall growth and development of the country. This research paper is focusing on various challenges which is faced by farmers while adapting mobile technology and role of mobile technology in agriculture. It also covers main features relating illiteracy of farmers about technology, their awareness about agriculture apps, and online scheme started by Indian govt. This research paper will help us to find ground reality problems of farmers in implementing and using mobile technology in their day to day business activities and it also discuss possible solutions to their fundamental problems.

Keywords: Mobile technology, Agriculture, Farmers

OBJECTIVE
1. To study Mobile Technology
2. To study need of this technology in farming and their awareness about agriculture apps
3. To study technology enabled Farming problems
4. To find the suggestions to solve this problems

INTRODUCTION
Today'smobile technology presents a huge world where any source of information is available. Mobile technology is now considered as a necessity and is being adopted by all people in theirday to day life.Mobile technology has presently transformed into a digital world and has made life and business much easier. This technology makes our lives more comfortable by number of reasons like its interactive user interface, attractiveness, increasing portability, falling charges, and internet connectivity.Its outcome is society truston mobile technology for their necessary work. It has many strong features like digital data collection, updates all information, and security behind that. The introduction of new functions in this technology such as voice messaging, recording system, gathered information and capturing images,Video call conferencingand their applications becomes more powerful to this technology. Its application trend holds the future to satisfy consumer needs and to make life better.In today's scenario, the use of this technology through positive results in different sectors of the society. Because positive result now mobile technologyis also going to be the part of our developing country. Many areas like medical, education, business and agriculture usesthis mobile technology because of its flexibility and freedom to use it anywhere, anytime with least amount of time. Mobile technology also provides new ideas, methods and techniques increasing and improving the knowledge and information among people of different areas.The main reason of use of this technology is it savethe time, money, cost and energy.The mobile is also equipped with internet connectivity, making it easy for the user to gain information and also to download files from the internet.

MOBILE TECHNOLOGY AND AGRICULTURE
One of the areas,such as agriculture where mobile technology has brought evolution in the field of agriculture. This technology provides opportunity to farmers where they can sell their products and get information related to farming with ease. Mobile services to the agricultural sector provide SMS facility which includes different type of information like weather forecast, crop disease updates, and better connectivity to the farmer's society. This technology provides platform to farmers where they communicate even without seeing individual. Mobile technology has given new thinking and new approach to farmers, where farmers can directly keep in touch with the market and weather, and also get information about quality of seeds, proper irrigation, and chemical fertilizers pesticides commodity pricing and financial supports. Mobile technology gives good opportunity to

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farmers and to show the growing importance of this technology can considered as an essential for agriculture development.

NEED OF MOBILE TECHNOLOGY IN AGRICULTURE IN RURAL AREA

Agriculture is the largest source of livelihood in India. Last many decades rural area farmers rely on traditional farming because it's a oldest method of farming and oldest food production system.TraditionalFarming is not dependent on any proper knowledge but it based on agricultural knowledge, and they pass their knowledgegeneration to generation through careful observations and experience.70 percent of its rural family still depends mostly on agriculture for their livelihood. India is the largest producer, consumer and importer of pulses in the world. India is the largest producer of milk, jute and pulses. It is the second-largest producer of rice, wheat, sugarcane, cotton and groundnuts, as well as the second-largest fruit and vegetable producer. Farmers are using new technology to increase their productivity. Mobile technology can play vital role in area of agriculture and to share their knowledge and information among each other on the time such as market rates and weather.India also needs to improve its agricultural practices by using mobile technology. Last few years, Farmers are using Mobile phones for SMS purpose through which they communicate and to share information about agriculture in short period of time. Farmers who select to subscribe to its services via a toll free number especially for rural farmers. Last past years Internet and wi-fi brought evolution in field of mobile technology. Using these technology rural farmers can acquire knowledge about agriculture issues, information and services which are provided by the government to improve their farming. These technologies is also providing precise data to farmers to growth of crop yields and keep themselves up-to-date with cutting edge methods of farming.With the rapid adoption of mobile technology possible to serve rural farmers and connect them with governments, large corporations and other resources. Every year 2,000 farmers give up farming because of many reasons,like lack of resources, low cost of produce, lack of awareness, electricity issues in rural area and lack of knowledge about farming.

IMPACT ANALYSIS OF MOBILE TECHNOLOGY ON RURAL AREA FARMING

The dynamic growth of mobile technology is giving opportunities to rural farmers to increase growth of India in the fields of agriculture. Nowadays mobile technology is being used everywhere in every field, people are using mobile technology in businesses and other fields. Some Farmers are already using this technology in farming. Rural areas farmers are still facing many problems such as lack of resources and awareness among farmers society while using this technology.

DATA ANALYSIS AND RESULT PRESENTATION

Study result: We collected this data from those individuals who belong to agriculture, for this research paper from TalukaDahanu and their nearby villages. The total 29 of the respondents were interviewed from Dahanu, District Palghar, where farmers are using mobile technology partially in their farming.

All collected data from the self prepared questionnaire administered were used for analysis as follows in the following graphs:

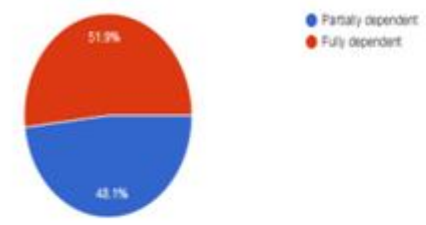

Figure 1: % distribution of farmers dependent on farming

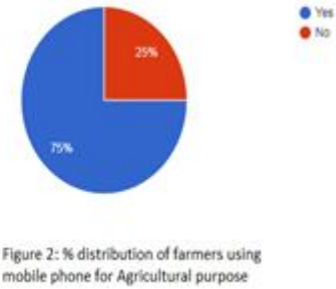

Figure 2: % distribution of farmers using mobile phone for Agricultural purpose

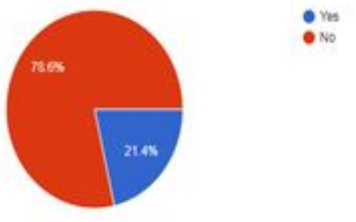

Figure: % distribution of farmers having government help line number

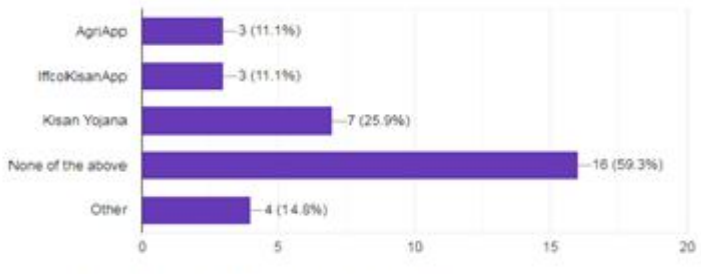

Figure 4: % distribution of farmers using Agricultural Apps

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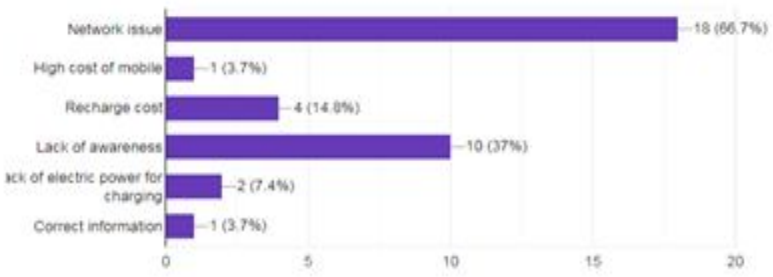

Figure 5: Problems faced by farmers

The above graphs-1 showed that 51.9% of the respondents are partially dependent and 48.1% fully dependent on farming. 75% of the respondents are using mobile technology for agriculture purpose and 25% not using this. Those are using mobile technology in farming, purpose is that only to get weather information, market details, perform selling and purchasing operations, payment and farming practices and some are using govt. helpline no. for getting information about farming . The figure-4 result showed that some farmers using mobile applications like Agri App, IffcoKisan, KisanYojana and more. The figure-5 clearly shows that those are using mobile technology they are facing some problems like network issue, high cost of mobile, lack of awareness, recharge cost and electricity problems and not enough resources. The figure-2 indicate that majority of the respondents using mobile technology for agriculture purpose and similarly using internet for getting marketing information regarding agriculture and crop prices.Those are using this technology they are facing many problems like lack of awareness, illiteracy, high cost and network issues; that's why ratio of not usingthis technology is continuously decreasing because of same problems. The study has shown that only some proportions not using mobile technology because of some lack of resource and technical issues.

The Greek case study has shown the majority of the participants (95%) have never used a mobile app for their agricultural activities

FINDINGS AND SUGGESTIONS

Lack of awareness

From the response of interviewers we come to know that majority of farmers are not having formal education about how to operate mobile phones. Illiteracy in rural area is affecting the growth of agriculture through mobile technology. The farmers are using mobile phones only for communication purpose. Some of them are using it for SMS, video calling and accessing internet purpose. Very less percent of farmers are using mobile phones for other farming practices. Only few number of farmers are using agriculture related apps and government help lines.

Suggestions

Agriculture is the backbone of Indian economy, to increase nation's economy, the productivity from farming should be increased. Government, NGO's and other social development services should take step to educate farmers. Most of the problems can be solved by training; training and awareness programs should be taken at ground level, so every farmer can take advantage of it.

Network issue

More than half of the respondent revealed that, they are facing the problem of poor network signals or no internet connectionto use this mobile technology. Most of them are facing problems like no service, poor sound quality, breaking of sound or calls ending unexpectedly. Among of all this problems, the major challenge is 'no service', which is experienced at regular basis. Some of the farmers changing to other service providers, they believe can provide better network.

Suggestions

Mobile service providers should introduce more network towers in rural area. It is the responsibility of service providers to increase towers and solve the network issue.

Expensive mobile phones for buying and running

From this research we come to know that the price of mobile phones for buying and running is also one major challenge for farmers. Majority of the farmers in Palghardistrict are having very small size of land, they are getting very less cost of produce. This income is sufficient only to fulfil their primary needs. They can't afford the smartphones. Farmers who already has a smart phone, they are not getting so much knowledge of using this technology.

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Suggestions- Some public phone booth should be introduced in rural area by government. So farmers can take the advantage at fewer prices. Service providers should also cut the cost of subscription, as their contribution towards nation's development.

Lack of electric power for charging

Some of the farmers mentioned that power failure is the major problem in rural area. They are facing power failure more than 7-8 hours a day. Because of network issue battery immediately discharges while searching a network. It becomes difficult for them to charge the phone.

Suggestions- Solar system can be used to generate electricity. It provides the alternate option to electricity. Government should take initiative to provide solar panel at low cost to rural farmers to solve the problems of electricity.One another suggestion to solve this problem of electricity is that Grampanchayat should take initiative by providing generator facility to the farmers on the pay and use basis.

Illiteracy

India has the highest illiteracy rate in the World. According to the latest report published by UNESCO there are 287 million illiterate adults in India. India's rural area faces much higher rate of illiteracy than urban area. A recent government study estimated that 32 percent of India's rural population is illiterate. Illiteracy is the main reason that farmers are facing difficulties while dealing with modern technologies like mobile technology. Majority of the farmers interviewed are having very less educational qualification. They are not having any formal knowledge about how to enter the digits and type the words in mobile phone to search any agriculture related information. They are using mobile phones only for communication purpose. Limited access to information directly affect as low productivity, low profit; which turns in poverty.

Suggestions- Basic education should be given to the farmers. Government has already taken the initiative to educate the farmers. Government should also start awareness program and training program related technology for rural area society.

Trust on traditional farming

Traditional farming is the oldest ways of farming were information is passed from generation to generation. The methods of farming used in traditional farming are come from the experience and observations of the farmers. Farmers mentioned that they have complete trust on traditional farming,

Because they are getting enough income to fulfil their primary needs from it.

Suggestions-Mobile technology based farming cannot replace the traditional farming.Mobile technology can palya important role in agriculture itcan enhance the productivity and profitability.Awareness and guidance can encourage the farmers to believe in mobile technology based farming. The problem can solve by adding some value added programs and introduce of new technology in agricultural growth.

Use of Agricultural Apps

As a part of Digital India the tech companies have grouped with the government to develop mobile application for farmers in India. The Indian govt. and other research institutes have introduced several mobile applications in help to the farmers as support for their agriculture practices apps such as Agri App, IffcoKisan, KisanYojana and many more which are available in regional languages.Mobile applications are containing the information about the market prices, it connect to local buyers and sellers and also contain information related to the crops.

Suggestions-Farmers are not using mobile apps because of lack of technical knowledge.We can solve this problem by training programs, with demonstration. Government should introduce agriculture mobile phones which hold agriculture related information,agriculture apps and govt. helpline numbers; installed by technical personsin it.

CONCLUSION

Farmers are doing limited use of mobile for agricultural purpose.Mobile technology gives the opportunities to the farmers to reduce costs, maximize yields and profits, and easy access to communicate with people to sell their product in market.Proper use of this technology can reduce the gap between the need for farmer and their farming related services. The government should also come with initiatives to encourage farmers to use mobile technology by adding some value added programs and training sessions.Government can start a separate subject on farmingat school level. Mobile technology and it applications canbring evolution in the field of agriculture with great innovations.The Mobile technology has been developed to help farmers to reduce stress, gain relevant information on good agriculture practices. We conclude that this technology can participatein developing agriculture and best helpto farmers to improve the farming practices.

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STUDENTS ATTENDANCE MONITORING SYSTEM USING FACE RECOGNITION

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ABSTRACT
Every day and for every lecture teachers are bind to take the attendance of students. Maintaining the attendance of the student is important task. It will help to evaluate the performance of the student. But maintaining attendance manually by using pen and paper is not a easy task, it is time consuming and less efficient. To make this task easy we can use the online attendance system. For this face recognition approach is used. The reason behind using the face recognition is no two students can have the similar faces. Every student is having its own identical face so by using this approach we can maintain the authenticity as well as security. There is no chance of proxy attendance, even no student can try to mark the proxy attendance. To achieve this Principal Component Analysis (PCA) algorithm is used. This algorithm is used to create the eigen vectors of the student face which, consist of multiple eigen faces. This will also help to compare the student stored data with the present captured data and accordingly it will mark the attendance.

Keywords: Attendance, Face Recognition, PCA, Eigen vectors, Eige nfaces

I. INTRODUCTION
For every lecture teachers are bind to mark the attendance of the student. Traditionally teachers are using the paper and pen to mark the attendance, but this is complex job. It also wastes the lot of papers and time. For this we introduces the face recognition approach.Face recognition has a various of applications in modern life. Many algorithms are used for recognizing the face and compare it with the stored faces. This algorithms can be also used in the multimedia applications like gaming. Matching algorithms are used to match the stored image with the captured image. It will help to maintain the security and authenticity in the process of attendance.To achieve this Principal Component Analysis (PCA) algorithm is used. PCA is a matching algorithm but it doesn't recognize the whole image instead it recognize only the advantages of the face. So it is cost effective as well as efficient.

PCA yields projection directions that maximize the total scatter all classes, i.e. across all face images [1].In [2] the authors have proposed Daughman's algorithm based Iris recognition system. This system uses iris recognition management system that does capturing the image of iris recognition, extraction, storing and matching. But the difficulty occurs to lay the transmission lines in the places where the topography is bad. In [3] authors have proposed a system based on real time face recognition which is reliable, secure and fast which needs improvements in different lighting conditions. Biometrics technologies verify identity through characteristics such as fingerprints, faces, irises, retinal patterns, palm prints, voice, hand-written signatures, and so on. These techniques, which use physical data, are receiving attention as a personal authentication method that is more convenient than conventional methods such as a password or ID cards because it uses data taken from measurements and such data is unique to the individual and remains so throughout one's lifetime [4]. The reason for the popularity of fingerprint verification is that fingerprints satisfy uniqueness, stability, permanency and easily taking [5]. By using the face recognition method to check the authentication of the user will help to provide the security to the system . Traditional face recognition algorithms are very much complex and takes too much of time but algorithms like PCA reduced the complexity of work by, introducing the direct syntax for the various geometric shapes, mathematical variations. Face recognition method can be used in the various applications. It can also be used for the identifying the criminals, criminal records with the person can also be easily get identified using the face recognition. Nowadays face recognition is used in multiple social websites, for unlocking the smart phones, devices. Face recognition can be done using the image processing technologies.

II. EXISTING SYSTEM
Previously teachers are taking the attendance of the student using the paper and pen. Student have to sign on the given sheet of paper during every lecture, to maintain the attendance. But it is tedious job as well as more time consuming. It wastes lot of papers and to keep that papers safely is also very important task. But it doesn't guarantees that no one marked the proxy attendance. And after every month teachers have to generate the defaulter list by calculating the present and absent numbers manually, it wastes time. To overcome this problems many applications were built. Attendance using the Identity Cards, which gives the unique code to each student. But it might get the possibility of one student can take the others Identity Card and mark the

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attendance. So it will not maintain the efficiency. Attendance using the biometric like Finger Prints, Retina, Palm etc.are also maintains the authenticity as well as efficiency. But there is a chance that twins can have the identical fingerprints. So attendance using the fingerprints is not complete authentic.

To overcome all this problems we can use the face recognition approach which, is fully authentic as well as maintain the uniqueness in the attendance system. It automatically evaluates the student performance based on marked attendance so there is no chance of proxy as well as false report generation.

III. PROPOSED SYSTEM

To overcome the drawbacks of existing system the proposed system uses the face recognition approach. This system will store the database of the student like images, roll_no, name. At the time of attendance marking it will capture the face of student then it will create its eigen vectors. Eigen vectors consist of multiple eigen faces. It will perform the normalization to remove the redundancies in the images. Then it will compare that image with the stored image to find the distance between the both. If the distance is minimum then the images are identical. And if the distance is maximum then images are different. In case of minimum distance it will mark the attendance and if not then system will show the error. This will help to show the identity of the student. To perform all this operations Principal Component Analysis (PCA) matching algorithm is used.The proposed system is efficient because it doesn't recognize the whole face, it just recognize the features of the face.

Advantages of the proposed system:

- Recognizing the whole image is expensive task but this system will recognize only the features of the face so it is cost efficient as well as less time consuming.
- It provides the great feature of authentication

A. PCA (Principal Component Analysis)

PCA is a matching algorithm which is used to compare the captured image with the stored image. The purpose of PCA is to reduce the large dimensionality of the image space (captured image) to the smaller intrinsic dimensionality of feature space (stored images), which are needed to describe the image data economically [6]. In this case, the observed variables in image space are strongly correlated and variables in smaller feature space are uncorrelated [7]. It is observed that there are some redundancies between the two images. So the main aim is to find the redundancies and make it unique and compare the unique factors with the stored images. The new variables, called Principal Components (PCs), are uncorrelated, and are ordered by the fraction of the total information each retains[8].

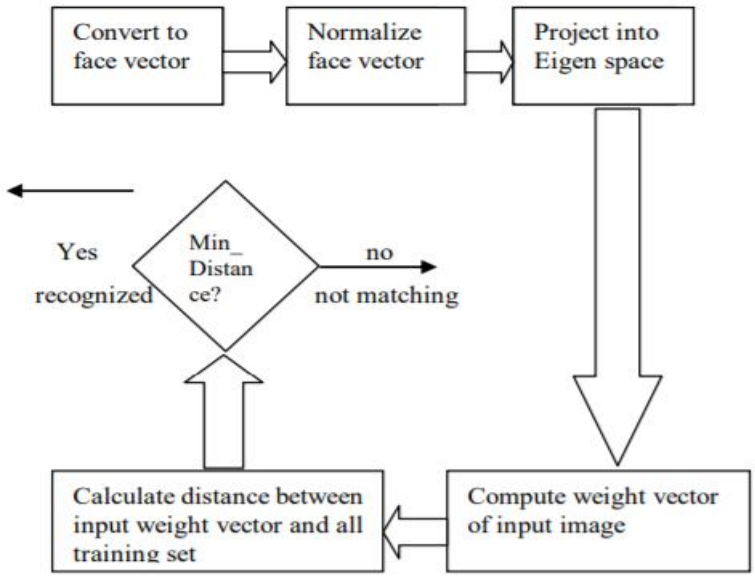

Fig-1: Steps of PCA

Initial step of PCA is to convert the captured image into the face eigen vectors. Then perform the normalization of image to remove the redundancies and the noise present in the image. Normalization is done to generate the unique image and to generate the eigen faces. Then calculate the similarities between the stored image and the captured image. If distance between both the images are minimum then the face is recognized or matched, Hence captured image is matched with stored image so we can mark the attendance. If distance is maximum it means that both the images are not identical.

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B.MODULES

1. How to store Database

These is the main frame. Before taking an attendance of the student we have to store the data of the student. This frame contains the four options:

a. Attendance

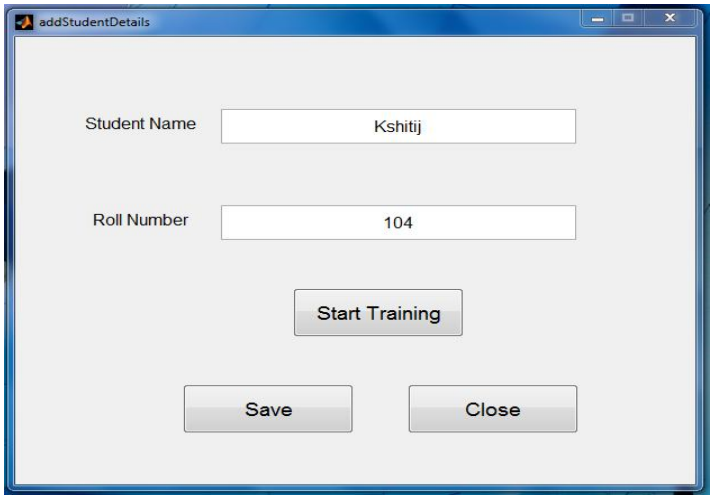
b. Add student detail

c. View record

d. Close

2. Add student detail

Enter the student name and the roll number. After entering the name and roll no click on start training. Start training will start to capture the image through the web camera.



2.1. Capture the image

Creation of Eigen Faces. It will create the five Eigen Faces of one original photo.

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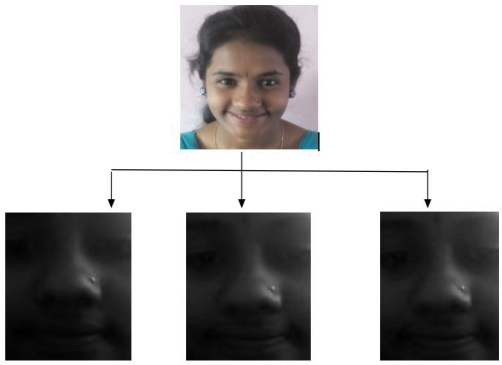
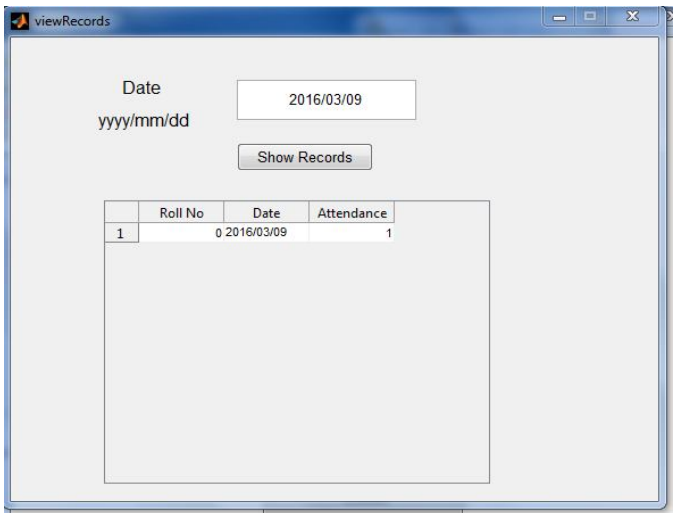
3. How to mark the attendance

3.1 Capture the image

3.2 Match the original photo with stored photo



4. View Records



After marking the attendance it will view the record of the student.

IV. PROPOSED SYSTEM ARCHITECTURE

Following steps depicts the working of the proposed system

1. Database represents the stored information of the students like images, roll_no, name.
2. Then it will capture the photo of the student using the web camera and it will compare it with the stored images of the student. This will be done using the PCA matching algorithm.
3. Matching algorithm is used to find a proper match between the original image with stored image.
4. PCA will extract the features of the images and it will compare it with the stored images.
5. To compare the photo of student with the stored images PCA will create the eigen vectors of the captured image which consist of several eigen faces.
6. After successfully comparing the stored image with captured image it will mark the attendance.
7. Finally it will show the number of students present and number of students absent.

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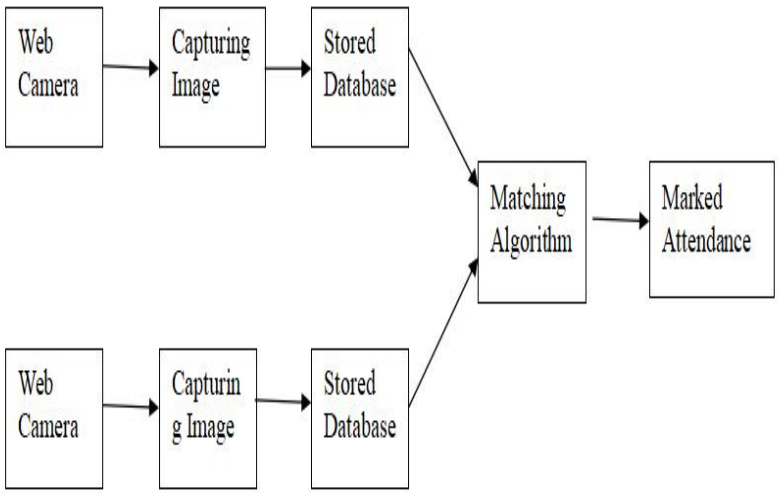

Fig-2: Proposed system architecture

V. FEATURES OF PROPOSED SYSTEM

- This proposed system marks the attendance of the student by capturing their faces
- It also helps to detect the absent students.
- It can also generate the defaulter list of the student.

VI. CONCLUSION

Traditionally teachers were bind to use the paper and pen to mark the attendance. But this is a tedious job as well as time consuming. It also doesn't ensures the complete authentic report because students can mark the proxy attendance which will lead to the inefficiency. This process will waste the lost of papers as well as time. It can also create the disturbance during the lectures. So this is not an efficient process to mark the attendance.

To overcome this drawbacks this paper introduces the efficient as well as authentic method to mark the attendance. This system will help the teachers to mark attendance using the face recognition of student. It will compare the captured image with the stored image and marks the attendance. So students can't mark the proxy attendance so it will ensures the perfect authentication. And it will help to evaluate the students record using this information.

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A LITERATURE SURVEY ON BRAIN COMPUTER INTERFACE

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ABSTRACT
Brain Computer Interface is a high tech system which aims to link a brain with the computer system or any other external device. It is developing massively in research zones and has different applications. BCIs are highly beneficial in research, mapping, assisting and augmenting of human sensory motor functions.

It's contribution in medical field lies with prevention and neuronal recovery from serious wounds. Companies such as Neuralink will soon perform human trials. This paper discusses the major components involved in developing a Brain Computer Interface System which includes the methods to obtain brain signals and its related processing methods.

Keywords: EEG (Electroencephalography), BCI(Brain Computer Interface)

1. INTRODUCTION

A BCI is a system that provides a user a direct communication link from the brain to an external device, without using any muscular activities[3],[4],[5],[6],[7]. These systems rely on real time recognition of different mental states from the brain activity[1]. BCI devices assist in communication, control and rehabilitation and

typically involve a closed loop architecture which is divided into several modules. As a procedure, the user has to perform a specific mental task, which elicits a specific signature in form of brain signals which are recorded using different techniques.

Feedback is generated by the external device closes the loop[1].

2. LITERATURE REVIEW

2.1 Brain Computer Interface

2.1.1 Controlling devices

Command deliveries in BCI systems use either synchronous[8],[9] or asynchronous protocols[10],[11]. In synchronous protocols, a subject is required to constantly monitor external stimuli which can be a visual, auditory or tactile cue, whereas, the asynchronous protocol frees the subject from the stimulus system and allows them to deliver commands themselves.

2.1.2 Acquiring Brain Signals

The human brain is made up of billions of individual processing units called neurons which communicate with each other using neurotransmitters which comprise the reason for brain activity[1]. The BCI recording system has to capture this activity from these neurons using either invasive or non-invasive modalities. The invasive technique includes neuronal activity by surgically implanting an array of microelectrodes into the cortex to obtain single-unit activity, multiple unit activity, and nearby field potentials[12]. The signal quality acquired using this technique is restricted to creature testing or severely disabled patients since the insertion of electrodes can cause irreparable damage to the cortex. A less invasive procedure is electrocardiogram (ECoG) where the recording electrodes are placed on the surface of the cortex which records a combination of LFPs[1].

The non-invasive techniques include Electroencephalography (EEG), Magnetoencephalogram (MEG), function Magnetic Resonance Imaging (fMRI) and Near Infrared Spectroscopy (NIRS). The EEG records brain activity in the form of electrical potential by placing electrodes on the scalp (shown in figure 1). On the other hand, MEG catches the attractive field starting because of cortical currents.

Conversely, fMRI and NIRS depend on hemodynamic changes in the cerebrum because the causal relationship between neural and blood oxygen level changes. Among these, EEG is the most prevalent and broadly utilized chronicle methodology in BCI because of its high temporal resolution, low cost, portability and safety. Additionally, EEG accounts experience the ill effects of low spatial resolution because of the poor conductivity of the skull and brain tissues that spreads the neuronal activity when transmitted from the cortex to the scalp. This outcomes in low Signal-to-Noise (SNR) and requires to use proper signal handling and AI strategies to accurately recognize distinctive mental states. Using signal processing techniques, brain activity of a normal person and abnormal person can be distinguished easily.

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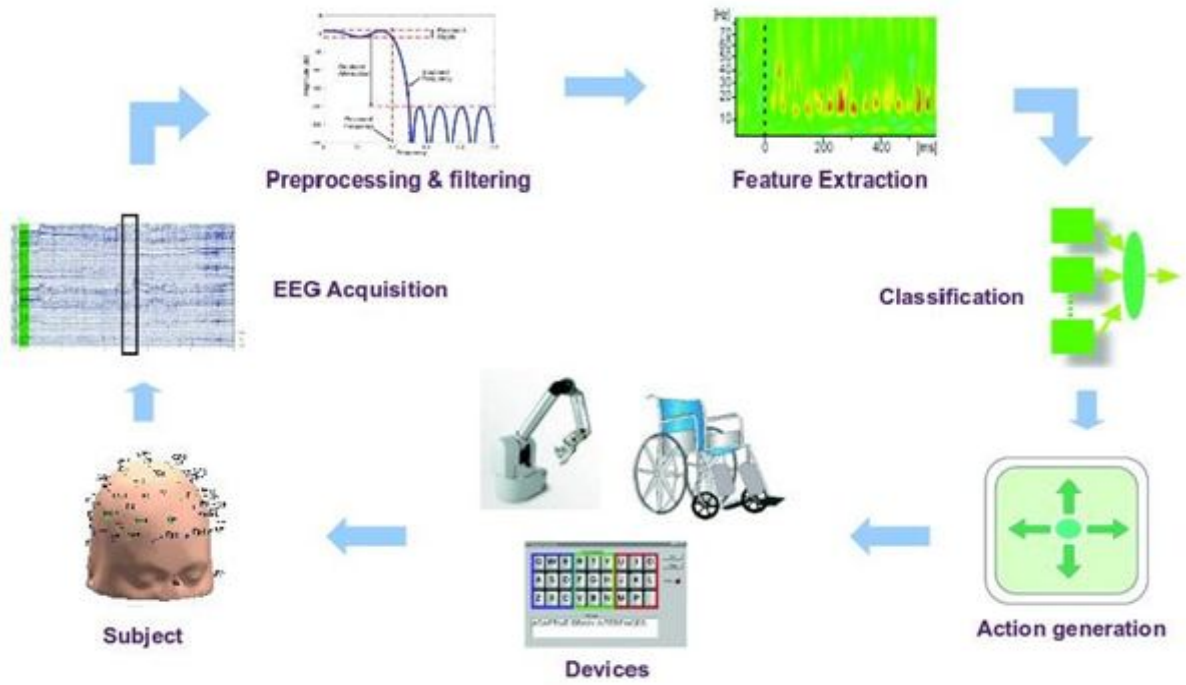

Figure-1: Typical architecture of an EEG-based BCI system [1]

2.1.3 EEG Preprocessing:

The EEG signals, with its low magnitude are extremely vulnerable to contamination due to various kinds of noise and artifacts (see figure 2). The physiological signals such as Electrocardiogram (ECoG), Electrooculogram (EOG) or Electromyogram(EMG) contributes as additive noise during EEG recordings[1]. Furthermore, minor faults in electrode contact leads to a bad impact of line recurrence at 50/60Hz. The noise component spreading across time can be canceled through temporal filtering while the component across channels can be canceled through spatial filtering. The significant information content in EEG signals lies between 1 Hz and 30 Hz for most applications[13]. A mathematical task that performs weighted summation of activity from different EEG channels is called spatial filter. The spatial filtering is necessary when the noise affects more than one channel in constant or varying proportion. Further, the characteristic of spatial noise is unknown and requires certain assumptions before deciding on the choice of spatial filter. The re-referencing based spatial noise reduction approaches are Common Average Reference (CAR), monopolar and bipolar derivation techniques that enhance the SNR of EEG recordings[14]. These referencing techniques can significantly reduce line noise as they may affect all the electrodes simultaneously.

Another spatial filter called Laplacian is a high pass filter and is designed to enhance the spatial resolution of surface EEG.

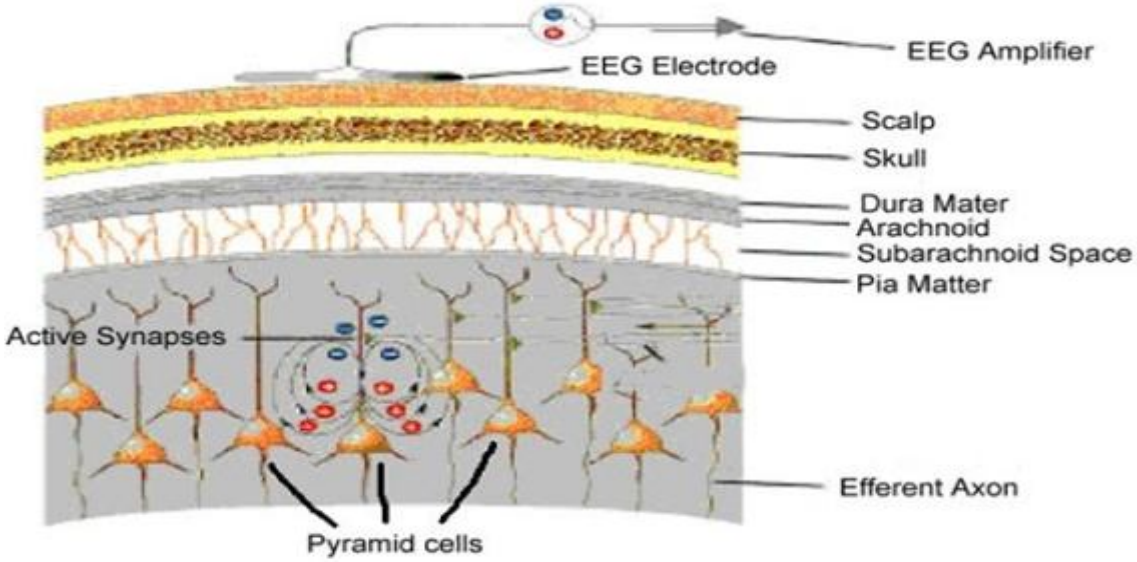

Figure-2: Schematic representation of EEG signal generation [1]

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On a fundamental level, these referencing techniques are free of EEG information and computationally cheap to implement. On the other hand, the commonly used data-driven spatial filtering approach is Principal Component Analysis (PCA), Independent Component Analysis (ICA), Fisher Linear Discriminant (FLD), Linear Discriminant Analysis (LDA), Common Spatial Pattern (CSP) and beamforming[1]. We consider each of these methods as a spatial filter since their resultant form is a weighted combination of surface EEG activity. The PCA finds orthogonal projections where the EEG data has maximum variance which is used to decorrelate signal from noise[15],[16].

2.1.4 Feature selection and extraction

There are staggering number of features in spatial, temporal and spectral domains, where all features not really contribute towards obtaining better classification performance.

Moreover, the limitations in the number of trials require a smaller feature set in the classifiers to avoid over fitting wonders. In this way, a system has to acquire few features that can best separate between various classes. To reduce the dimensionality further, a subset of features has to be selected. Two popular approaches are filter method and wrapper method[17]. Filter method shows features having highest measure for discriminating between two classes. Whereas, wrapper approach considers this factor and finds a feature set which is best suited to the classifiers used.

2.2 Smart Robotic Gripper

This device is another way to do Brain Computer Interface. It has a single channel MindWave Mobile sensor which is used to collect the EEG signals. Feature extraction is performed to obtain two distinct values corresponding to blink strength and attention level (see figure 3). These values are used to control the prosthetic gripper in real time, to guide the gripper in right, left, forward, backward, up, down, open and close[2][18]. The platform used to extract real-time data is Python[2].

2.2.1 Methodology

2.2.1.1 Neurosky Mindwave mobile headset

It is powered by a AAA battery and communicates via Bluetooth. It has a Think Gear chip[19],[20] inside and uses a TGAM module. It detects raw brainwaves and outputs processed EEG signal consisting of Alpha, Beta, Delta, Theta and eSense parameters like Attention, Mediation, Blink strength[2].

2.2.1.2 Think Gear

This technology[20] is a patented NeuroSky's technology which measures and analyses the EEG signals. It consists of an inbuilt small chip which helps in filtering the electrical noise and can measure the wearer's state of mind. Different brain signal mapping is possible to achieve carious control activities.

2.2.1.3 Python interface – Telnet communication

A python module establishes connection between NeuroSky headset and Laptop using Telnet communication. Telnet is a protocol used on LANs to provide a bidirectional communication facility.

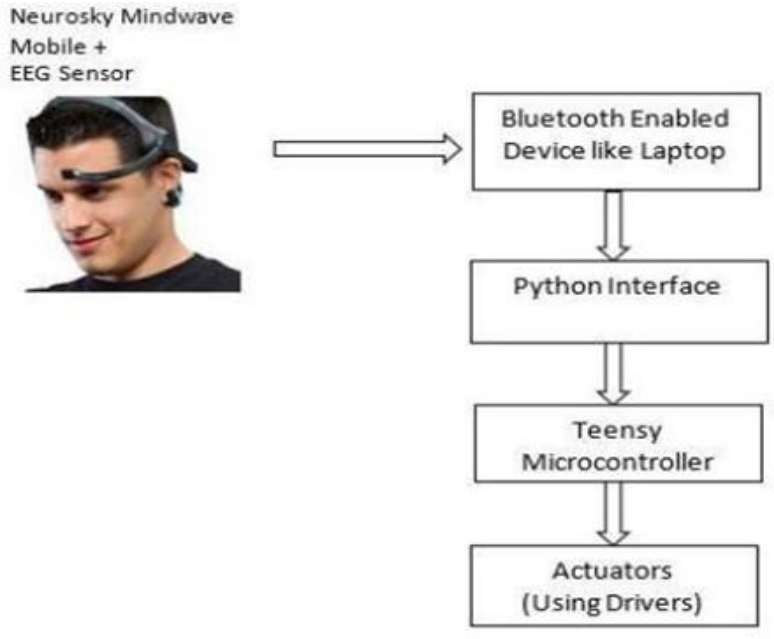

Figure-3: Block Diagram of Smart Robotic Gripper [2]

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2.2.1.4 Signal Detection

The Different states of brain correspond to different patterns of the cerebral activity[2] which gives rise to waves that are distinguished using amplitudes and frequency pattern generated. Interaction between neurons produce a microscopic electrical discharge which leads to waves characterized by different amplitudes and frequencies which are then transmitted using Bluetooth communication to various applications.

2.2.1.5 Signal Acquisition

The headsets captured the EEG signals and are transmitted to the laptop using Bluetooth communication. It detects, analysis and processes the signal and transmits the processed data to laptop

2.2.1.6 Pyserial

This module encapsulates the access for the serial port and provides access to the communication port of Teensy microcontroller. Different commands like read and write are used to establish this communication.[2]

2.2.1.7 Teensy

Teensy 3.0 is a 32-bit ARM Cortex-M4 development board running at 48MHz. it has 43 Digital I/O pins out of which 10 pins are shared with analog and 3 UARTs (serial ports) and 10 PWM outputs[2].

2.2.1.8 Actuators

The data obtained from the Teensy microcontroller is used to drive the motors using L293D motor drivers. These motors perform action as per the data obtained and processed from Neurosky and Python interface. Thus, real time brain waves are used to control the prosthetic mobile robotic gripper.[2]

2.2.2 Detection of eye blink signal

Eye blink plays a critical role to people suffering from motor neuron disabilities. These devices understand eye blinks and helps interact with the external world more efficiently. Every eye blink has certain feature like frequency of operation, amplitude and time elapsed between opening and closing of eyes[2] (see figure 4). Blink strength and attention values are gathered from the processed signal from the NeuroSky Mindset headset (see figure 5 and 6).

Action	Range	Actuation
Long Blink	40-60	Forward
Quick Blink	Normal Blink	Backward
Stress Blink	>100	Stop
Blink (twice)	40-70	Move Left
Stress Blink (twice)	90-255	Move Right
Attention 1	40-60	Pick
Attention 2	70-100	Place

Figure-4: Blink and Attenuation status to perform control application[2]

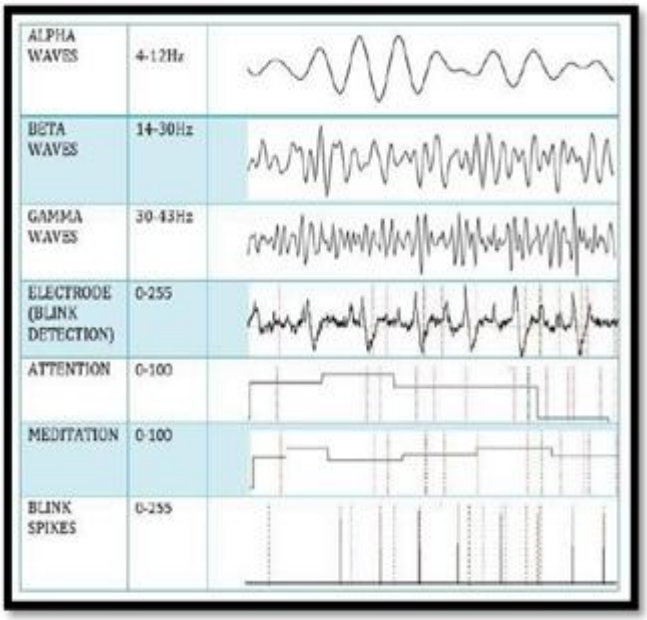

Figure-5: Plot of real time brain waves[2]

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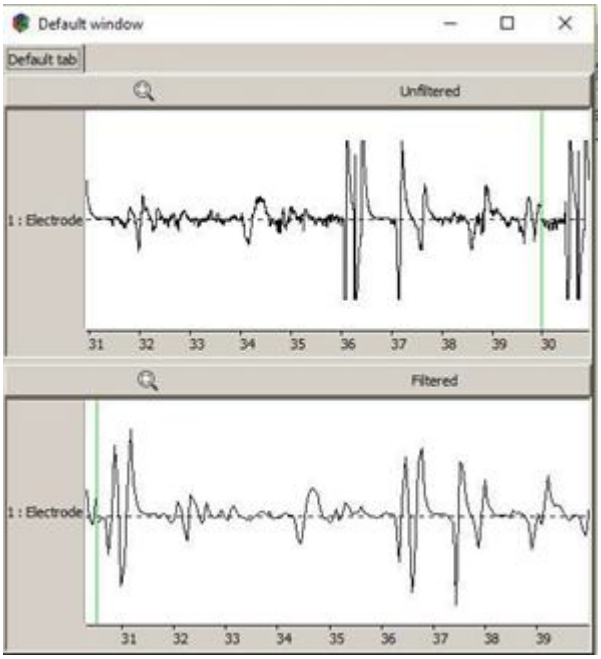

Figure-6: Signal Display[2]

2.2.3 Architecture of the system

The brain waves detected and processed by the Neurosky EEG sensor, are transmitted via Bluetooth communication to Laptop and platform used is to extract real-time data is Python[2]. A Telnet communication is established between Neurosky and Python to collect and parse the data. The values of the different mind states and mind-waves corresponding to a frequency and activities are extracted (see figure 7).

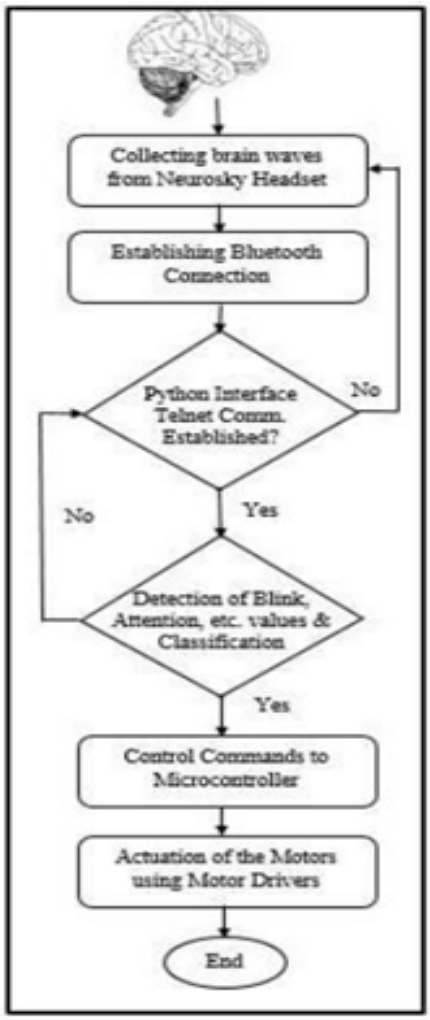

Figure-7: Flowchart of the system [2]

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2.2.4 Algorithm

Step 1: Establish serial communication between the laptop and microcontroller. Step 2: Establish telnet communication to Neurosky headset and enable Think Gear Socket Protocol.

Step 3: Read and parse relevant eSense parameters like attention and blink strength values.

Step 4: Enable pyserial communication.

Step 5: Transmit the parsed control parameters from the program module to the microcontroller.

Step 6: Using the received parameters in microcontroller perform the corresponding actions.[2]

3 CONCLUSION

This paper discussed about various aspects of a BCI system, its methods and models. This paper also discussed about the preprocessing, feature selection and extraction methods

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ASPECTS OF HANDWRITING SYNTHESIS AND ITS APPLICATIONS

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ABSTRACT

In this era, people want handwriting style personalized font for the communication with the goal that document or message can be displayed as they are written by their own hand. This can be achieved by handwriting synthesis. Handwriting synthesis aims to generate the computerized text which exactly mimics the writing style of the individual user. Handwriting synthesis not only help to give personal touch or user style preservation, but it has several applications such as improvement of text recognition systems, font personalization, writer identification and spreading as the technology becomes popular. In this paper different application, and approaches of handwriting synthesis is highlighted. One approach is based on movement simulation, where neuromuscular movement is the key features to synthesis the writing. Other is shape simulation, in which glyph is taken by the online or offline way and synthesized the writing based on the glyph. Also discussed challenges faced by researcher such as lack of dataset samples, handwriting variation, the complex structure of glyph, etc. Among 22 official languages only Chinese, English, Arabic and Bangla are the language in which an ample amount of work found for handwriting synthesis. Very less work has been found for other complex scripts. The objective of this paper to enlighten all aspects and application of handwriting synthesis which exactly imitate the user writing style.

Keywords: Handwriting Synthesis, Shape simulation, Handwriting Generation

INTRODUCTION

In the era of digital multimedia, messages have increasingly more consideration because of the extraordinary accomplishment of PC and internet facilities, such as posting content, uploading picture on social media like Facebook, twitter, sharing blogs or sending messages through mobile application, sending mails to friends and professionals. Nevertheless, Text communication is still a popular way of communication among the people. In earlier era, people used plain text for communication, but now scenario is changed with plain text to rich text[1], they used existing font style for the writing the text, however they are usually unsatisfied with the limited visual presentation of the text. Many efforts have been made to enhance the communication. For example invention of Unicode version 6[2] in 2010 encoded emoji (emotion Hanzj) characters, such as ☺, to express the personal feeling through text and enhance the communication. Many font have been developed by font engineer so that sender can choose unique fonts to express their idea gracefully. Many font family were designed by Google font[3] and web portal 1001[4] font etc. Google Fonts provides a free web font service with more than 600 font families. By using these, web designers can exhibit a vivid text without worrying whether the specified fonts are installed in client devices. For example, a blogger can use different fonts to show his or her feeling.

Presently, people of personalized period wants their own handwriting style personal font for the communication with the goal that document or message can be display as they written by their own hands. If you use the same then communication become more effective as personal fonts will attract the people's eyes. One can give individual or personal touch by inviting by card in own writing, writing books in personal font, Indeed, even we can make logo, notes and header utilizing charming individual writing which makes great effects on reader minds[5]. In our education and culture, the primary mean of communication served by handwritten text and it is considered as a form of art. It have been very useful in the task such as note- taking, reading with writing, may have great impact on short term and long term memory. Handwriting is normally indication of individual personality represented by neurological patterns in the brain.

Handwriting recognition is the process of converting input image sample in to the text form, whereas handwriting synthesis is reverse of it, which generate image from the input text. Synthesis is an automatic process of converting input data in to handwriting style text which exactly mimic the human writing style. Handwritten documents paly vital role in Human Computer Interaction (H.C.I.), where by this HCI technology has mostly emphasize on the handwriting recognition system, and principle focus towards the application of handwriting recognition. Handwriting synthesis technology has been largely neglected, however with the availability of electronics like Personal Digital Assistant (PDAs), and online handwriting capture devices, the globalization of computing technology needing an effective system which deals with the handwriting synthesis, and open up a wide range of research in this domain.

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Handwriting synthesis not only help to give personal touch or user style preservation, but it has several applications and spreading as the technology becomes popular. Some of the principal applications are

- Document can be digitized in the subject's handwriting which gives personal touch as well authentication of document.
- Reading become more easy, if document written in own writing as human minds are habituated with own writing.
- The major component of handwriting synthesis is learning and analysis of writer's handwriting. Which leads to a many application such as writer identification, document authentication, and handwriting recognition.
- Editable handwritten document with real time inline correction is a one of the useful application of handwriting synthesis, where computer will automatically correct the error from handwritten document and that correction should be in same handwriting.
- It also applicable in the field of text recognition, writer identification, captcha generation [6].

The rest of the paper organized as follows, the background study of handwriting synthesis followed by characteristic of different script. Further, the details discussion on the applications of handwriting synthesis is highlighted.

BACKGROUND OF HANDWRITING SYNTHESIS

Variation is natural in handwriting of a person from document to document. And it is quite impossible to maintain the consistency in handwriting. There is an obvious case that two person have distinct handwriting.

Generating handwriting in any language requires parameters like Character glyph, Connection style, Character space, Coerciveness[7]. Visual representation of the character is known as character glyph. In some case, the character might be represented by more than one glyph. Example letter 'J' is the character while a particular sketch of that character is known as a glyph. A style using which characters are connected with each other that style is known as connected style. Amount of space between each individual character is known as character space. A handwriting in which letters are usually connected in a slanted and flowing manner is known as coerciveness.

CHARACTERISTIC OF SCRIPT

Handwriting synthesis is highly dependent on nature of the script and its structural features. Some script have small number of character set where some have more. Roman script is linear in nature having small set of symbols. Some complex script are cursive in nature so difficult in synthesis. But the real handwriting is a combination of both cursive and non-cursive which creates a problem during recognition and synthesis.

Indian language are normally return in the form of non-coerciveness. And character are normally known as consonant, or combination of vowel and consonant. The aksharas are independent in nature and having space or discontent component. Component are made of the special layout normally known as stroke. So handwriting process considering all the features of component and generate the text. So synthesis becomes quite difficult. Very less work have been noticed for handwriting synthesis for Indian language, only some authors have worked on it [8].

APPLICATIONS OF HANDWRITING SYNTHESIS

As digital technology increases throughout the years, their scope of utilizations has additionally expanded. One of the real objectives of research in processing has been to make system easier to communicate with and in this way to make their advantages accessible to an a lot more significant number of individuals. These points are reflected in the industrial business as innovation trying to make system easier to understand. This section pointing out some handwriting synthesis applications.

SYNTHESIS IN INFORMATION RETRIEVAL

Handwriting synthesis makes it promising to execute text searches on handwritten word image databases when no ground-truth data is available. This is still an open issue in information retrieval research field. The handwritten string is treated as a pictorial pattern without an attempt to recognize it. This is a more natural way to handle the handwritten text[9].

SYNTHESIS IN BIOMETRIC SECURITY

In this era biometrics synthesis is spreading widely which includes voice, fingerprint, iris, handwriting, or signature. It used to generate biometric databases which helps in performance evaluation of recognition system

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instead of manual biometric. Also provide a tool which helps to identify the weakness of the system against the attack carried out with generated traits[9].

HANDWRITING RECOGNITION BY DATASET GENERATION AND PERFORMANCE IMPROVEMENT

For the issue related with sentence recognition leads to a less accuracy. To improve the accuracy, the straightforward way is to increase the training set which looks natural like human written text. And it is task of collecting the hand written text is rather error prone, expensive and time consuming. So one can generate the training set by systematically generate the text in human writing. Improvement in performance, speed [9]–[13] and stability [10] of text recognition was done using handwriting synthesis by many researchers.

WRITER IDENTIFICATION AND FORGERY DETECTION

With the help of handwriting synthesis one can identify by analysis of handwriting and comparing synthesized text. Also helps to generate the dataset which leads to performance improvement and less time consuming[10], [11]**.**

HISTORICAL DOCUMENTS REPAIRING

Important historical documents may damage by time and may cost a lot for expert consultancy and repair. Handwriting synthesis can help by analyze the personal handwriting style and generating character glyphs to repair the damaged writing [9].

FONT GRAPHICS

It is difficult and time-consuming to create and preserve a constant style in all characters in manual font design procedure. Thus, one can generating a new font from a user- defined example by synthesis process[14]–[16]**.**

PERSONALIZATION, PLEASANT VIEW

Some application such as wish to express their feelings using their own individual characters. Receiving a letter or email written in a personal font makes communication more pleasant and expressive than if written in a typical font. Give personal touch to the document, so that reading become more easy and helps to express the feelings via text, if document written in own writing as human minds are habituated with own writing[5], [17], [18].

LITERATURE REVIEW

Handwriting can be synthesize by imitating author's writing by analyzing its features. There were two approaches to model the handwriting. One is by Movement simulation[6], where neuro muscular moment of hand is used to simulate the writing. Another is shape simulation [6] where handwriting can be synthesized by learning features of writing style and without imitating human hand movement. Moreover, there are two scenario of handwriting synthesis where input data is in the form of online and offline. In offline handwriting synthesis, where the handwritten data is a scanned image of a paper document and handwriting is synthesized with stroke thickness, glyph, ligature, and inking information. In online synthesis, handwritten data collected by hand-held devices and Tablet PCs devices incorporate temporal information about the writing process, in addition to the spatial information present in traditional handwritten data.

Phases of Handwriting Synthesis: following describes the different aspects of handwriting synthesis.

- Output of system: character's Strokes, complete character, group of words, sentence or small paragraphs.
- Methodology: Concatenation and Generation
- Input Data : Online and Offline data types
- Script and Language: Arabic, Chinese, Indian, Latin(English and Spanish Language)
- Synthesis System based on Writer : Writer Specific and Writer independent

Output of the system: refers the output of different synthesized system where system generated output in the form of strokes, characters, character groups, words, lines, or paragraphs.

METHODOLOGY

There are two approaches for imitate the user writing. First approaches is Concatenation[14], [19] in which output images is produced by concatenating best similar characters. Generation techniques[7], [8], [17], [18], [20]–[22], completely new synthesize image by synthesize the glyph of a character from the very basic elements - strokes. Figure 1 shows the different approaches and output of concatenation whereas Figure 2 shows the approaches and output of generation system.

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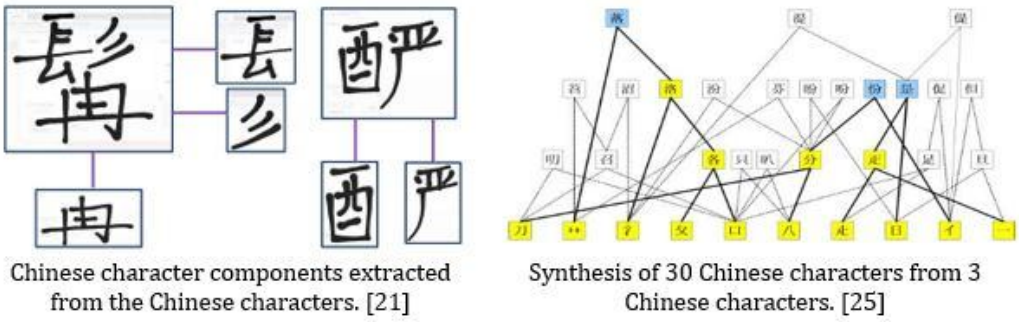


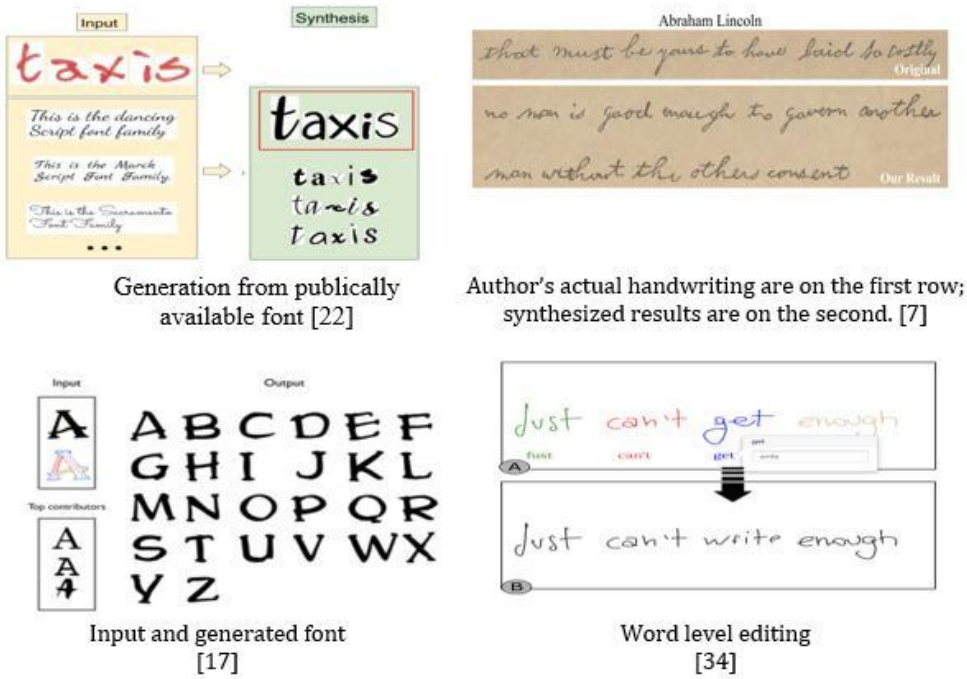
Chinese character components extracted from the Chinese characters. [21]

Synthesis of 30 Chinese characters from 3 Chinese characters. [25]

Figure-1: Approaches of Concatenation

Input Data: There are two ways to input the data: online and offline. In offline data synthesis, the scan image of paper document is taken. Based on characteristic of writing style the synthesis is carried out. In online synthesis the input is taken from hand-held device such as mobile, tablet, input capture device. Such kind of data have temporal information related to writer and spatial information is present.

Script and Language: Personal calligraphy creation had been developed for many languages such as Chinese[16], [18], [20], [22], [23], English[7], [10], [14], [16], [17], [19], [24], Arabic[13], [25] and Bangla[21], Korean (Hangul) [26]. Japanese[27] , Indian (Hindi, Tamil, Malayalam, and Telugu) scripts[8].



Generation from publically available font [22]

Author's actual handwriting are on the first row; synthesized results are on the second. [7]

Input and generated font [17]

Word level editing [34]

Figure-2. Approaches of generation method

Synthesis System based on Writer: The objective of synthesis is based on application in which it might or might not preserved the writer's style. For the application such as character recognition improvement [9]–[12], font graphics[14]–[16], CAPTCHA generation does not require the exact features of generation. It just need for dataset creation. While many application preserves the write style such as writer identification[10], [11], PC personalization[5], [17], [18], forgery detection.

REVIEW OF SHAPE-SIMULATION APPROACHES

Shape simulation is a techniques which considers the shape of handwriting instead of hand movement to synthesize the writing. Handwriting can be synthesized by learning features of writing style of specific user.

In [19], they presented generative model that can render the text which looks like they were written by human. Given a user text sample and some publically available handwriting style font families, they approach to finds the fonts that best matches the user calligraphy. For that they compare individual character with font family and find out best match for that particular character based on shape and thickness as a comparative parameter. Once they find entire set of best match characters, system has generated the actual statement or paragraph. On a user study with 12 subjects, their synthesis results were considered, on average 71% similar to the input samples.

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In [7], they presented a data driven generative model built around individual characters that can be replicate a specific author's pen on paper handwriting style. Their algorithm is capable of generating writing from a limited set of input samples, and can be model a writing that is printed, cursive, or somewhere in between. As an input to system the user marks a sample of the handwriting style they wish to synthesize. To greatly speed up this step they introduce a semi-automatic handwriting annotation tool. Finally, their end to end rendering pipeline can be calibrated to enable it to print in the same color as the target sample of writing. They evaluated system with several perceptual user studies and show that it is capable of fooling human's observers.

In [22], For generating Chinese character two phases are proposed, pre-processing phase and production phase. In the pre-processing phase sizes and positions of components of every Chinese character is label manually. In the production phase for creating personal handwriting, the user had to handwrite the small subset of the Chinese character. The system can track every stroke, distinguish and extract components from the user's handwriting character by character. Different methods are explained for it such as component analysis, positions and sizes of components in Chinese character, component extraction and glyph synthesis.

In [18], Whole Chinese character first splits into multiple constituents parts such as strokes and radicals. After that algorithm analysis and learns the characteristics of character handwriting styles both defined in Chinese national font standard and those exhibited in a person's own handwriting records. Parametric character shape representation method is used for characterizing the shape difference between components. A method calculates stroke similarity according to the feature points of a stroke. The topological structure of Chinese character, automatic extracting character components task are used for generating Chinese character.

In [17], complex sequence with long term sequence was generated using LSTM recurrent neural network by predicting one data at a time. Researcher demonstrated their work on online text data. RNN gives better result of synthesis by predicting the text sequence. They also used novel CNN which helps to estimate the supporting sequence of text.

In [21],Specific writing has macro structures like neighboring word roughness, line orientation, margin orientation, and interline spacing etc. as well as micro properties like inter-character transitions and individual character shapes. Bangla writing is more complex in nature because of the same, a grouping of stored character database and stroke synthesis by a spline with paint brushing is used.

In [28],Generation of character shapes done based on Bayesian networks, in which experimental results of digit shows more natural character shapes than HMMs. Character shapes are generated from specified texts by searching the most feasible input point sequences. Representing random variables and their dependencies by the probabilistic graph is acknowledged as a Bayesian network. Its node represents random variables and its arcs represent dependencies between random variables. Also overall shapes, relationships between graphemes, strokes, and points are more natural.

In [29]An approach for analyzing simple, as well as complex movements such as cursive handwriting, describe in this paper. Cursive calligraphy is labelled as the superimposition of vital strokes with an elliptic form that results from the algebraic summation of Beta velocity profiles. Each stroke is totally described by a set of ten parameters that characterize the movement both in the kinematics and the static domains. The beta-elliptic model can be applied not only to French handwriting but also to Arabic handwriting words.

In [30], they have proposed baseline for the handwriting synthesis task and evaluating metrics in order to measure the performance and quality of different methods. They proposed two methods: letter bias and letter plus writer bias. In letter bias average of letters is calculated and in writer plus letter bias they have direct access of writer ID and have analyses the style of writer. They proposed two metrics which find relevant to their problem. They used IRON-OFF dataset for the handwriting synthesis.

Author	Approach	Input data	Output data	Online/ offline	Applications	Script
(Aksan, Pece and Hilliges, 2018)	Generation	Sentence	Sentence with targeted style	Online /offline	Style transfer, Editing of digital ink, Spell-checking and correction of handwritten text.	English
(Suveeranont and Igarashi, 2010)	Generation	Single character	Complete character set	Both	Font generation (body type font), Graphics design	English

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(Haines, Mac Aodha and Brostow, 2016)	Generation	Handwriting paragraph and sentence	Sentence or full paragraph of text	Both	Personalization, Line replacement with different color	English
(Graves, 2013)	Generation	Line sequence	Cursive handwriting sequence	Online	Variety of style, Personalization	English
(Balreira and Walter, 2017)	Generation	Text sample	Statement or paragraph	Offline	Visually similar renderings, Personal communication	English
(Liu, Xu and Lin, 2012)	Concatenation	84 handwritten characters	Other handwritten characters	Offline	Computer based font design, Gamming and mobile which favor personal touch	Chinese
(Lin et al., 2016)	Concatenation	Small subset of Chinese characters	Complete Chinese character set	Offline	Personalized Chinese font.	Chinese
(Chang et al., 2018)	Generation	Unpaired character source	Target fonts	Online	Improve the generation quality	Chinese
(Choi, Cho and JinHyung, 2003)	Concatenation	Characters	Characters	Online	Personalization	Hangul and Digits
(Dolinsky and Takagi, 2007)	Concatenation	Font character	Character	Both	Human like Behavior	Hiragana
(Elarian et al., 2015)	Concatenation	Characters	Sentences	Offline	Word finding OCR improvement.	Arabic
(Jawahar and Balasubramanian, 2006)	Concatenation	Characters	Characters and Group of Words	Online	OCR, personalization, writer style identification	Indian (Hindi, Tamil , Malayalam, Telugu)

Table-1: Comparative study of handwriting synthesis

In [15], they elaborated used of FontForge tools: which allows the creation and modification of fonts in many standard formats. This tools automatically guess at widths for characters and even produce kerning pairs without human intervention. It has a scripting language which allows batch processing of many fonts at once. Tool supported for Apple's font formats. It can read and generate Apple font files both on and off a Macintosh and allows to manipulate bitmap fonts as well as outline fonts.

In [13], Arabic handwritten text have different characteristic and phased the problem of scarcity of dataset. To avoid such problem they presented efficient system which automatically helps to synthesis Arabic Unicode text into image of handwritten document. They used online sample for synthesis and features were extracted from the IESK-arDB database. And finally they used the synthesized character sample to validate the segmentation method. Which leads to good accuracy in training and testing document analysis.

Form the literature, it is state that there were two approaches to synthesize the handwriting such as movement and shape simulation. Normally, it is noticed that shape simulation is carried out by two way: one by generating the new character or by concatenation of stroke from other character. The different criteria is taken by researcher such as input/output levels, data types, and script is also discussed in the table 1.

CHALLENGES FOR HANDWRITING GENERATION

- Lack of user wise handwritten Dataset for script: Generation is expensive in terms of time and labor due to lack of dataset. Moreover, handwriting analysis, character recognition, component spotting and segmentation of handwritten characters are highly dependent on dataset which requires for training and validation.
- Variation in the character size is change based on position.
- Size may vary according to position of character, like size is defer even if same character is written in first, middle or at the end.
- Variation in handwriting of a person from document to document.
- Writing may be varies according to pressure given on pen.

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CONCLUSION AND FUTURE SCOPE

Synthesis aimed to generate the computerized text which exactly mimic the writing style of user. Researcher faced many challenges while synthesized the handwriting like lake of handwritten dataset, character structure of language. Handwriting synthesis is applicable to many area but most leading application are related to handwriting recognition. Different approached is discussed in this paper. Synthesis is mainly carried out by two approaches such as shape simulation and movement simulation. However shape simulation method is most preferable by the researchers. The work based on shape simulation is further classified in to generation and concatenation operation.

Many work have been done with the synthesis of the handwriting for different script. Handwriting synthesis is carried out by many researcher for Chinese, English, Bangla, Arabic scripts. Form the survey, it is noticed that, the generation based on Indian language script is under done.

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A LITERATURE SURVEY ON IMAGE AND OBJECT RECOGNITION USING CONVOLUTIONAL NEURAL NETWORKS IN AUTONOMOUS VEHICLES

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ABSTRACT

Autonomous cars have the potential to solve traffic problems such as accidents and congestion using cognition with the help of CNN's. However in the current scenario complete autonomy is still to be achieved. Although today's CNN's have brought us closer to autonomy than ever before. Convolutional Neural Networks are deep neural networks that include artificial neurons. These neurons are trained using preset rules and these rules determine whether will provide an output when given several inputs. CNN's start to learn and make future decisions on the basis of the situations they encounter. One major application of CNN's is object and image classification.

CNN opens up wide applications in the field of autonomous vehicles where they could analyze various forms of on road footage which includes various scenarios such as collisions, empty roads, traffic blocks, etc. CNN's will narrow down the image to image grids which could include the possibility of an obstacle. The errors that take place are fed back for reclassification and deeper analysis. Post analysis the CNN will send the appropriate instructions to the car for example accelerate, brake, etc. A literature survey on the use of CNN's in image recognition and object detection is presented in this paper.

Keywords: Deep Neural Networks (DNN), Convolutional Neural Networks (CNN), Convolution, Pooling, ReLU, Kernel

1. INTRODUCTION

"*If We Want Machines to Think, We need to teach them to see.*"[1] – Fei-Fei Li, Professor of Computer Science at Stanford University.

Deep artificial neural networks (including recurrent ones) have won numerous contests in pattern recognition and machine learning. [2]

Driving has become an integral part of our daily lives. From driving to carrying out errands to taking long road trips driving can be extremely risky due to an uncontrollable factor which is human error. Distractions such as entertainment systems, cellphones, etc are one of the biggest reasons of accidents and collisions. Nearly 1.25

Million People die in road crashes each year, on average 3,287 deaths a day, [3] According to

The Global Road Crash Statistics. This horrific statistic proves that driving is a high risk activity and the realm of autonomous vehicles can help reduce these deaths and eliminate human errors completely. Self-driving cars can just know the destination and let the passengers carry on with their task while the car takes them to their destination. This will eliminate the threat and risk of travelling for daily activities.

With the implementation of deep neural networks an autonomous vehicle can be achieved. Deep neural networks are computerized decision-making networks that mimic the mammalian visual cortex. [4] The structures of deep neural networks consist of multiple layers of neuron-like components. [4] With the use of multiple layers in the network the neurons are able to process and receive input from various parameters. A Convolutional Neural Network is a subtype of a deep neural network. The use of CNN's is being expanded for the specific purpose of autonomous vehicles. CNN's are used for obstacle detection and image recognition. In 2016, NVIDIA created an autonomous car using CNN technology. [4] Their car exemplifies and demonstrates the validity of using CNNs in autonomous transportation. [4] Although CNNs have the potential to increase road safety they bring several ethical conundrums into question such as, 'is a computer going to keep a passenger safer than a human?' Achieving autonomy through CNN's will add more sustainability to the driver's environment. This means that this will be more beneficial for the environment and will also aid in preserving vehicle parts. Even though CNNs are still new, they are the new emerging technology in self-driving vehicles

2. A LITERATURE SURVEY

Convolutional Neural Networks include several layers through which data input is received. These layers are organized in an orderly structure and include convolutional layers, a pooling layer, a fully connected layer and a layer for loss. Every layer has its own functions and as the images progresses from layer to layer the analysis

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becomes more abstract. This translates that the first layers of the neural network react to different stimuli such as oriented fields, change in light intensity, etc, while the layers ahead concentrate on the identification and recognition of objects and make independent and intelligent decisions about its importance.

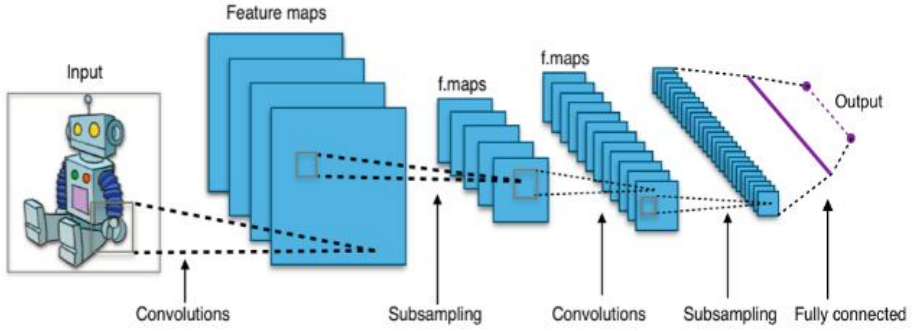

Figure-1: Typical Structure of a Layered CNN [5]

2.1 LAYERS OF A CNN

2.1.1 THE CONVOLUTION LAYER

The convolution layers are the ones that are the most at work. The convolutional layers serve as feature extractors, and thus they learn the feature representations of their input images. Convolution is officially defined as the integral that shows the amount of overlap of one function as it is moved across another function. [6] This scenario includes a kernel being moved across an input image. A kernel is a matrix of values created to detect different features. [4]

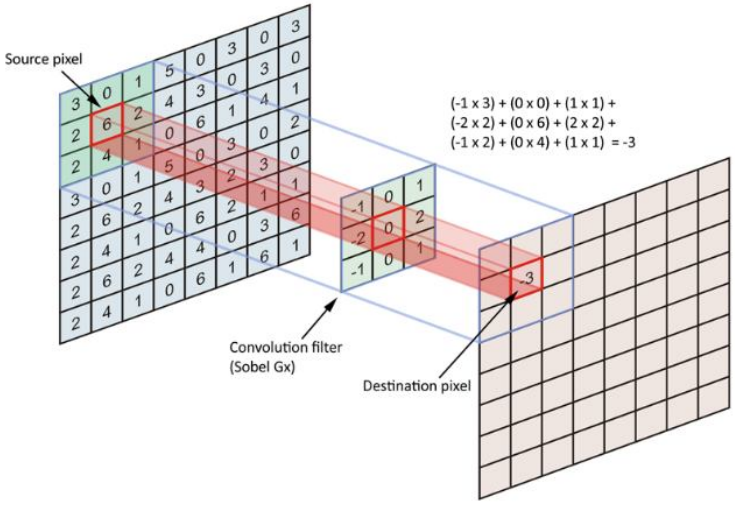

Figure-2: A kernel analysing an arbitrary picture [7]

In self-driving vehicles, the kernels are made to identify detailed features of the input such as edges. When the convolution encounters a local maximum that position is identified as an edge. Different kernels are required within the CNN in edge detection. Depending on their values, kernels can be used to detect differently oriented edges. [4]

2.1.2 THE POOLING LAYER

The pooling layer essentially shrinks the image stack by picking a window, striding over filtered images and then taking the maximum value from each stride. The 4 steps are:

- Select the size of the window (usually 2).
- Select stride (2).
- Run the window over the filtered images.
- Retrieve the max value.

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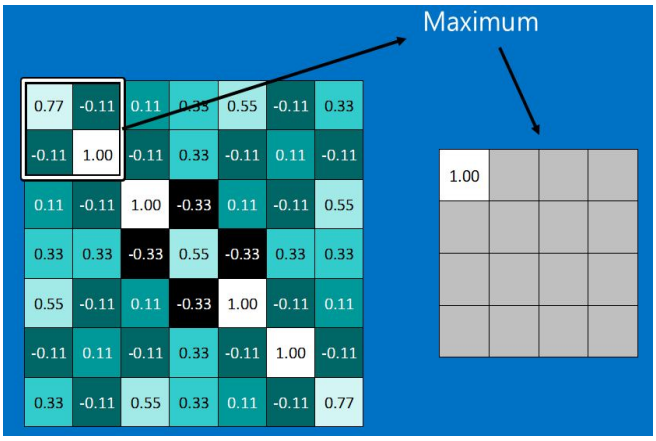

Figure-3: Max Pooling [8]

2.1.3 THE ReLU LAYER

In the ReLU (Rectified Linear Units) layer a stack of images becomes a stack of images with no negative values. [8] ReLU is used as the classification function in deep neural networks. (DNN) This layers is used as an activation function in deep neural networks, with Softmax function used as the classification function. Mostly used only in the output layer, the Softmax function is to represent probability distributions of all the possible outcomes generated by the CNN.

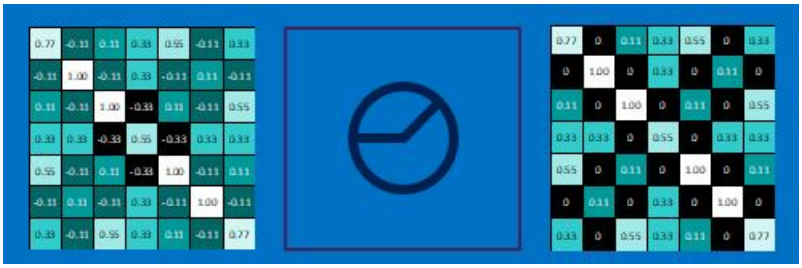

Figure-4: ReLU Layer-Negative to Non Negative [8]

2.1.4 THE FULLY CONNECTED LAYER

The fully connected layer handles the task of merging all the data processed from all the layers into one final output. The Fully connected layers produce inner products**.** All neurons in the full connected layer are connected to all the other outputs provided by the previous layers. The fully connected layer analyzes all the data provided at the same time without the need of a convolution function

2.2 LEARNING IN A CNN

Convolutional Neural Networks learn using what is known as stochastic gradient descent and back propagation. Backpropagation is an algorithm used for learning. The goal is to make the predictions of the CNN match the ground-truth (original input image) by minimizing a cost function. [4] The CNN must be able run in both a feedback and feed forward configuration.

During the forward run the errors are collected and processed by the loss layer. Error are reduced with the help of stochastic gradient descent. Stochastic simply means that the training images are fed through the network in small, random subsets. [9]

2.3 IMAGE RECOGNITION

The demand for CNN's is growing rapidly when it comes to image recognition. A rough localization is performed by presenting each pixel with its neighbourhood to a neural net which is able to indicate whether this pixel and its neighbourhood are the image of the search object. [10] However in the current scenario convolutional neural networks are being used to identify specific objects which means that the network processes the given image and tries to locate or identify special features in the input image such as other cars, obstacles, pedestrians, etc. To help the CNN in classification of objects in the given image the CNN must be trained first through several test images. The general hierarchy for the identification of an image is as follows: pixel → edge → texton → motif → part → object. [4] Pixels and edges are just as generic as one might expect. Textons are micro structures and form the basic elements in pre attentive visual identification. Textons are small patterns which are merged into motifs**.** Motifs are sections of repeating patterns that can later be combined into larger image parts. These parts are then combined to form a whole image to be identified. [4]

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Image classification begins with the division of the input image into sections/pixels. The input then passes through the CNN for analysis. The kernels in the convolutional, pooling, ReLU and full connected layers identify special features in the given image. The matrix of values becomes more detailed and accurate with the progression of the layers.

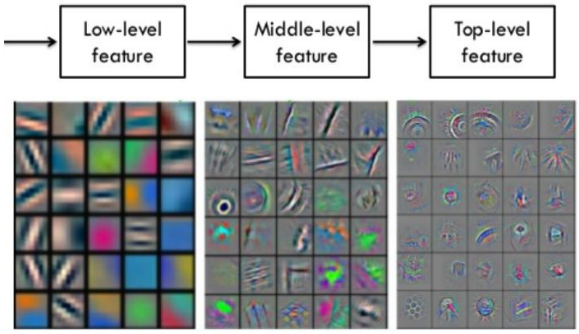

Figure-5: The Kernel Becomes more Intricate with each Layer [11]

Each grid square in figure 5 represents one kernel which is passed over each pixel of the image. The final output is a representation of the original ground-truth image. [4]

In the current scenario most Convolutional Neural Networks are made to identify specific objects such as faces, wildlife, handwriting, etc. For the CNN classification to work well and efficiently in self-driving vehicles the network must be able to classify various objects and should be able to detect possible obstacles in the image.

Convolutional Neural Networks in Self-Driving cars needs to process and analyse an all-round 360 degree constantly changing environment. The car can include a rotating video camera to collect all the required driving data. The machine must be able to recognize metric, symbolic, and conceptual knowledge as demonstrated in figure 6. [4]

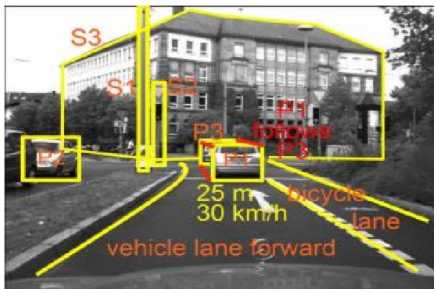

Figure-6: Metric Knowledge (yellow), Symbolic Knowledge (orange), and Conceptual Knowledge (red) applied to a driving scene [4]

Metric knowledge is required to keep the vehicle in its lane and a safe distance from other vehicles. Symbolic knowledge allows the vehicle to classify lanes and conform to basic rules of the road. [4] Conceptual knowledge gives the vehicle to the capability to understand and formulate trends between traffic participants and the driving scene.

2.4 OBJECT DETECTION

Object detection is a technique through which bounding boxes and class labels are created. Bounding boxes surround the objects detected in the image. A machine overtook human level performance in the ImageNet classification challenge for the very first time in 2015. Compared to image classification, object detection is far more complex and several concepts such as super human performance through deep learning is still not clear and remains puzzling. The problem arises when we need to locate several objects at once with the class and the number of instances. Surpassing this problem in an efficient way could be a major breakthrough in the development of self-driving cars.

2.4.1 REGIONAL CNN (R-CNN)

The genesis of R-CNN came in 2014, when a group at UC Berkley aimed to generalize the successes achieved with CNN to the task of object detection. [11] Their technique combines an autonomous regional proposal algorithm and a Convolutional Neural Network, which identifies and tells us the regions containing objects and compresses them into a fixed length vector. All the feature vectors are then classified by class-specific support vector machines and the region proposals are reduced using non maximum suppression. NMS is a greedy

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algorithm which sorts detections by their object confidence scores, takes the highest scoring detection and removes lower-scoring detections which have an IOU greater than some threshold [12]**.** At last localization is refined using linear regression using the CNN, forming the anticipated bounding-boxes of objects in the input image**.**

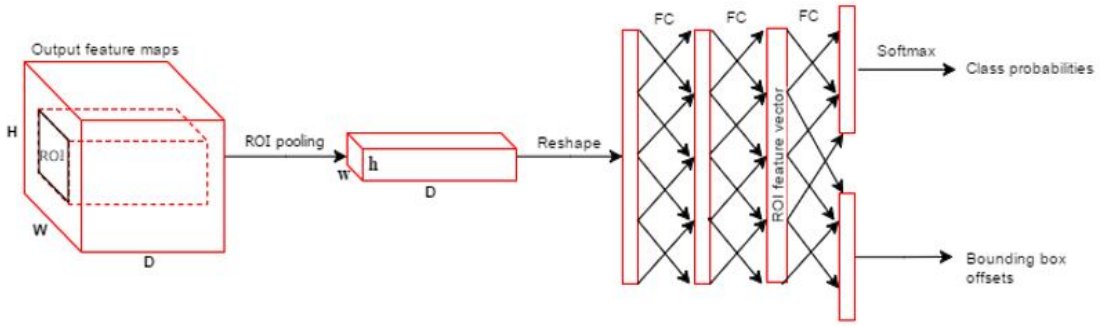

Figure-6: Fast R-CNN architecture [12]

3. CONCLUSION

The multi-layered trainable structure of the CNN's sets them apart from other neural networks. They include parameters which can be varied to best fit the intended purpose. The neurons are constantly improving the accuracy of their outputs by learning from each piece of input data**.** [4] This is specifically very useful in the application of self-driving vehicles to differentiate both the existence and distance of obstacles in front of the vehicle. CNN's are the backbone in achieving full autonomy and will continue to become more and more advanced.

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EDUCATION SYSTEM WITH DYNAMIC GRAPHICS OF VR / AR

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ABSTRACT
Literacy using digital environment is one of the most important feature in this Era. This type literacy providing more options for teachers and students to connect the reality and digital world Technologies in 2019 move towards5G. 5G will improve the processing speed more than ten times now

Virtual Reality opens world of creative opportunities to the students. Now a days Wide range of availability of online and offline tools of VR. Apps are providing gateway for interactive features of VR.

Augmented Reality is simulated recreation of a real-time environment where a user can interact with the replicated real environments. AR grants the students extraordinary digital information about the subject in understandable easy manner. Nowadays VR And AR teaching aids experiences interactive graphic education.

Keywords: HMD-Head mounted devices, Immersive-deep absorption inside artificial environment

VR-immerse and inspire

AR-interact and projection

INTRODUCTION
This paper presents graphical oriented; visualized teaching aids increase student skills which are not fulfilled by conventional learning process. Augmented reality animated contents catch the student's attention in our dynamic day. Theoretical knowledge is not enough to provide skills in professional areas.These Realities allows us to attaining high standards in various fields like education, entertainment, science, medicine, visualization, robotics, military.

Augmented Reality is ahead of Virtual Reality Virtual Reality has its limitations. It provides whole immersive experience it blocks the user's interaction with the surroundings. AR do not completely disconnect people from the real world

USES OF VR IN EDUCATION
1. IMPROVED UNDERSTANDING
In digital Era, knowledge is the top priority of students. Students are constantly looking for deep and clear knowledge about a particular environment. Simulations, visual data, and interactive games can be used as tools to help students understand everything from the building blocks of life. Immersive VR education can transform contents and enhance the students learning. It engage them without any diversions.

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2. IMMERSIVE MATHS

The nature of the subject may difficult for some students to progress. VR acts bridge that fill gap with enhanced immersive visualization In VR, however, algebraic problems, trigonometry can be represented through virtual objects. These experiences give them the mental framework to understand problems, effectively improving their spatial abilities and logical thinking.

3. FIELD TOURS

It is a guided tour to explore many unseen places, distant lands, other cultures, geographical areas, landmarks, historical events.. It generates the feeling like actually visited that location. Field trips can generate enthusiasm in subject material and encourage pupils to get interest in their learning.

4. BEST CREATIVE TOOL

It open new doors for artistic students. Cyber paint is a tool to give unique effects to painting. These tools are used for creating presentations as well. VR tools allow users to create three-dimensional with custom models.

5. EXPLORE LITERATURE

VR can help students reach a deeper understanding of literature with 3D models. Virtual environments can give immersion and interactivity in literature. A novel can be virtually simulated to enhance the learner's historical view. This new enriched media gives great values to the students of literature.

6. DISTANCE LEARNING

Distance learning is possible through VR immersion technologies. This way of delivering education is more useful to the student who has lack of attendance. That student can lead to a serious struggle to catch up the topics.VR also improve the researcher to promote from their knowledge. VR learners receive quick understanding, develop interpersonal skills .It also provide independent education.

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7. ASSISTING DISABLED STUDENTS

VR can serve as an assistant for students with learning disabilities Differently abled students or learners may go through virtual field trips to places they would not originally be able to visit. Students with sensory disorders can benefit from virtual environments

8. INDEPENDENT LEARNING OF AUTISM STUDENTS

The VR technology is especially important for autism student careers. Autism children like this immersive and inspire imaginations. Autism student will distract easily. VR helmet take them in that artificial environment. Autism children don't like people's faces but they attentive to VR media

USES OF AR IN EDUCATION

Freitas & Campos (2008) developed SMART (System of augmented reality for teaching) that is an educational system using AR technology.

SMART increase motivates students learning process and creates positive impact on them.

AR is a very efficient technology for education system such as universities and colleges. Students can improve their knowledge and skills.

1. EXPLORE MORE DIMENTIONS

Exploring a content with more dimensions like 3D, 4D are possible only with AR.. That App is perfect aid to students. These app can be used to conduct an interactive and innovative class. It enhances the digital information on the top layer of existing environment It enables the artificial view in attractive field

2. INTERACTIVE SESSIONS

AR apps enhance the natural environments by adding computer vision, object recognition and interactivity. AR can also help students to do their homework with digitally manipulated worksheets .That are encouraging students and enrich their experiences.

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3. COMPLICATED PRACTICAL BECOME EASY

Complicated subjects like chemistry becomes easy with AR apps Good quality of practical work develop student skills. It supports interactivity and experimentation in easy understanding.

4. ENGAGING VIA FIELD TRIPS

AR field trip provide some unique exp erience of new learning process. It gives different experience which is not available in normal classroom and field trips. There is no limitation for AR field trips. It has wide imagined 360 degree scenes and 3D objects.It provides interesting sites and artifacts.

5. EASY TO DO PUZZLES AND QUIZ

Interactive puzzles, and quizzes are conducted by the teachers using AR apps. That are improving students discovery skills, exciting knowledge. Teachers also develop their skills using these technologies. AR apps makes the student learning process towards innovation and sharpening their knowledge .Ultimately, the effectiveness of the learning process will increase because students attention they may need to move forward with a certain subject or concept.

6. 4D-FLASH CARDS

AR flashcards are useful to 4D view of objects. Preschoolers enjoying interacting and enjoying with amazing graphical apps. Flashcards is unique instruments attracting the attention of small children Flashcards are providing attractive concept about simulated information.

7. LESSON PLANNER

Students have control over the pace of the lessons.They are using AR lesson plan to hit the play and pause buttons, and choose to replay scenes. Some AR programs force students to engage and they might have to control activities.

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8. AR GEOMETRY

Augmented Reality Offering a collection of multiple 3D models that explain various geometric shapes, teachers can handhold students This app can strengthen knowledge about spatial visualization ability of students to visualize 2D and 3D,4D figures. AR makes comparisons between different geometric shapes in a virtual environment. It explains student to understand various geometric shapes from different angles.

BENEFITS OF AR over VR

1. Anytime anywhere availability

2. No special equipment is required.

This is the reasons why AR is preferred over virtual reality . VR necessarily require headset, AR needs only an app and a smartphone enough education.

3. More effective learning process

4. Enthusiastic way of practical learning

5. Safe and efficient workplace training

6. Virtual Reality OHMD's also have been associated with VR-induced sickness and nausea, which can be a problem for some people. AR headsets do not require users to stand at one place; they can move around and can attend other tasks also. This is also an important reason why AR is overcoming VR.

VR-APPS: Labster, Cospaces, VR-MATH etc.

AR APPS :-Hp reveal ,star walk, Planets, Science-AR, The fantastic flying books, IMAG-N-O-TRON etc…

These apps provides students to occupy, observe and feel at the same time while learning. These realities shape education sector.

VR- Shuts the physical world. Completely Immersive experience

AR- Enhancing the real world with the addition of virtual environment.

CONCLUSION

VR and AR technology learning process will become easy. It engaging students of all age groups. Utilization of AR/VR in schools, universities will increase student motivation and knowledge. Both are eliminating language barrier is the best advantage.

VR environment strengthens student idea and concept of the subject. It provides high quality virtualization. student can able to digest and retain the complex concepts at the higher level of understanding.

AR environment strengthens student knowledge with interactive sessions. Student Cannot find the difference between the real world and virtual augmentation in it.

Now a days, In Digital learning process must include network and integrate VR/AR in to curriculum

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ERGO-SMART WORKSTATION: A COGNITIVE BASED TRAINING USING ICT FOR INDIVIDUALS USING COMPUTER WORKSTATION.

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ABSTRACT
A procedure of improving the design of a work environment and desk systems to optimize them for human use is one of the major elements in Ergonomics. It works on a principle to reduce an individual's exposure to work hazards.

Anthropometry in Ergonomics is a conceptual method of arranging workplaces, products and systems using human measurements so that the user gets an apt desk environment.Designing a compatible workspace for the user will result in comfortable and adaptable work experiences.

The idea is to prevent the user from musculoskeletal disorders (MSDs) and to help the user to acquire a correct posture while working on a desk using a cognitive based training.

INTRODUCTION
The concept of Anthropometry[1] in Ergonomics[2] through CBT [3] is utilised in this research. The motive is to tackle the problems caused by technology using technology. After going through the concepts thoroughly, there was an intensive need of spreading Ergonomic awareness. Hence, the idea is to merge these three distinctive concepts and make a practicalIndoctrination Module (Training Module) with a tailored approach. Before initialising the implementation process, the authentic data is gathered. In this pre analysis process, a web-based survey was conducted which would helpto know where exactly an individual is facing problems when using desktops.

METHODOLOGY
The collected data comprises of information related to an individual and their knowledge about ergonomics. This survey examined computer use patterns of 100 individuals about habits and physical discomfort caused because of frequent computer use. The analysis reported computer use to be56 out of 168 h/week.

The major problems concluded
From the survey reportare manifested below,

A. Neck Pain

B. Forward and Backward Slouching

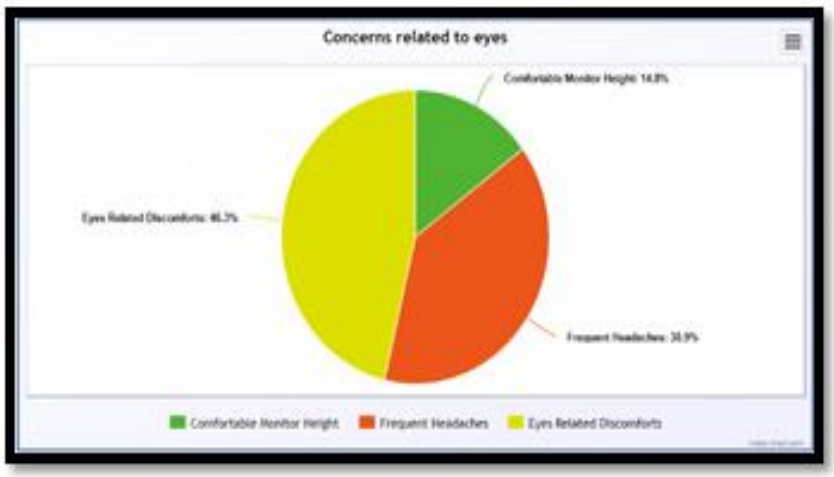
C. Shoulder strain

D. Headache

E. Burning and Teary Eyes

F. Dizziness

G. Hunchback Issue



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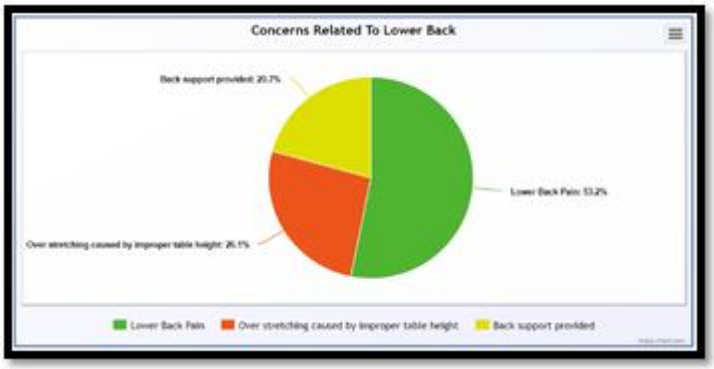

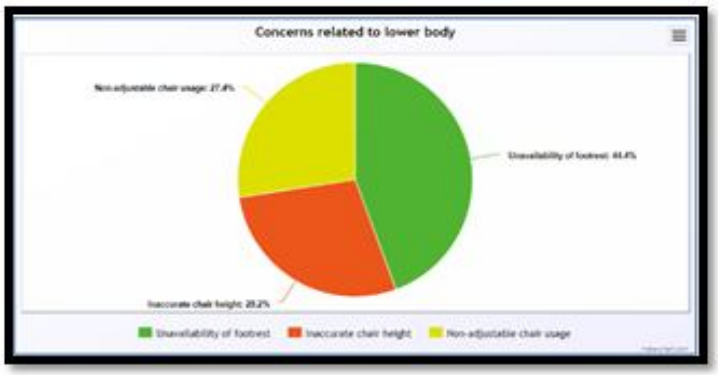

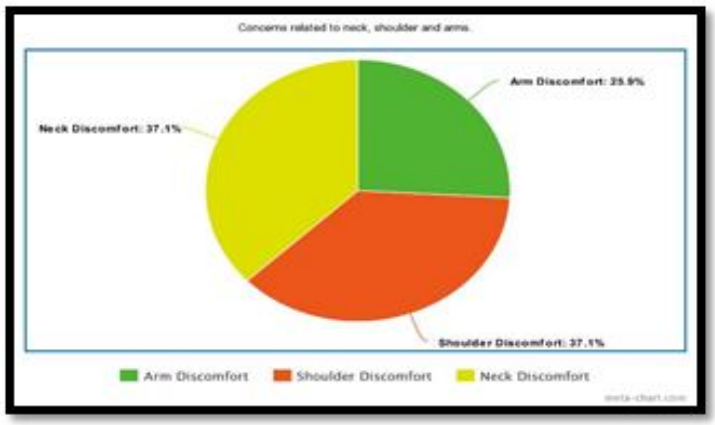

SURVEY RESULT

Good workstationarrangements and design with habit-forming techniques can provide solution to majority of the issues observed in survey.

PROPOSED SOLUTION

The aim is to develop an indoctrination module for an individual, specific to the areas of his/her discomfort while using computer for long hours. In addition, the module also aims to create an awareness of the MSD's[4] caused because of these discomforts.

It is necessary to motivate user to perform stretching of 30-40 seconds after specific interval of time without disturbing the schedule.

As technologies change, so does the need to ensure that the tools we access for work, rest and play are designed for our body's requirements and does not damage our bodies.

OBJECTIVES

The objectives of creating an ergo-smart workstation environment are stated below:

1. Asses yourself
2. Recognize common risks
3. Set up your workstation according to your comfort level
4. Learn new techniques and exercises to keep yourself healthy and active while working.

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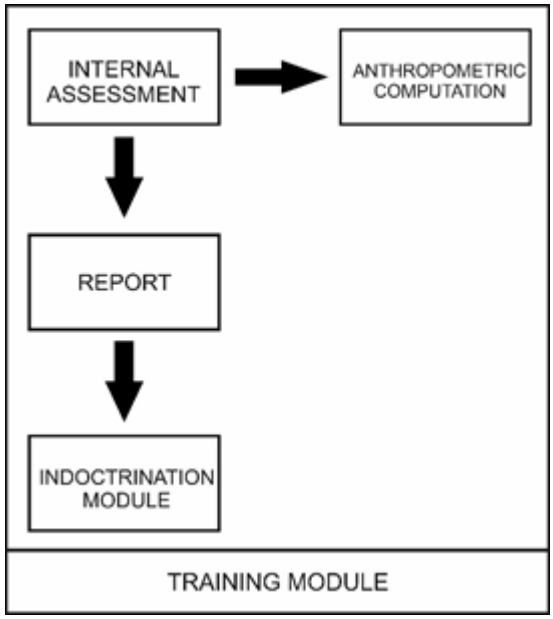
TRAINING MODULE

Component Name and Component Description



Assessment: A comprehensive scan of individual and workplace to identify risks associated with acquiring bad posture while using desktops. An individual will take up a questionnaire that will comprise of questions to analyse the current workstation setup.

Anthropometric Computation:It is very important for individuals to have their own anthropometric data before starting to design their workstations.

The data collected from the user such as height and weight get calculated [5], and in result gives us the anthropometric measurements of chair height, arm rest, desk height, monitor height and monitor distance, height of the keyboard and mouse tray.

Report

(A) A report will be generated on the basis of individual assessment highlighting discomfort experienced.

(B) A report will be generated according to the anthropometric computation based on the inputs given by theuser.

Indoctrination Module:Indoctrination Module will be used to train individuals with professional methodologies an attempt is made to change the perspective of the user when operating desktop using cognitive strategies.

It will advise the user to perform few stretches or exercises in small intervals of time. If a workstation is not set up properly, the sitting positions can put great stress on the user's muscles and bones [6].

Since visual learning is an effective aspect of cognitive strategies[7], it is believed that the individuals utilise the knowledge more when they see it. Constant visual appearance of an instruction will help them to inculcate these techniques in their daily habits.

CONCLUSION

The precise boundary between education and indoctrination often lies in the eye of anobserver. As each individual has a different cognitive strengths and weaknesses, an individualised assessment is important for the development of a tailored approach according to the needs.

The motive is to change work patterns by focusing on an individual's habit. Moreover, utilising computer to train individual by inculcation of goal-oriented assistive behavioural therapy. An attempt is made to restore a condition of good health and promote efficient work routine.

A workstation designed according to ergonomic principles can result in comfortability, stability, reduces pressure on bone stature and eventually decreasing the risks of MSD(s).

CBT techniques, such as goal setting, problem solving, cognitive restructuring attention diversions and assertiveness training aims to enhance coping skills and reduce discomfort.

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IMPLEMENTING INNOVATIVE FORMS & TECHNOLOGY AS A PEDAGOGY IN TEACHING MATHEMATICS AT UNDERGRADUATE LEVEL

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ABSTRACT
Mathematics plays a very important role in all fields and its applications directly or indirectly can't be avoided. It has equal importance when it comes to significant areas of Engineering, Commerce, Science and development of Technology. This paper explores the various developments in innovative forms of teaching and its implementation in teaching mathematics specially with respect to teachers in Mumbai Zone. The study understands and validates the innovative forms and the willingness to adopt them in teaching Mathematics. The study will help in effective implementation of the innovative forms moreover suggesting the innovative suitable with its pros and cons. Traditional forms prevailing in teaching in educational institutions no longer meet the expectations of students, they are the people who soon will have to make their own responsible decisions and think of the possible consequences, to be able to cooperate, to be mobile, dynamic and constructive.

Keywords: pedagogical innovations, flipped classroom, computational thinking, open social learning.

INTRODUCTION
We know that mathematics plays a very important role in all fields and its applications directly or indirectly can't be avoided. It has equal importance when it comes to significant areas of Engineering, Commerce, Science and development of Technology. Research also uses the quantitative component to conclude or prove hypothesis or make any concrete statements. Thus it becomes very important to grasp the concepts from Mathematics in a very different way so that it will help in applying the principles in real life. This hints us at searching for innovative methods in teaching and learning mathematics, moreover the willingness and inclination of Instructors in this areas to adopt it without any limitations. This paper explores the various developments in innovative forms of teaching and its implementation in teaching mathematics specially with respect to teachers in Mumbai Zone.

The study understands and validates the innovative forms and the willingness to adopt them in teaching Mathematics. The study will help in effective implementation of the innovative forms moreover suggesting the innovative suitable with its pros and cons. This would help in developing new ways of teaching mathematics, overcome the fear of mathematics and exploring more of its applications. The aim of this study is to identify the level of readiness of teachers to implement innovative forms of educational activities into the educational process with the help of the analysis of the responses of mathematics teachers to reflexive questions. the new interests and needs of the younger generation cannot be satisfied with updating the educational content, they depend on the forms of learning activities. Traditional forms prevailing in teaching in educational institutions no longer meet the expectations of students, they are the people who soon will have to make their own responsible decisions and think of the possible consequences, to be able to cooperate, to be mobile, dynamic and constructive.

INNOVATIVE FORMS
Development of Innovative Forms across various fields in shown to improve the way things are looked at, making learning interesting and simpler. If the concepts are crystal clear it leads to good applications and implementation. Mathematics as seen a complex field when it comes to understanding and teaching as well. Some traditional techniques of imparting knowledge have no made the subject simpler but still people have their own way on understanding concepts and eventually applying it. There is a need of innovative forms specially in mathematics being the major component of any study as it helps in recognizing patterns developing models and many such important part of application. Many innovative forms have been introduced and applied across the globe and its observed that this innovative forms as pedagogy in teaching and learning process don't have uniform challenges when it comes to implementation. Sometimes it the system in place, sometimes learners, sometimes knowledge of teachers etc. makes it difficult in effective implementation of the innovative form. In this study we try to focus on which innovative forms is suitable and how are teachers prepared for adopting it. This is understood for Mumbai zone through survey, interviews and workshop. Some reports on the study of innovative forms from Russia education, European Commission for Education and Culture which are available online have been utilized in the discussion.

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The known innovations in education such as open social learning, computational thinking, flipped classroom, bring your own devices, event-based learning, crossover learning, bricolage, computational thinking etc.

They are briefly described below

- Computational thinking: - In this case the problem is solved using five steps involving,

1. Decomposition
2. Pattern recognition
3. Abstraction
4. Algorithms
5. Debugging

Firstly, the problem is decomposed into smaller parts, followed by solving it with the help of similar problems solved previously then the unwanted or not useful data is kept aside, process is developed to obtain solution and eventually its debugged. the focus is on thinking approach and not on developing a particular algorithm. this makes them strong in thinking approach.

- Flipped classrooms: - In this innovative forms the class work and home work is flipped such that the homework focuses on going through the theoretical concepts, prerequisites etc. and class work focusses on implementation for which they have prepared at home. The dynamic & interactive learning happens in class. Exercises are analysed in the classroom in detail.
- Event-based learning: - special events are conducted with and objective to understand or learn a particular concept.
- Open social learning: - there are many effective websites providing online courses and numerous videos explaining a particular concept. This helps the students learning the way want to at their own pace, moreover they are free to choose the type of explanation they want to from available video lecture. Also the discussion forums on a particular topic re seen to come out with multiple approaches to solve problem and many time make thigs easier. Also open problems are posted on such forms. The problems are also solved in parts utilizing this virtual discussion forum. This innovative form helps in making/connecting many people interested in the particular topic, organizing live virtual conferences/discussions, short-time discussion groups on the subject.
- Using devices: Nowadays almost everybody carries a smartphone, tablet or some or the other device with internet connection. Many times in traditional lectures it leads to distraction. If these devices are used in the teaching process one will be able to achieve a good learning. As we all know these devices are informatory, but the information can be used further for application. It changes relationship with teacher. the development of lessons could be some sessions on the subject where students use their personal devices for learning.

There are some more innovative forms not completely developed but can be reviewed and explored like Crossover learning, which is informal learning. Bricolage which is working creatively with any tools and resources. Adaptive teaching, using the data about a student's past learning and creating a personalized learning environment. Stealth assessment which is automatic data collection in the background with digital resources, to provide assessment of their learning.

EXPERIMENT

the investigation of reports on instructional method, hypothetical examination of writing on teaching method in Mathematics, investigation of learning items, blending of realities and ideas, displaying, instructional structure, intelligent evaluation strategy, investigation of the learning exercises results, study and speculation of the experience of utilization of creative types of association of learning action, educational trial is the Base of the Study. The study was based on Literature available on the implementation and effectiveness of Innovative forms globally, survey responding by mathematics teaching faculty in Mumbai zone & open source content. Following are the outcomes of the survey.

DATA ANALYSIS

1. Innovative form used sometime

Flipped classroom	25%
Computational thinking	70%
Using electronic devices in classroom	10%
Open Source learning	40%

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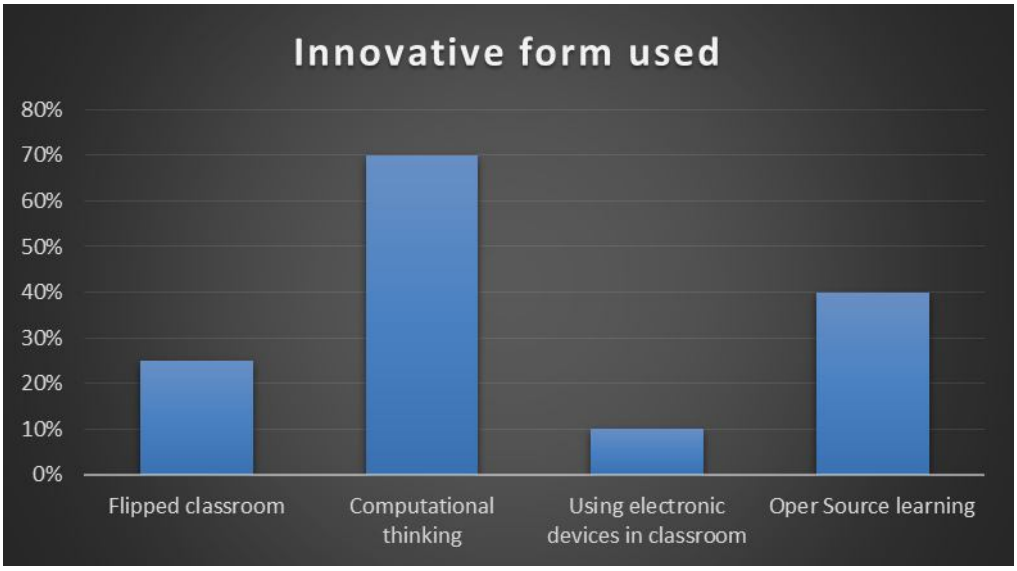
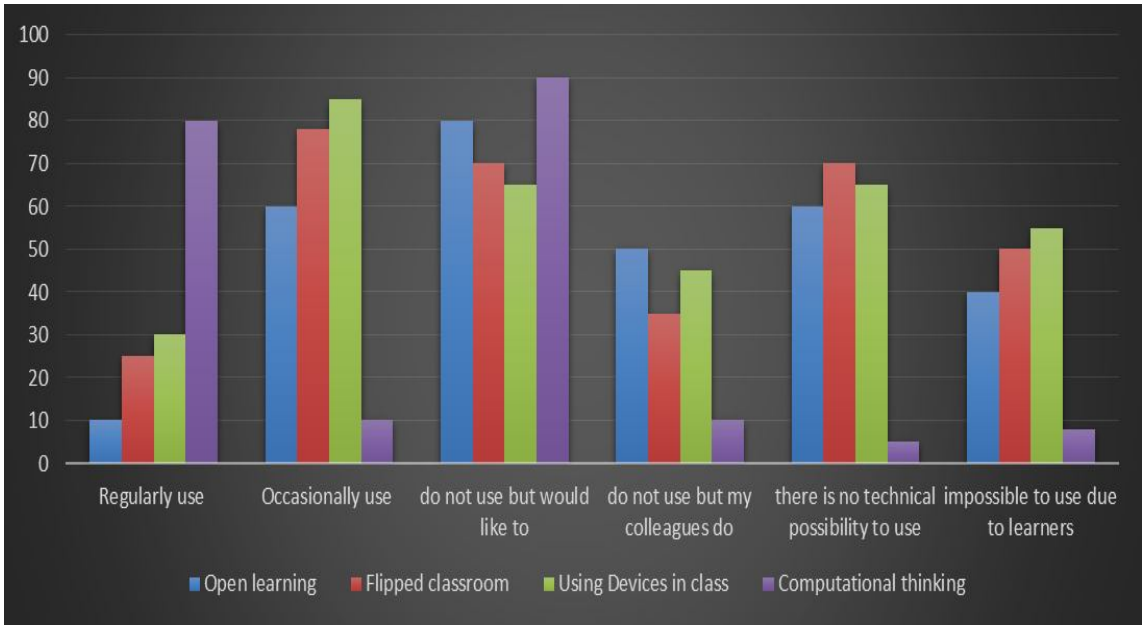


Computational thinking is the most used innovative form as it does not need any resources for implementation and can be easily integrated in the session.

2. About specific innovative form (response in %)

parameters	Open learning	Flipped classroom	Using Devices in class	Computational thinking
Regularly use	10	25	30	80
Occasionally use	60	78	85	10
do not use but would like to	80	70	65	90
do not use but my colleagues do	50	35	45	10
there is no technical possibility to use	60	70	65	5
impossible to use due to learners	40	50	55	8



The highest pedagogical readiness for the implementation of the innovative forms the mathematics teachers give to computational thinking

The lowest pedagogical readiness for the implementation of the innovative forms the mathematics teachers assign to flipped classroom

3. Is it necessary to use innovations/creativity in teaching mathematics?

- Yes -70%
- No-30%

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It is observed that instructors are ready to implement innovations in teaching but many times some challenges, technical as well as non-technical make it not possible to implement. But innovative forms are highly recommended to improve the teaching & learning process in Mathematics.

4. Challenges in implementation of Innovative forms

- Time consuming
- Syllabus completion time constraints
- Resources unavailability
- Technical support
- Weak performance of learners
- Remote areas
- Classroom restrictions

The aim of the study was to identify the segments of discipline to which well-known positive practices could be connected. Chosen forms don't generally indicate high proficiency in usage. It isn't simply because of the instructive unpreparedness to actualize them, yet additionally in light of students whether they are inspired or not, more youthful or more seasoned, regardless of whether it is a town school or not. It is important that the positive aftereffects of the evaluation of availability of instructors to the presentation of the inventive structures imply that educators need to show their subject with the goal that the young people of today like it.

Following are some outcomes of the study and should be noted to support effective implementation of innovative forms which have strong impact in teaching and learning mathematics.

• The use of innovative work forms by teachers with low motivational readiness does not improve the quality of education, thus there is a need for motivating teachers.

• Periodic review of new and innovative forms of teaching may improve the quality of education.

CONCLUSION & RECOMMENDATIONS

Thus from the study it can be concluded that

1. Teachers are ready for implementation of innovative forms and therefore should be motivated and trained to use innovative practices and should be provided with the required resources.
2. It is observed that computational thinking is the most used form (with respect to mathematics teaching) and we need to overcome the challenges in implementing other innovative forms. Challenges like time constraint and classroom restrictions,
3. The innovative forms for a particular topic can be generalized.
4. The effectiveness of an innovative form may not be same for all the topic, it should be tried and tested which form is effective for which topic to yield best results.

Following are some recommendations based on the study and should be noted to support effective implementation of innovative forms which have strong impact in teaching and learning mathematics.

1. The use of innovative work forms by teachers with low motivational readiness does not improve the quality of education, thus there is a need for motivating teachers.
2. Periodic review of new and innovative forms of teaching may improve the quality of education.

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A LITERATURE SURVEY ON ARTIFICIAL INTELLIGENCE IN THE MEDICAL SECTOR

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ABSTRACT
Artificial intelligence (AI) is the simulation of human intelligence processes by machines, notably computer systems. Informally, the term "artificial intelligence" is typically used to describe machines (or computers) that mimic "comprehensive" functions that we, as humans, associate with the human mind, like "learning" and "problem solving". AI has caused massive changes within the human life and is slowly changing our perception of the world. It is fostering a revolution within the field of health care.

It is interesting to note that AI and health care are not new to one another. Health care was one of the earliest practical applications of AI systems. AI has the potential to surpass human capabilities to produce better health care and service. It helps promote larger accessibility and actionability of health care data, which may result in additional clinical breakthroughs, developments in cybersecurity, advances in radiology & the early detection of chronic conditions.

Additionally, it can be used to enhance the patient experience altogether as well as detect issues and threats that cause immense patient suffering. Our review contains data regarding how AI is being used within the health care sector for producing better treatment and in aiding doctors. It also succinctly provides insight regarding the long run that AI offers to the society.

1. INTRODUCTION
A report from the World Health Organization said that the global shortage of healthcare workers was 7.2 million in 2013 and would climb to 12.9 million by 2035. It says that if this issue is not taken care of then the shortage would have adverse effects on the health of billions of people around the world. This is where Artificial Intelligence comes into picture.

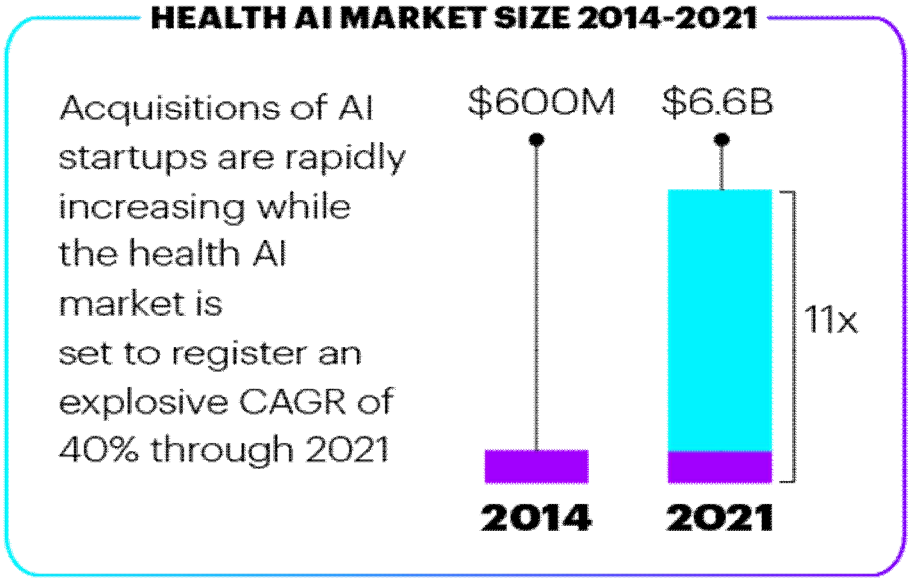

Fig-1: Market of AI in Healthcare. [18]

It has proved to be a boon in the healthcare industry improving the reach and availability of healthcare delivery especially in underserved areas, while also lowering the cost of access. The Healthcare Industry has widely accepted Artificial Intelligence. Artificial intelligence (AI) is a neighborhood of applied science that emphasizes the innovation of intelligent machines that attempts and reacts like humans.

Digital technology has liberated medical doctors, nurses and researchers to focus more mental energy on higher-level psychological feature tasks and patient concern.

Doctors and other medical professionals utilize AI to make more accurate and faster diagnosis [1]. In medicine, AI uses arithmetical algorithms along with data-science from the human body to make diagnosis, better than doctors can do [2]. This gives specialists the potential to take instantaneous actions for diseases that may otherwise become severe [3].

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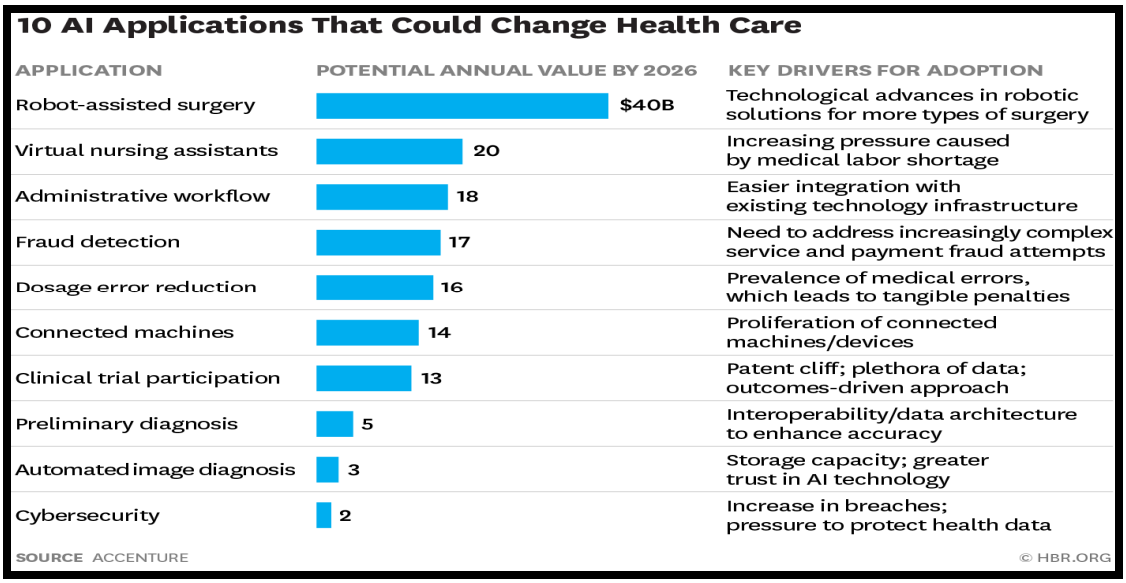

Fig-2: Applications of AI in Healthcare.[4]

AI is employed to assist doctors and other medical professionals make a more accurate and faster diagnosis and not create a threat to take over healthcare into its own hands from them (the doctors).

Earlier, many hours were required to compile data in a comparable form. When this process was complete, it only took mere seconds to decide. Due to AI, more time is spent on consuming data rather than acquiring it.

As AI keep on progress, it has the capability to expand the energy of a person thinking in three crucial regions: highly developed computation, statistical analysis and hypothesis generation. These three regions correspond to three unique waves within AI progression [5]. With modern Medicine facing a significant challenge of acquiring, analysing and applying structured and unstructured data to treat or manage diseases, AI systems with their data-mining and pattern recognition capabilities come in handy. In contrast to non-AI medical software application, which relies on pure statistical analysis and probabilistic approaches, medical AI applications utilise symbolic models of diseases and analyse their relationship to patient signs and symptoms [6-9].

The AI system, developed after eight years of research by the Chinese Academy of Sciences and PLA General Hospital in Beijing, has achieved nearly 90 per cent accuracy on prognostic assessments, according to the researchers. The Artificial intelligence system will never replace doctors but it can trace brain activity invisible to the human eye. At least seven patients in Beijing who doctors said had “no hope” of regaining consciousness were re-evaluated by an artificial intelligence system that predicted they would awaken within a year and they did. In Medicine, AI uses arithmetic algorithms on with data-science from the human body to scrutinize the condition of the patient, higher than doctors will do. Machine learning algorithms are now being adopted with numerous achievements to decrease drug discovery times by assisting with stages like, discovering new compounds that could be possible drugs.

This offers specialists the potential to take instantaneous actions for diseases which will otherwise become severe. Healthcare systems need to be understood in terms of a broad variety of heterogeneous, distributed and ubiquitous systems, speaking dissimilar languages, integrating medical appliances and being personalized by dissimilar entities, that in turn were set by individuals living in dissimilar contexts and aiming at dissimilar goals.

Hence, architecture has been envisaged toward support the medical uses in conditions of an organization for integration, dispersion and archiving of medical information and therefore the electronic medical record, a form of a web spider of intelligent information processing system, its foremost subsystems, their practical roles and the stream of knowledge and management among them, with modifiable autonomy. With such web-based simulated systems, quality of service will be increased.

2. LITERATURE SURVEY

2.1 Modernizing Medicine

Artificial intelligence is bringing about progressions in social insurance medications, for example, overhauling the association of treatment strategies, breaking down information to give unrivalled treatment system, and observing medicines AI allows quicker diagnostics by curtailing the time of patients hanging tight for a finding from weeks to insignificant hours and efficiently presenting excellent treatment choices

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Modernizing Medicine, a medical assistant that accumulates patient data, record analyzes, command tests and remedies and orchestrates billing information. Besides, the bent to investigate open databases with data from a large number of specialists and patient cases can help doctors oversee better-customized medications or find comparative cases.

2.2 Face2Gene phenotyping

Facial Emotion Recognition(FER) is a most significant region in the fields of computer vision and man-made consciousness attributable to its noteworthy instructive and business potential.

Fig-3: Facial Emotion Recognition.[13]

To illustrate, consider Face2Gene phenotyping purposes that utilization face identification and AI to help medicinal services suppliers in perceiving remarkable hereditary issues.

These applications draw information focuses from a picture and assess it to pictures of patients from a database, who have additionally been treated with these maladies. Using facial acknowledgment is credible to see an individual from a computerized photograph or a video. This is come to by recognizing a face in the picture or video and contradicting it and a database including both face pictures and metadata relating the image with an individual. Our face, like our fingerprints, is a biometric identifier, an extremely one of a kind attributes are removed, for face recognizable proof, the comparable procedure is taken into account.

2.3 AI in Digital Consultation

The first main objective of the existence robots is for patient interaction. They were created to be of assistance to patients.

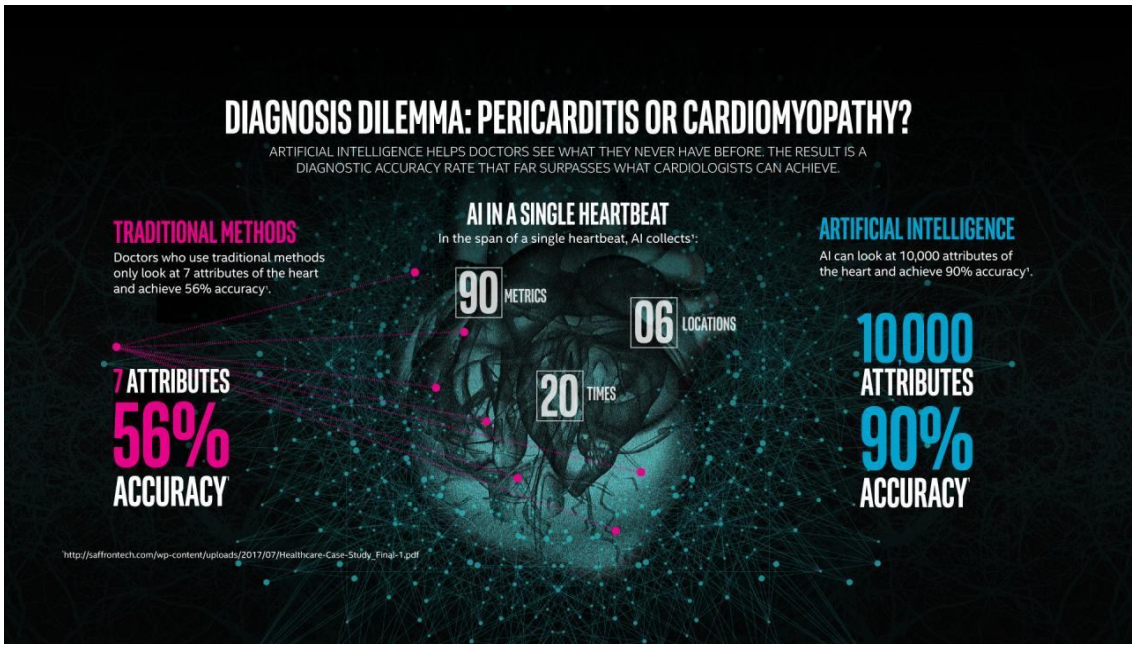

Fig-4: Traditional methods and AI comparison. [17]

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Health conversation bots can reply to health-associated questions and even help patients oversee drugs by giving information on assortment of prescriptions and proposed portions.

Healthcare Monitoring devices that implement AI methods are as of now in broad use. They can be used as remote patient observing for health indicators, for example, post-task heart activity, understanding tallness and weight, etc. Wearable devices, like wristwatches, for example, those of Fit BIT business wellness trackers, are currently every now and again utilized.

2.4 Discovery and Diagnosis

Timely and accurate illness detection has a significant impact on the treatment outcome especially in the cases of rare or difficult-to-diagnose illnesses. Unfortunately, Medical practitioners can only analyze a limited number of images and samples and their diagnosis is subject to human error.

Fig-5: AI for Diagnosis. [16]

While AI can analyze millions of samples in a short time to provide an accurate result. AI is also striving to detect illnesses even before the symptoms appear. Studying sleep patterns is a tedious and time consuming work. With the use of AI led automation this has become very simple making it easier for physicians to treat patients. It is expected to yield better results and predictive treatments in the future.

2.5 Robotics in surgical procedures

As robotic-guidance becomes more common in spine surgery, there has been a growing body of literature on the technology's accuracy, reduction of intraoperative radiation and surgical efficiency. A study of 379 orthopedic patients showed that Mazor Robotics' AI-assisted robotic technology reduced surgical complications five-fold compared to freehand surgeons. [10] Researchers from the University of Oxford completed the first successful trial of robot-assisted retinal surgery. Twelve patients that required dissection of the retina were randomly assigned to either undergo robot-assisted or manual surgery under general anesthesia. Although the AI assisted surgery took longer, surgical outcomes were equally successful in the robotic and manual surgery groups.[11]

2.6 Drug Creation

Between the West Africa Ebola in 2014 infection episode, a program fueled by AI was utilized to filter open medications that may be updated to battle against the malady.

Fig-6: AI for Drug Creation. [14]

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Two medications were found to diminish infectivity in one day, when examination of this sort by and large takes a long time to years, a distinction that may connote sparing a great many lives. AI calculations are currently being utilized with various accomplishments to diminish tranquillize disclosure times. Simultaneously AI can't totally expel every one of the stages worried in medication creation, it can help with stages like, finding new intensifies that could be potential medications.

3. LIMITATIONS

Numerous moral and social issues raised by AI overlap with those raised by data use, issues that arise with the use of these beneficial technologies and 'telehealth' are:-

3.1 Reliability & Safety

Reliability & Safety are key issues where AI is used to control hardware, convey treatment, or then again settle on choices in social insurance. Simulated intelligence could make mistakes and, if a blunder is hard to identify or has thump on impacts, this could have genuine implications.

3.2 Transparency & Accountability

It tends to be troublesome or difficult to decide the fundamental rationale that creates the yields created by AI. Some AI is restrictive and purposely stayed quiet, however some are basically as well complex for a human to get it. Machine Learning innovations can be especially misty due to the manner in which they ceaselessly change their claim parameters and standards as they learn.This makes issues for approving the yields of AI frameworks, and distinguishing mistakes or predispositions in the information.

3.3 Data Privacy & Security

Man-made intelligence applications in human services utilize information that many would consider to be delicate and private. These are liable to lawful controls. In any case, different sorts of information that are most certainly not clearly about wellbeing status, for example, social media action and web search history, could be utilized to uncover data about the wellbeing status of the client and everyone around them. Artificial intelligence could be utilized to identify digital assaults and secure medicinal services PC frameworks. Nonetheless, there is the potential for AI frameworks to be hacked to access delicate information, or spammed with phony or one-sided information in manners that may not effectively be perceivable.

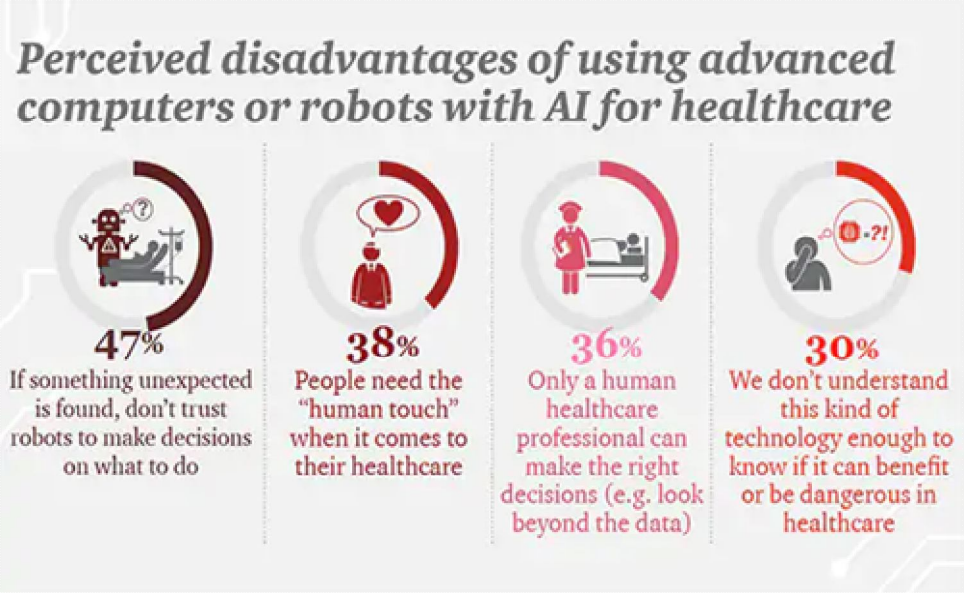

Fig-7: Limitations to AI. [15]

4. CONCLUSION

Witnessing all the developments in this field, AI frameworks will become further developed and achieve the capacity to complete a more extensive scope of errands without human control or information. In the event that this comes to fruition, some have proposed that AI frameworks should figure out how to 'be moral' and to settle on moral choices.

This is the subject of much philosophical discussion, bringing up issues about whether and how moral qualities or standards can ever be coded or learnt by a machine; who, on the off chance that anybody, ought to choose these qualities; and whether obligations that apply to people can or ought to apply to machines, or whether new moral standards may be required.

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But nevertheless we can expect a conceivable fall in Healthcare expenses because of Artificial Intelligence due to past and increasingly exact determinations but it will also jeopardize the profession of various doctors, though it would not happen in the near future.

Doctors will have to leave no stone unturned to use their training and experience to vouch for that artificial intelligence is accommodating the proper diagnosis and course of medical treatment until the data warehouse becomes massive enough and extremely competent.[12]

AI technologies have the potential to assist address important health challenges, however might be limited by the quality of accessible health information, and by the lack of AI to possess some human characteristics, like compassion.

The use of AI within the healthcare sector presents an exciting chance for organizations to drastically improve care during a short amount of time, while saving cost. However, they would need to carefully consider how AI deployment might have an effect on their workforce and make sure that the right ethical checks for autonomous systems are in place.

The aim of AI will be to augment natural intelligence, and its role will always be subordinate to the human's.

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ARTIFICIAL INTELLIGENCE: ITS APPLICATION FOR THE MODERN WORLD

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ABSTRACT
Artificial intelligence (AI) additionally called machine intelligence (MI) is intellect displayed by the pc system (or machine), in distinction with the natural intelligence (NI) displayed by humans and alternative animals. Given the complexity involved in the application of AI, AI is present in all spheres of our life wherein Technology is involved. Artificial Intelligence is the capability of a machine to perform tasks that unremarkably need human intellect, speech recognition, and decision-making. While there are many parallels between human intelligence and Artificial Intelligence, the applications of AI have influenced every aspect of our lives ranging from Palliative health-care, Space Exploration Missions, Self-driving cars, Social Media monitoring to global warfare and personal assistants like Siri and Cortana. This Research Paper is dedicated to the vast applications involved in the use of Artificial Intelligence in our Modern World.

Keywords: Artificial Intelligence, Machine Learning, Applications, Algorithms

INTRODUCTION
"Everything we love about civilization is a product of intelligence so amplifying our human intelligence with Artificial Intelligence has the potential of helping civilization flourish as long as beneficial technology exists"

-Max Tegmark

Artificial intelligence is the theory based on which computer systems perform tasks which require human intelligence. Thus, it is the simulation of human intelligence processes by machines. These processes include;

c) Learning i.e. acquisition of details and rules for using the information.

ci) Reasoning and Problem Solving(Using rules to reach definite conclusions)

cii) Self-Correction.

Achieving General Intelligence is one of Artificial intelligence's long term goals even though traditional problems such as reasoning, natural language processing, knowledge representation, learning, and the ability to move and manipulate objects exist.

The Field of Artificial Intelligence has substantially influenced an ordinary man's life on a day to day basis. With Siri and Google on our smartphones and complex AI used for Deep Space Exploration Projects,

APPLICATION OF ARTIFICIAL INTELLIGENCE
5. Military Application of Artificial Intelligence
The advent of AI may basically amend the character of warfare, leading to a metamorphosis from today's "informatized" ways that of warfare to future "intelligentized" warfare.

AI can be gainfully employed to enhance situational awareness and the speed of battlefield decision making. Few areas of military AI applications are listed in succeeding paragraphs.

- ***Computational Military Reasoning (Tactical Artificial Intelligence):*** Computational military resoning refers to a computer system that is used to solve a human-level military issue. It also concentrates on technical Artificial Intelligence, tactical strategies and battlefield decisions. Tactical & Strategical AI helps in analyzing the battlefield and acts on the information input by fabricating a set of cogent orders that exploit the fragility in the enemy's position found during battlefield analysis. Many international labs have with success incontestable the hypothesis that an unattended machine learning program might conjointly learn this ability and perform field of honor analysis that was statistically indistinguishable from analyses performed by subject material consultants (SMEs). The said application of AI can be gainfully utilized for terrain analysis, war-gaming, and tactical training. The most successful AI algorithms for battlefield analysis are TIGER & MATE developed by DARPA.

1. ***Cyber Defense and Cyber Warfare*:** Artificial Intelligence can be leveraged to reinforce the defense of military networks and knowledge systems, to measure the results of offensive cyber operations, and to command or manipulate decision-making in cyber warfare. Distributed Denial of Service (DDoS) attacks may be detected and satisfied through pattern matching, applied math analysis, machine learning, and

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large knowledge analysis. Software vulnerability analysis may be support AI "fuzzing" technique that might be utilized in penetration testing for offensive or defensive functions, and Intrusion detection and interference strategies may be self-addressed by deep neural networks. especially, given the speed of cyber operations, AI might function a vital enabler of fast command.

Intelligent and Autonomous Unmanned Weapon Systems: Artificial Intelligence is recurrently being employed in circumstances where independent, Intelligent and Autonomous Weapons Systems are needed, including unmanned aerial, surface and subaqueous vehicles, and also in military cruise missiles. this sort of weapon systems will utilize AI to mechanically pursue, distinguish, and destroy enemy targets and infrequently composed of data assortment and management systems, cognitive content systems, help to call systems, mission implementation systems, etc. Worldwide annual military disbursal on artificial intelligence infused with state of the art AI is predicted to soar $87 Billion by 2025.

6. ***Healthcare***

Disruption of many industries by the ingress of new technologies in the Information Age is becoming customary. Healthcare is no different. Artificial Intelligent used in Healthcare has provided approximate conclusions on the analysis of complicated medical data without direct human input. The primary aim of health-related AI applications is applied to practices such as diagnosis processes, drug development, treatment protocol development, and patient monitoring and care. AI is used to;

- ***Manage Medical Records and Other Data***

Since the primary step in health care is compiling and analyzing info (like medical records and different past history), knowledge management is the most generally used application of AI and digital automation. Robots collect, store, re-format, and trace knowledge to produce quicker, additional consistent access.

- ***Digital Consultation***

AI is being used by apps like Babylon in the UK for rendering medical consultation based on personal pre-medical history and common medical knowledge. User's symptoms are infiltrated into the app, which compares the entered data to a database of illnesses through speech recognition. Additionally, the app also offers a recommended action considering the user's medical history.

- ***Drug Creation***

Developing prescribed drugs through clinical trials will take over a decade and value billions of greenbacks. AI simulated development of unknown drugs will be quicker and cheaper. Amidst the recent filovirus scare, a program powered by AI was used to scan existing medicines that would be redesigned to fight the sickness.
The program found, 2 medications that will cut back viral hemorrhagic fever infectivity sooner as compared to the years that would have taken by undertaking clinical trials – a distinction that would mean saving thousands of lives.

7. ***Space Exploration***

With every sector beaming with the boons of AI, Space exploration is no longer an exception, with recent achievements include the discovery of two obscure planets located roughly 2500 light-years away and the use of AI software to distinguish between planetary/non-planetary objects.

Moreover, the NASA Frontier Development Lab (FDL) has been developing an AI application that will make it easy to wander across the surface of Mars or the moon. A contemporary example was the successful attempt to simulate the lunar surface of the moon. With over 2.4 million images of the moon captured, taken by a lunar rover, the topography of the moon was simulated on earth with surprising accuracy.

8. ***Automotive***

Advancements in AI have greatly contributed to the development of self-driving/driver-less cars. Companies such as Tesla, Google, and Apple incorporate AI into various sub-systems such as braking, collision prevention, lane changing, navigation, and mapping. Together these systems form a complex vehicle. Although limitations include the safety of the pedestrians and passengers where the Program might not assess high-risk situations involving a head-on collision with pedestrians, Advancements in the Automobile Industry involving the use of Artificial Intelligence has taken global strides.

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9. ***Finance and Audit***

For financial statements audit, various AI tools can be used to analyze different sets of information as quickly as possible. This helps to analyze any institute's financial shortcomings and overall audit risk will be reduced. Artificial Intelligence is mainly used in banks to detect fraudulent transactions and money laundering by analyzing any anomalies in the user's bank account. Furthermore, artificial intelligence systems are used today to organize operations, maintain book-keeping, invest in stocks, and manage properties.

10. ***Automated customer support and personalized shopping experience***

Online shopping experience uses AI-infused Chatbots that can answer simple questions and queries like letting you know the status of your order and helping you in finding a particular product based on your description, among others. Software such as Google Analytics asses your browser, location and preferences and often provides Online E-commerce stores with such data to personalize your experience and making shopping easier.

11. ***Artificial Intelligence for Cloud-based Internet of Things (IoT)***

Internet of Things (IoT) refers to a tool that's connected to the web and transfers the device data to different devices. The cloud-based IoT is employed to attach a good vary of things like mobile devices, vehicles, sensors, industrial equipments and producing machines to develop varied sensible systems. An increasingly large number of physical objects are being connected to the web at an unprecedented rate with the IoT sensible objects to succeed by 212 billion entities in 2020. Hence massive volumes of information, usually referred to as massive data can not be processed by ancient processing algorithms and applications. Hence AI combined with computational learning is employed to identify potential values hidden within the immense volume of IoT . Nowadays, AI plays a major role in varied environments together with business observance, tending applications, production development, analysis and development, share market prediction, business method, industrial applications, social network analysis, weather analysis, and environmental observance.

12. ***Security and Surveillance***

Latterly, development of computer software programs that analyze the audio and images from video surveillance cameras in order to recognize humans, vehicles, object and other events has proliferated. Using a series of algorithms/mathematical procedures, which work like a series of questions to compare the object seen with hundreds of thousands of stored reference images of humans in different postures, angles, positions, and movements.

There are two types of AI security known:

Rule-based: This is a more general and familiar form of AI security. In this type, the system is fed with pre-designed rules by the programmers. For example, all the video surveillance cameras used on a daily basis function on Rule-based AI.

Behavioral analytics**:** This is a novel and advanced form of AI security. This type requires no pre-coded or pre-designed rules as the former, Rule-based Artificial Intelligence security. It is a self-learning software that identifies patterns in which different objects and people interact on the network. The artificial intelligence system auto-detects and assimilates all types of human behavior and the workings of the environment around him. The system then classifies the data accordingly, and upon detecting any unusual behavior sends out an alarm.

Though Artificial Intelligence has greatly influenced and simplified all spheres in our lives by enhancing Military, Space Exploration, Comprehensive Healthcare and so on, it does certainly have its drawbacks. These drawbacks include the high cost of creation, unemployment and the lack of original creativity in which the inherent intuitive abilities of the human brain cannot be replicated.

CONCLUSION

Artificial Intelligence has revolutionized technology and still raises numerous ethical issues but this technology was created by man and can, therefore, be controlled by man.AI continues to be a technological boon to the society of mankind as its applications far outweigh the drawbacks. Artificial Intelligence is much needed for civilization to flourish and it is pertinent that it is further put to more research and development thus serving the technological advancement to the fullest.

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ONLINE FINANCIAL FRAUDS – AWARENESS MEASURES

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ABSTRACT
Online financial frauds are the crime cases in which the convict tries to break into financial details of its target (victim) to either hack personal financial details or to manipulate the ongoing transaction. The most preferred and already implemented prevention measure of the online financial frauds is OTP (One Time Password). But this too can be manipulated through hacking. Also every account (be it be bank account or professional records) now being linked with the Aadhar number anyone can gather information about any other person through means of fake ID. Hence data is more vulnerable since it can be easily exploited by just getting through one Aadhar number or one OTP. When considering the information shared while filing Income Tax Returns online through a professional, how does the income tax payer knows that he/she is not falling prey to a hacker's scheme? Awareness measurements needs to be taken regardless of the cyber security measures already existing for the online financial transactions. Cyber security is weak hence cyber forensic needs to be deeper.

INTRODUCTION
A modern India is moving towards digitization. This promotes more and more online money transactions leading to more and more online financial frauds. Net-banking, UPI transactions, can be threatening to the users' bank statement. Other general apps that are used by nearly every smart phone user such as WhatsApp and Play Store can also be used as a medium to hack your phone to steal your money related information. There is a need to spread awareness and the precautionary measures to be taken when doing online transactions. ITR filing can also become a means for financial fraud.

SOME EASY WAYS AND MEDIUMS OF FINANCIAL FRAUDS
1. PLAY STORE
Different types of mobile apps are available for different purposes which are easily downloadable from the Google Play Store. The Google Play Store being open to all, anyone can develop and upload an application on the Play Store by following few simple steps to be accessible by general public. Hackers and malicious hackers also have accessibility to the Play Store. These hackers being technically sound can design app(s) for malicious use and upload it (them) on the Play Store. The general public being unaware about the security measures to be taken for download and installation of app(s) might install these malicious application(s). Such unauthenticated applications can open a trapdoor on the mobile phone(s) such that when any online money transaction is made the user's credentials are sent to the hacker through the unauthenticated/malicious application.

One precautionary measure that needs to be considered for download and installation of application from the Play Store is to check the size of the application. Any authenticated mobile app will be minimum 12-13 MB in size. The unauthenticated apps can be of lesser sizes such as 2 MB or 3MB or 4MB. The gaming apps available on the Play Store are of size 4MB to 5MB (or even lesser in size). These apps maybe or may not be malicious but definitely with no authentication of its source.

When downloading an update for any app that's installed on your phone the Play Store downloads more data than that is required. It was noticed that an update for a gaming app of size approximately 450MB used up nearly 1GB of data while downloading the update version from Play Store. The Play Store is preferred over many other sources of downloading the apps because of its better security measures. But such downloads that uses up more data than the required or revealed size of the app or update of the app makes things suspicious. The extra data used in downloading the app (or its update) could be possibly was used up in downloading some spyware or ransomeware which will keep a check on the online transactions you execute on your phone through Net-Banking or UPI.

It's important to check the authentication of the app or update of the app before downloading and installing it. This can be done by verifying whether the application owner/author has actually uploaded an update of the app on Play Store by contacting the owner/author via their website or email services.

2. WHATSAPP
WhatsApp or WhatsApp chats can be easily hanged through messages; either long messages with more than a 1000 smileys or shared contacts. WhatsApp cannot handle such long messages with these many smileys. It starts crashing. It is a simple trick which people generally use to play pranks on friends. This can be misleading. Such messages when received in a WhatsApp group(s), and it crashes or hangs the application the group members

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take it to be a prank. The group member who has posted the message might knowingly / unknowingly have posted it and the other members unknowingly open / tap the message. The hackers can use these long messages to cover their hacking tricks using these long WhatsApp messages. When tapped or opened these messages might load a program or virus in your phone or WhatsApp that logs all the online transactions that you perform. The Black Hat hackers can target any of the WhatsApp group member based on the transaction log that he / she has tracked.

Also there are Android apps available on Play Store that helps in creating messages that hangs or crashes WhatsApp.

It is the WhatsApp user's responsibility that he / she should be aware of such tricks and be careful while using WhatsApp. The users of the application should be alert and wise in choosing which posted files and contacts they should open and which they shouldn't.

3. UNIFIED PAYMENTS INTERFACE

National Payments Corporation of India (NPCI) has developed an instant real-time payment system facilitating inter-bank transactions. These UPIs can be used for online money transactions for different purposes. India is moving towards digitization - people all over the nation are using UPIs for various money transactions. There are suite some third party vendors who provide UPI apps. Several banks facilitate the customer with UPI services. Such banks are generally termed as Payment Service Providers (PSP) and are listed with their UPI application and handle - and issuers. The cashless India movement has ignited people all-over the country to use UPIs for transactions such as bill payments, ticket bookings, money transfers, food ordering payments, etc. One needs to link the UPI to at least one bank account to make these transactions i.e. the UPI has access to your bank account details.

With so many third party vendors providing UPI apps it's difficult to identify whether an UPI is authentic or not. It's easy to build a fake UPI and victimize people to gain their bank details to loot them of their money. An UPI user needs to be more careful in choosing an UPI and when making online transactions.

4. ANYDESK

The AnyDesk Software GmbH of Germany launched a product AnyDesk which is a proprietary remote desktop software. It can be installed on different operating systems such as MacOS, Windows, Linux, FreeBSD and iOS.

AnyDesk provides access to remote Personal Computers or Desktop systems running the host application. AnyDesk encrypts connections using TLS or AES. One significantly disadvantageous notch of this software is that it has full admin rights on the remote system that too without much of authentication required for downloading and installing and distributing (personal data is not needed). It is reportedly seen that this application is been increasingly used in online financial frauds. AnyDesk can become an attack-channel for the emerging digital financial frauds.

The fraudsters make the victims to install the software in their PC or mobile representing themselves as customer service of an authorized and authenticated organization then, the convicts enter a nine-digit access code generated by the app / software, then convince their targets to grants them permission to access the victim's computer.

AnyDesk isn't a malicious software but is used by the scammers to victimize people for digital financial frauds.

5. INCOME TAX RETURN FILING

The online Income Tax Return filing is quite a known matter to everyone. The ITR filing can be done by either the employee himself/herself or a CA can be appointed. Advertisements can be seen of CAs who promote their ITR filing business; but how do we know that these are the professional CAs and not tricksters? In the ITR filing process the employee or tax payer shares crucial information with the CA such as his/her salary details that includes gross salary, PF deducted, DA, TA, the taxable amount, etc., personal details that may include PAN number, residential address, contact details, bank details such as account number, IFSC code, etc. also some required passwords or OTPs that is received on the tax payer's personal contact number. These sensitive and significant data if unknowingly handed over to a masked CA can make situation financially disastrous for the victim. It is highly significant to be careful in appointing authorized professional CAs for such crucial jobs.

AWARENESS AND PRECAUTIONARY MEASURES

The digitization of money transactions will keep increasing with the further development of the nation. Users' need to be careful while doing online transactions. They should not share any bank or UPI or chip based card details on a website or app without authenticating its credibility. Users' should confirm the authenticity of a

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message or post before making a message viral on WhatsApp and other similar messengers. Also should be careful when opening attachments in an email from an unknown sender. It's significant to check the authenticity of the source of the application that the users' download on their smart phone. The simple looking and easily available gaming apps can be misleading. One needs to be alert when installing such applications.

If one is financially exploited through online transaction(s), should report in the city's cyber investigation cell and also hand over the related facts and evidences of the case.

CONCLUSION

The cashless India movement is a progressive step in development of the country. It's needed that the citizens are aware of the threats, vulnerabilities and possible exploitations in online money transactions.

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INDIAN SIGN LANGUAGE RECOGNITION SYSTEM: APPROACHES AND CHALLENGES

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ABSTRACT
Communication is the fundamental need for an individual. People are communicate with each other to share their thoughts, ideas, information and the most crucial is they feel associated with each other by communicating with each other. Normal individual fail to communicate with deaf-dumb because the absence of the knowledge of sign language used by deaf-dumb. Total 5072914 hearing disabled and 1998692 speech disabled population are there in India which is reported by Census 2011. For such population there is a need of translator which solve the communication issue between deaf-dumb and normal individuals. To develop a gesture recognition is a one of the way to solve such kind of problem and it also have several application which is elaborated in this paper. The given study state the various gesture recognition systems based on Indian Sign Language (ISL) and different approaches. Also discussed the recent work and challenges to develop Sign Language Recognition (SLR) systems.

Keywords: Indian Sign Language; deaf-dumb communication; real-time sign language recognition; gesture recognition.

I. INTRODUCTION
Communication is the basic need of a typical person. Individuals speak with one another to share their thoughts, ideas, information and the most vital is they feel associated with one another by communicating with one another. Ordinary individuals utilizes speech, visuals, signs and behavior to speak with one another[1]. When we consider the population who having hearing or speech inability or both the incapacities they confront numerous issues to communicate. At same time ordinary individuals attempt to speak with deaf-dumb individuals they are also fail to communicate.

Deaf-dumb uses gesture based communication as a method of communication to communicate another deaf-dumb. Gesture based communication isn't known to all typical individuals. Generally deaf-dumb take help of human interpreter to speak with normal individuals. To keep human interpreter dependably with himself/herself isn't possible in each circumstance.[2]. Likewise there are very few human interpreters available who are having the knowledge of sign language[3]. Deaf-dumb people isolated in the society because of their incapacities. Deaf-dumb are also a human beings then why they are not equally treated by the society?[4] They are confronting numerous issues at whatever point they confront the real world. They are not living the life which normal human being lives. To think about their issues and to serve facility to those disabled people there must be a need of an automated interpreter.

In India according to census 2011 (2016 updated) 2.68 crores persons are disabled out of 121 crores total population. From given total disabled population 5072914 (male - 2678584, female – 2394330) are hearing disables and 1998692 (male – 1122987, female – 875705) are speech disabled[5].

Many researches at present proceeding to develop computerized interpreter for deaf-dumb by utilizing ICT based methodologies. In USA first ICT based learning tool was developed in 2002 by Sabahat[6]. Gesture recognition is one of such ICT based method which used to develop such interpreter. In next section gesture recognition and sign language is discussed with respect to deaf-dumb and normal individual communication, its approaches and applications as well.

II. GESTURE RECOGNITION
Gesture recognition is a method which process gestures made by the person and interpreted by the other person. Gestures are expressive, body motions which includes movement of fingers, arms, hands, face, head, or body with aim to pass an information and interacting with others. The gesture recognition system is an application area of Human-Computer Interaction (HCI)[7]. HCI researches designs various system to communicate or work with computers. Basically gestures are classified as static gestures and dynamic gestures. Some gestures also have both static and dynamic elements. Gestures can broadly be of the following types:[8]

A. Hand and arm gestures
Recognition of hand poses, sign languages, and entertainment applications (allowing children to play and interact in virtual environments). This includes posture and gesture. A posture is a static arrangement of a fingers with no hand movements. A gesture is a dynamic hand movement with or without finger movements.

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B. Head and face gestures
Some examples are: Nodding or shaking of head, bearing of eye stare, raising the eyebrows, opening the mouth to speak, winking, flaring the nostrils and looks of surprise, happiness, disgust, fear, anger, sadness, contempt, etc.

C. Body gestures
Involvement of full body motion, as in: a) tracking movements of two people interacting outdoors; b) analyzing movements of a dancer for generating matching music and graphics; and c) recognizing human gaits for medical rehabilitation and athletic training.

Human gestures commonly establish a space of a motion expressed by the body, face and hands. Hand gestures are the most expressive and most frequently used[8].

Gesture recognition system is classify as hardware based and vision based systems [4][9].

Hardware based gesture recognition systems
The hardware based system incorporates the wireless gloves, data gloves that can be used to extract the hand signs [10]. These gloves have sensors, Arduino circuit board, and Accelerometer in them to recognize the gestures [10][11][12]. The accelerometer is used to sense the tilt; it can be static as well as dynamic. The sensors that can be used are the flex, tactile and so forth. The drawback of the hardware-based system is that we can't generally carry the hardware with heap of cables. Hardware not reasonable for all sort of climate condition also. What's more, the most is the expense of hardware is very higher[4].

Vision based gesture recognition systems
In vision based methodology simply require camera gadget like cell phones to catch the video or image. It uses image processing fundamentals with artificial intelligence concepts to extract sign features and recognize a sign. And based on that it shows text or audio[7].

III. SIGN LANGUAGE
The sign language is a visual language and it is used by deaf-dumb for communication. It is consist of major three components: finger-spelling, word-level sign vocabulary and non-manual features[8]. A finger-spelling is used to spell words letter by letter and it is commonly used to state the name of person. The word-level vocabulary (sign language dictionary) is used for majority of communication and non-manual features consist of facial expression, position of tongue, mouth and body.

Sign language is the method of communication used by deaf-dumb people. Fundamentally sign language has its very own semantics, language structure and grammatical rules[4]. In sign language signer utilizes movement of hands and facial expressions to form various gestures and that presents specific character, number or word[2][13]. Deaf-dumb people utilizes sign language while they are communicating with other deaf-dumb[4]. However, when the communication occur between deaf-dumb and normal individual than it makes an issue to pass on the message because communication via gestures is not known to all.

There are 143 sign languages are used around the world[4]. Different nations having their very own sign languages like American Sign Language, Arabic Sign Languages, Austrian Sign Language, Indian Sign Language, British Sign Language, German Sign Language, Persian Sign Language, Chinese Sign Language and Pakistani Sign Language etc[7][6][4]. American Sign Language is acknowledged as standard sign language by numerous nations world-wide[3]. Few countries utilizes sign language according to their culture like Indian Sign Language used in India.

Distinctive sign languages utilizes diverse ways to present a characters, numbers and words; for instance a few uses one hand, a few uses two hands. Indian Sign Language has a characteristics that it uses two hands to frame different characters[1]. Where in American Sign Language it utilizes just a single hand to frame a characters. In sign language the grammar usage is not considered and the emphasis just on the words. In this 'a', 'an' and 'the' articles are omitted and does not concentrate on tenses. The organization of sentence is – Subject, Object and Verb (SOV) where in English language arrangement of sentence is – Subject, Verb and Object (SVO) [14]. For instance in English we state "I am not reading a book", this present in sign language as "Not reading book", which omits grammar of English Language.

Below in Fig-3 given the alphabets and in **Error! Reference source not found.** [7] given the numbers of Indian Sign Language:

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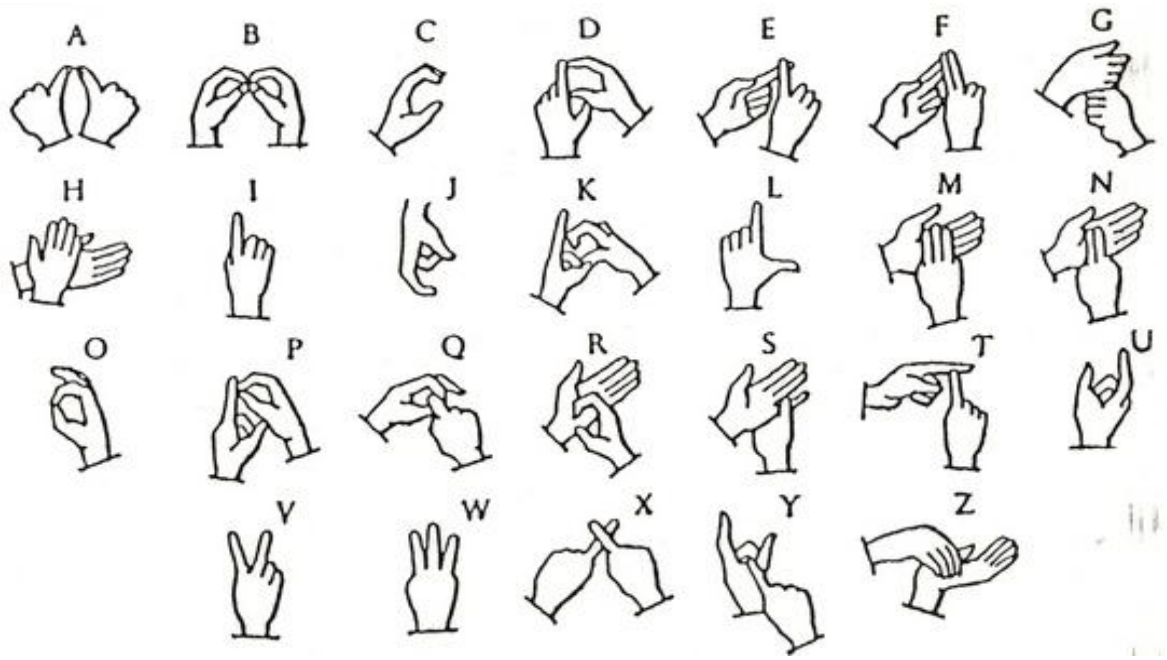

Fig-3: Indian Sign Language Alphabets

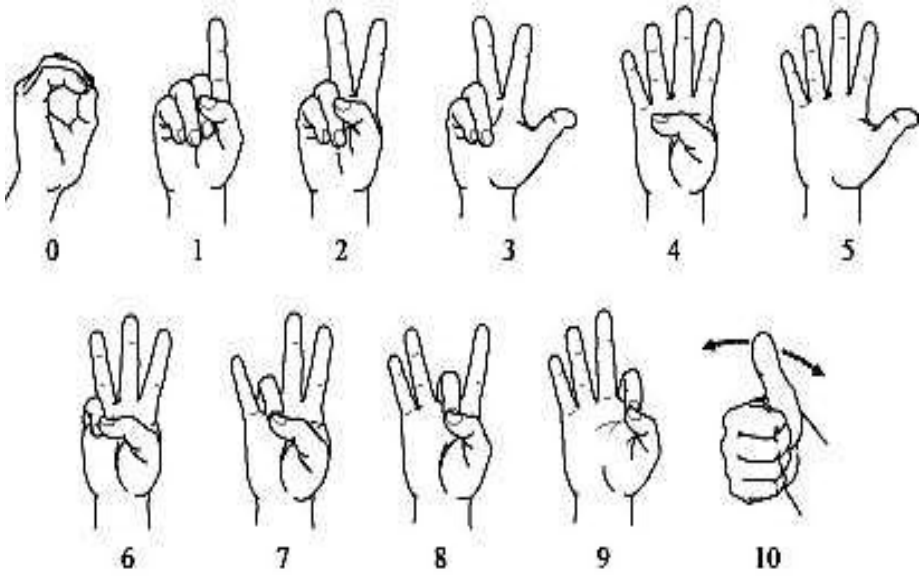

Fig-2: Indian Sign Language Alphabets Numbers

IV. APPLICATIONS OF GESTURE RECOGNITION

A. Sign language Interpreter/Translator

It is makes communication possible between deaf-dumb and a normal individual as Deaf-dumb need human translator with together which is costly and limited openness of human translator at anyplace anytime.

B. Sign Language learning tool

Most deaf-dumb kids are born as ordinary kids who have incomplete or no knowledge of sign language. Such kids learn sign language only at deaf-dumb schools, thus any system for such kids which help in form of teaching tool would be the great help to them and make them able to express themselves through signs.

C. Human computer interface

It is used by deaf-dumb individuals to provide inputs to the computer interface.

D. Interfacing in virtual environment

It is use gesture to control the computer systems, music system, virtual games, many home appliances, medical equipment used in surgery by doctors, etc. This provide more nature way to interact with computer.

V. COMPARATIVE STUDY

The following table describes the comparative study of different ISL recognition work done by various researchers. Also describes the input, output and methodology followed by them.

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Ref.	Inputs	Approach	Dataset Detail	Segmentation	Methods	Sign Language	Number of Gestures Used for Recognition	Output	Limitations	Recognition Percentage
[15] (2018) IEEE	Video	Static Gestures	Created own, 3000 statics symbols for training and 100 images for each symbol for testing	Thresholding using the HSV color space	Deep learning technique CNN used	Indian Sign Language	Numerals only	Text	Not work when background and skin color is same	99.56% for same subject, 97.26% (low light)
[3] (2016) IEEE	Image	Static Gestures	Not specified	HSV Histogram then the median filter, morphological operations	Harris Algorithm to extract features	Indian Sign Language	Not specified	Text and audio	Effective for static gestures, Light brown background gives error in segmentation	Not Specified
[9] (2013) IEEE	Image	Finger Spelling (Static Gestures)	Created own dataset of alphabets and numerals with black background (Training : 36 * 10 images, Testing 36 * 5 images)	YCbCr color space based skin color segmentation followed by thresholding	Shape feature is derived from the distance transform of the binary image. Used ANN for classification	Indian Sign Language	36 Alphabets and numerals	Text	-	91.11%
[1] (2012) IEEE	Video	Not Specified	Not Specified	HSI color model based segmentation is applied on each frame followed by thresholding	The state of finger is used to identify the sign. Features like angle between fingers, number of fingers fully closed, semi-closed or fully opened.	Not Specified	Single hand gestures	Not Specified	-	Not Specified
[4] (2017) IEEE	Video	Dynamic Gestures	Own dataset of videos (6 words from 4-5 people)	Skin color based segmentation using HSV color space then convert image into binary	Histogram matching to find similarity between frames, For feature extraction Eigen Vector and Eigen Value technique used. Euclidean based classification technique used.	Indian Sign Language	6 Gestures	Dual way communication	-	Not Specified
[2] (2017) IEEE	-	Static Gestures	Own Dataset (Six words)	Static segmentation: gesture needs to be pinpointed and traced. Dynamic segmentation: the hand gesture does not involves pinpointing or tracing but only segmentation.	features extraction using scale-invariant feature transform (SFIT) algorithm	American Sign Language	Not Specified	-	light intensity	Not Specified
[16] (2015) Elsevier	Video	Dynamic Gestures	Own database of 10 sentences from 5 people	Skin color based segmentation using HSV color space, thresholding	Gradient based key frame extraction, orientation histogram as a feature extraction technique, Classification : Euclidean Distance, City Block Distance, Chess Board Distance, Mahalanobis Distance, Correlation Distance, and Cosine Distance.	Not Specified	Not Specified	Audio or text	-	Not Specified
[17] (2017) IEEE	Image	Static Gestures	Used dataset which was created by someone.	Skin color based segmentation using HSV color space, Sobal edge detector	For classi cation purpose, they have used neural Network and trained it using Scaled Conjugate	Not Specified	Not Specified	-	-	Not Specified

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					Gradient Backpropagation algorithm					
[18] (2014) IEEE	Video	Static Gestures	Created own dataset with A to Z alphabets and 1 to 10 numerals and few phrases used daily in emergency	Skin color model YCbCr used, Thresholding and canny edge detector	Their algorithm used in feature extraction of gestures	Not Specified	Not Specified	-	-	Not Specified
[19] (2017) IEEE	Video	Static Gestures	Created own dataset with 11 ISL symbols	Background subtraction algorithm and skin segmentation based on YCbCr color model	HoG feature extraction, SVM based classification technique used.	Not Specified	Not Specified	-	-	Not Specified
[20] (2016) IEEE	Image	Static Gestures	Dataset details not specified. For testing A, B, C, D, E, F, G, H and I characters taken. 9 * 10 = 90 images as testing set	Background segmentation used to segment hand	Uses the angle and peak calculation to extract the features, For classification 12 bit binary sequence is generated for each hand gesture which classifies the different hand gestures	Not Specified	Not Specified	Two way (Gesture to audio and audio to gesture)	-	Out of 90 gestures 81 correctly recognized (90.00%)
[21] (2015) IEEE	Video	Not specified	Not specified	Region based segmentation Method (Connected component approach)	Correlation based approach used for matching extracted features from inputted image to the gesture image that is stored in database	Not Specified	Not Specified	Two way (Gesture to audio and audio to gesture)	-	Not Specified
[22] (2016) IEEE	Video	Dynamic Gestures	Created own dataset for 24 Signs (Medical, Court, Hotel)	Skin color based segmentation followed by binarization operation	Tracking trajectory of moving hand, Recognition Dynamic Time Warping	Indian Sign Language	24 hand signs	-	-	90%
[23] (2018) SPACES - IEEE	Video	Dynamic Gestures	Created own dataset for 200 signs by 5 users	Not Specified	CNN (max, mean and scholastic pooling) followed by softmax regression	Not Specified	Not Specified	-	-	Stochastic pooling (92.88%), max pooling (91.33%) and mean pooling (89.84%)

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The observations derived from above comparative study is as given below

1. Majority of work done for static gestures very less work reported for dynamic gesture recognition.
2. There is no standard dataset available so everyone has created their own dataset.
3. For segmentation majority have used skin color based segmentation using color spaces like YCbCr and HSV.
4. Effective illumination condition for skin color segmentation is necessary for recognition of gestures.

VI. LITERATURE REVIEW

The communication problem between deaf-dumb and normal people is addressed in [4]. The proposed approach is a computer vision based algorithm which make a dual way (Full Duplex) communication between deaf-dumb and normal people. Extraction of image frames from live video and extract hand gesture from that image and the final output is text or speech and vice versa. As unavailability of ISL dataset they have made their own video dataset of 6 different words of ISL from 4-5 persons under different illumination condition. In video pre-processing they have performed filtering and segmentation. For skin color based segmentation HSV color model is used. For feature extraction they have used Eigen vectors and Eigen values technique. After feature extraction for classification they used Eigen value weighted Euclidean Distance based classifier has used. Finally after classification of gesture the sign converted into text or speech and the reverse processing for dual way communication.

In [23] they have discussed the problem to extract complex head and hand movements with constantly changing shapes for recognition of sign language is addressed. They proposed CNN based Indian Sign Language (ISL) recognition system. For implementation they have used mobile selfie based video as an input image. Due to unavailability of dataset they have created their own dataset of different 200 sign words from 5 ISL users with 5 different viewing angles under various background environment. Training is performed in different batches to know the robustness training modes required for CNN's. Batch-1 training using one set of 200 images from 1 user, Batch-2 training using two set of 200 images from 2 users and in Batch-3 five set of sign images were used. For higher recognition they have implemented different CNN architecture and tested on their own dataset. They have implemented different three pooling methods like mean pooling, max pooling and stochastic pooling; from these they found stochastic pooling is best for their case. For proving capabilities of CNN they compared results with Mahalanobis distance classifier, adaboost, ANN and Deep ANN classifiers. The average recognition rate of proposed CNN model is 92.88 % and is higher as compared with the other state of the art classifiers.

In [18] they have proposed a method in which input video is taken as 640 X 480 resolution in VGA recordings. The frames are convert to grey. For segmenting hand 0.2 times average lamination of original image threshold is used followed by canny edge detector. Use YCbCr skin color model for better feature extraction. They have created their own dataset which consist of alphabets A to Z, numbers 1 to 10, few phrases (daily conversation in emergency), for variation in signs they have used one lefty signer & one signer had an extra thumb.

In[3] they have used webcam for capturing the image. Segmentation is done using skin color based HSV histograms. Then median filter is applied followed by morphological erosion and Harris algorithm is used for feature extraction. The output is given in both the textual and audio form. The limitations of their approach is they can't use both the hands and lighting conditions can affect the results.

In [2] they have used scale-invariant feature transform (SIFT) algorithm to calculate features vector from source image to recognize the gesture of American Sign Language (ASL). They have used Euclidian distance for vector comparison. The delay time is reduced and the accuracy is increased using the SFIT algorithm.

In [9] they have proposed a method for automatically recognizing the Indian Sign language finger spelling and the output is text. They have used digital image processing techniques with artificial neural network to recognize the signs. They have presented method for recognizing static gestures of numerals and alphabets of Indian Sign Language. Skin color based segmentation is used to extract the hand region from the image. Shape of hand is used in feature extraction. This method has the accuracy rate of 91.11%.

In [27] they have proposed two new feature extraction techniques of Combined Orientation Histogram and Statistical (COHST) Features and Wavelet Features to recognize the static sign of numerals in American Sign Language. The performance of the system is measured by extracting the four different features of Orientation Histogram, Statistical Measures, COHST Features and Wavelet Features to train and recognize the American Sign Language numbers individually using a neural network. Observation states that COHST method forms stronger feature than the Orientation Histogram and Statistical Features. Wavelet features based system gives

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the best performance of all the system designed for static American Sign Language number recognition with the maximum average recognition rate of 98.17%.

Microsoft Kinect a motion capture device was used by Rajaganapathy. S, Aravind. B, Keerthana. B and Sivagami M [28]. for converting the human sign language to voice. Their project used to control PowerPoint presentation by moving hands left to right to change slides, next used to control electric appliances.

VII. CHALLENGES

A. Real Time Sign Language translator used anywhere and anytime

The improvement of Sign language Recognition systems lie in the fact that they should have the ability to work in uncontrolled real time environment that implies that they should have the ability to cope up with complex scenes that possess messy background, various moving objects, diverse illumination conditions and variety of users. At present many frameworks intended for controlled conditions like legitimate light illumination, the background of signer is static and the clothes wear by signer are additionally dull or non-skin shading so discovery of hand and face in such controlled conditions is appropriate for such recognition systems.

B. Indian Sign Language Dataset based on standard dictionary

Computer vision based method having numerous challenges like lack of standard dataset for Indian Sign Language (ISL), and unviability of standard dictionary of ISL. Recently Indian Sign Language Research and Training Centre (ISLRTC) has formally published ISL dictionary[34]. In India the people of different regions use their own signs for specific word. Such ambiguity in signs may lead a problem for any sign language recognition system.

C. Recognition of Dynamic gestures and false gesture

Dynamic hand gesture recognition is still a challenging task because numerous researchers works on static gestures only and also they have consider very few words, characters or numbers for their experiments. Sometimes one gesture represents same meaning ex. ‘very good’ and ‘beautiful’[4]. Such ambiguity in signs still consider as a challenge for Sign Language recognition systems.

Sometimes in sign language the presence of unwanted gesture between two words while signer present a sentence is consider as false gestures. Detection of such false gesture is considered as challenge.

Many ISL alphabets uses two hands to form a character and use of two hands for gestures make recognition difficult.

VIII. CONCLUSION

The above study illustrates various techniques used in vision-based system, along with some hardware-based techniques. In vision, based technique the accuracy depends on many factors like the position of the hand, the distance from the camera, the background of signer, single hand or two hands used by signer, illumination conditions, dataset etc. Many researches used skin-color based segmentation techniques to segment hand and face from image. For skin color segmentation HSV, YCrCb color models used by many. Only a few systems have recognized both alphabets and numbers for specific regional sign languages like American Sign Language, Arabic Sign Language, etc. The real-time sign recognition system can be develop which is used in real environment but capturing and interpreting sign from real-time video is not up to the mark hence most of the methods have used the static images. Unavailability of standard ISL dataset also reported as crucial aspect of ISL based SLR. Many machine learning and deep learning methods may be helpful and effective in the development of sign language recognition systems. The effectiveness of these methods rely on the proper dataset. The future scope of given study is to create the standard dataset based on standard dictionary.

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DIGITAL PAYMENTS: STIMULATING DOSE FOR ECONOMY GROWTH

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ABSTRACT

Digital Payments in India grew exponentially post Demonetization. Government introduced the idea of a Digital India and with the availability of mobile internet, the idea has turned out to be a complete success. This transformation towards digital payments benefits in more transparency in transactions which empowers the country's economy.

Payment procedures have slightly changed gears by the accelerated use of online digital wallets, UPI and BHIM mobile applications, which will take away the extensive use of cash for transactions. The main objective of this paper is to analyses the impact Digitization has had on the payment system. The present paper focuses on the analysis of the adoption level of these digital payment systems by customers.

A primary data was collected from 162 respondents from various backgrounds and different age groups. The responses through the questionnaire were analyzed statistically. Here our research paper we will be showing how digital payments will be useful in boosting Indian economy and demands. As we know that if demand increases supply will increase and thus it will result to increase in economy. Mr.Ambani, in his latest AGM of Reliance Industries concluded that by 2030 India will be $ 10 trillion economy and so they will be focusing mostly on E-services.

Keywords: Digital Payments, Demonetization, E-Payments, Online Payments.

INTRODUCTION

The Digital India is the Indian Governments flagship program to make India a digitally empowered country. The change begun with Prime Minister Mr. Narendra Modi demonetizing the high value currency of 500 and 1000 in November 2016.

The Reserve Bank of India has taken several steps in providing opportunities for citizen to actively contribute towards frequent digital payments. Various banks and vendors have stepped up and got their foot into the digital payment process to stay ahead of the curve and not fall behind whatsoever. Investments over the past few years made in developing public digital payment infrastructure are already showing results.

UPI's & Wallets has emerged as the fastest growing payment interface in the country and while domestic start-ups continue to grow at break-neck speed by leveraging these innovations. Although, India has been scaling new heights in the journey of digital payments, one thing that we need to keep in mind is how easily the consumer can trust these payments and how safe are these payment methods for him/her.

DIGITAL PAYMENTS

"Digital Transaction" means a payment transaction in a seamless system carried out without the need for cash. This includes transactions made through digital/electronic modes wherein both the originator and the beneficiary use digital/electronic medium to send or receive money.

The digital payment system has the following phases

1. Registration
2. Invoicing
3. Payment selection
4. Payment confirmation.

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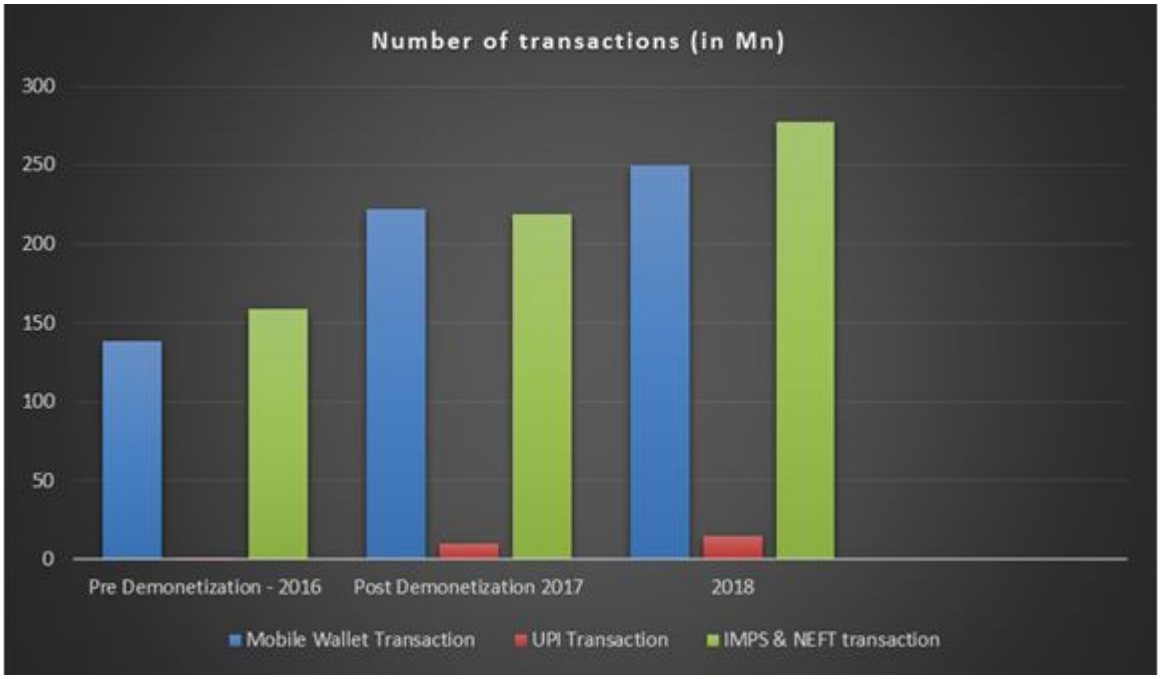
Change occurred after demonetization



Change in trend of nature of transaction after Demonetization / Types of Digital Payments

1. UNIFIED PAYMENTS INTERFACE (UPI)
UPI is a real time payment method developed by National Payments Corporation of India in regulation with the Reserve Bank of India for inter-banking transactions on a mobile platform.

As per the report by NPCI, as of July 2019 there are 143 banks regulating UPI with a monthly volume of 822.29 million transactions and a value of 1, 46, 386.64 crores.

Different UPI Mobile applications that have been developed are:-

- BHIM UPI
- Google Pay
- PayTM UPI
- Phone Pe

UPI has its own user base which they prefer over cash payments as it is easy to use, easily available, does not require registration every time you initiate a new payment and the biggest segment where UPI stands out is there are no minimal charges or transaction charges on payments carried out via UPI in comparison to RTGS and NEFT where the bank has its own commission charges.

The only drawbacks or limitations UPI has is the transaction limit per month, which is fixed. Secondly, the availability of a mobile phone and an internet connection whenever the payment has to be carried out. Lastly, it is difficult to convince new customers about the security and safety online applications provide for online transactions, safeguarding the online frauds.

How it will help in improvising business?
1. Due to instant transfer services provided by this UPI apps business trading occurs instantly, unless like NEFT which takes at least 30 minute waiting period and it can reach up to 12 hours.
2. It is the cheapest way, as one can also transfer 5 rupees without any transaction charges.
3. No need to fill the bank details again and again as it creates irritation filling up the details which sometimes results in ignoring payments or making late payments.
4. Also you need a separate person for doing transaction through NEFT. It is smooth and require easy steps.

If a merchant wants payment from you:-
1. Give your virtual payment address to the merchant.

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2. A message would be prompted at your phone.

3. Approve the amount of payment and enter the PIN.

If you want to Transfer Fund

1. Open UPI App by entering the 4 digit passcode

2. Choose the payee

3. Enter amount

4. Enter MPIN

5. Also the money directly goes to the bank account, unlike wallets which imposes transfer fees for transferring money.

6. UPI apps also gives out cashbacks and rewards on the transaction made.

7. It is Universal: One UPI App Many Accounts.

8. UPI apps are normally used by small scale industries or small business transaction up to rupees 50,000 as large transactions are not preferred here.

9. One UPI App works for many bank accounts. You do not need different UPI app for a different bank account. You can link many bank accounts in a UPI-based app. Because of the multiple accounts at one place, you can pay by using any of the accounts. You can also set the default account for the payment.

There are various UPI applications available such as BHIM, SBI UPI app, HDFC UPI app, Phone Pe app etc.

So these are the reasons why UPI apps are mostly used, which are very much helpful in boosting business thus thereby pushing Indian Economy.

2. MOBILE E-WALLETS

E-wallet or mobile wallet is the digital version of your physical wallet with more functionality. You can store your money in an E-wallet and use it for various purposes from recharging your and booking tickets to buying groceries or sending money to your friends. The only basic requirement for any E-wallet payment is a smartphone and an internet connection. Various E-wallet applications now provide lucrative deals and rewards through the means of cashback and coupons so that more and more people are encouraged to use digital payments. Some common E-wallet applications are:

1. Amazon Pay

2. Free charge

3. Paytm etc.

E-wallets when you are wanting to send funds from wallet to another, but sending money from an E-wallet to a bank account may cost some extra tax. Another important thing that needs to be considered is that these applications do not ask you for any PIN or password while performing any transaction, so you always need to be attentive.

How it will help in improvising business?

1. Instant payment and higher conversion rate for customers.

2. Paytm plays a very important role in booking movie and travel tickets as it saves time in going physically to booking window.

3. Also paytm provides attractive cashback offers with anyhow promotes business.

5. Mobile wallets also ensure security of payment for customer.

6. Mostly use by FMCG and during ticket bookings.

7. It can be used at most retailers and online stores.

8. It could help you with your budget.

Paytm

PayTM is an Indian e-commerce payment system and digital wallet company, based out of Noida Sez, India.

PayTM is available in 11 Indian languages and offers online use-cases like mobile recharges, utility bill

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payments, travel, movies, and events bookings as well as in-store payments at grocery stores, fruits and vegetable shops, restaurants, parking, tolls, pharmacies and education institutions with the PayTM QR code.

How paytm is playing an important role in boosting business?

1. It is fast & safe.
2. No need to carry debit or credit card means fewer chances for being fraud
3. Get Cashback on most of the store using Paytm wallet
4. Easy & automatically refund to Paytm wallet in case of product cancellation at partners store
5. Good wallet limit for KYC customer (25k) & Non-KYC customer (20k) both
6. Paytm also provides credit of Rs- 10,000 monthly.
7. Booking or railway tickets on paytm is far more easy rather than on IRCTC website as it takes lot of information to fill which creates stressful job.
8. Paytm plays a very important role in booking movie and events tickets as it saves time in going physically to booking window.
9. Paytm Payments Bank offers a Savings Account with no account opening charges or minimum balance requirements and keep up to Rs. 1 lac of deposits.
10. Also paytm has its own shopping mall, which sell goods at attractive prices.
11. It also provides the passbook to note down timely transactions.
12. Exclusive access to frequent special offers from Paytm partners like Uber, Food panda, Book My Show, Make My Trip and many more**.**

Cons of Mobile Wallets

1. It charges some percent of amount when money is transferred to bank account, unless like UPI which do not charge any amount.

2. It is not fully available worldwide.

3. It may charge you more to process payments.

3. BANKING DEBIT/CREDIT CARDS

Bank cards is among the most used type of cashless payment method. It comes with many features, such as convenience, security, etc. Debit or credit cards can be used to authenticate digital payments.

Credit Cards are issued by your registered bank along with some other entities authorized by RBI. They help you withdraw money or use extra money. Credit cards can be used for domestic as well as international payments. **Debit Cards** are issued by the account holder's bank but they can only use the money that is present in their account. Transactions carried out via Debit Cards are immediately debited from your account and credited to the payee's account. You can use these cards to make payments to one bank account to another.

- Online/offline merchant sale.
- Transaction limit: Set by card issuer.
- Details required: Card number, CVV, Expiry date.

4. RTGS / NEFT

NEFT is National Electronic Fund Transfer. Like UPI and IMPS, NEFT is a fund transfer system. Recently this system has also become almost free. This is not an instant payment method, however, it is fast enough.

This is an RBI regulated system in which every major bank participates. This system facilitates one to one fund transfer. NEFT helps individuals, firms and corporates to electronically transfer money from any bank branch to individual, firm or corporate having account in any other bank branch participating in the scheme. You can use this system at the branch, ATM, mobile app or online banking. High amount of money can be easily transferred through NEFT. Following are the features of NEFT:

1. Up to Rs 25 per transaction.
2. It can transfer minimum of rupees 1/-

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3. It takes 30 min to show the transaction.
4. Working timing is 8 am to 7 pm, except 2 and 4 Saturday.

Real-time gross settlement (RTGS) systems are specialist funds transfer systems where the transfer of money or securities takes place from one bank to any other bank on a "real time". RTGS systems are typically used for high-value transactions that require and receive immediate clearing. Features of RTGS are:

1. Up to Rs 50 per transaction.
2. Speed – transfers in real-time.
3. Minimum transfer value is Rs- 2,00,000
4. Working timings are 8am to 6 pm

How it will help in improvising business?

1. This payment system Works in whole India.
2. It credits fund to a bank account.
3. This system works only on working days.
4. Mostly useful for MSME and large scale industry where large amount of money is transferred on daily basis.
5. The system reverses the payment in case it is not credited to the beneficiary account.

ANALYSIS REPORT

We have also gone through the analysis of 162 people determining different age groups and their choices regarding mode of digital payments.

In the analysis done among 162 people we found that almost 80% use digital payments.

Using fat cash	Using digital payment mode	Total
36	126	162

Option given to choose UPI/Wallet and we found that:-

UPI	Wallet	Total
100	62	162

Option given to choose which UPI app:-

Google Pay	Paytm UPI	BHIM UPI	Total
102	28	32	162

In which product mostly paytm you use?

Tickets (movie, train, air, event)	Food	FMCG	All the above	Total
60	12	4	86	162

Amount of transaction done through paytm?

< 500	500-2000	2000-5000	>5000	Total
16	60	42	44	162

Amount of transaction charge acceptable through paytm?

2%	5%	>10%	Total
145	9	8	162

CONCLUSION

After a detailed analysis of all the given parameters we can conclude that Demonetization has led to a massive growth in people using digital payments as their mode of payment.

One common trend that was observed in the survey was that amongst all the users opting for digital payments, a majority of these belonged to the age group of 20-30 years. We can say that the people post 30 years still find it difficult to trust the security and safety these online applications provide and trying to prevent themselves from online frauds and scams.

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Another conclusion that can be drawn from the survey is that PayTM has emerged as the biggest winner as they provide both individual wallet and UPI services, attracting a larger base. Talking about UPI payments, Google Pay seems to have gained confidence of the crowd with their instant payment option and lucrative cashback deals. Their partnership with SBI on these payments have helped them create a stronger brand image and would hope to continue in the same manner.

OBJECTIVE OF STUDY

- To examine the age of respondents impact on digital payments.
- To analyse the impact of customers education on usage of digital payments.
- To analyse the impact of customers income status on usage of digital payments.
- To examine how digital payments can grow business.
- How digital plays a time saving concept.
- How it will boost Indian Economy.
- To examine pros and cons of digital payment.
- To study different types of digital payments system available.

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ROLE OF CLOUD COMPUTING IN TRAFFIC CONTROL

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ABSTRACT
The normal purpose of traffic system requires sophisticated control & management to confirm that traffic moves as smoothly & safely as possible. The insufficient road capacity and the resulting congestions have become major problems likes wasting of fuel and time, stressed and frustrated motorists, higher chance of collisions. The living methods for traffic management are not effective. Solutions to this problem are Intelligent Transportation Systems (ITS) knowledges, Cloud based Traffic Managing System (CTMS) which combines intersection control with joint approach advices to the automobiles and active routing. With the help of new knowledge and mythology it has become possible to achieve very huge quantity of identifying data. Cloud computing is revolving a good trade to deliver a strong and accessible computing at truncated cost. Using Cloud Computing and Global positioning system and Satellite (GPS) to abate the stretch and price of the vehicle movement on the specified route. GIS expertise which carries association between human made data and appliance generated data for removing the structures of them and authenticates traffic flow using recreation demonstrating systems.

Keywords: Traffic Issues, Cloud Computing, Real Time Traffic Control, CTMS, ITS, Vehicular Cloud Computing (VCC).

1. INTRODUCTION
Traffic jam position befalls when a size of traffic causes mandate for space larger than the existing road volume; this point is normally termed overload. The current methods are not precise in terms of performance and price for traffic management and control. Some electro-mechanical controls are still in use. Enormous amount of traffic cause waiting and calamities. Due to dense traffic emergency automobiles face difficulties. Cloud computing permits the structures and users to utilize Platform as a Service (PaaS) provider offer several settings to users for development of applications. The user can develop applications conferring to their requirements. IaaS that offers virtualized computing properties over the Internet and SaaS provides software or application on the internet and customer used these, with no awareness of progress or maintenance.

1.1 Traffic roadblock has a sum of adverse effects
- Declining time of motorists and travellers.
- Wasted fuel increasing air pollution and carbon dioxide discharges owing to increased lazing, acceleration and decelerating.
- Emergencies: congested traffic may inhibit with the way of emergency vehicles travelling to their terminuses where they are immediately needed.
- Higher chance of crashes due to constricted space and boundless stopping and going [1].

1.2. Existing Traffic Control Systems
- Applied Study on Traffic Information Collection system.
- Self-Scheduling for Real-Time Traffic Signal Switch.
- Smart Traffic Control Unit and Priority Based Traffic Lights Controller: The Smart Traffic Control Unit emphases on three Parts- Ambulance, Precedence vehicles and density control.
- Automatic Daytime Road Traffic Control and Watching System: Exactly calculating the routine of vehicles on a route at daylight.[4].

2. THE ITS-CLOUD (INTELLIGENT TRANSPORTATION SYSTEMS) PLATFORM
This is a dispersed computing platform, based on cloud and grid computing values, planned and applied as portion of the exertion. Its key purpose is to host all the ITS applications that form the Cloud based Traffic Management System (CTMS) and achieve communication between them.

- Services: Services are the elementary structure slabs of service oriented construction, systems such as the ITS-Cloud. Services are independent software components designed to perform specific functions in the system.

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- Resources: In ITS-Cloud resources are service containers. Their task is to instantiate other services and manages them throughout their life time.
- Service Discovery System(SDS): It keeps a record of all service instances that exist in the system and are available to users.

2.1. Service types

There are three categories of services available in the ITS-Cloud: Static, dynamic and multi-dynamic. The _first two types are based on standard cloud and grid computing approaches and the third was introduced in this work due to special requirements of ITS applications. Services and resources available on the grid systems are usually considered as static. It can be assumed that such static services are available throughout the lifetime of a user application. In cloud computing based infrastructures service instances are created on demand, usually to serve only one client exclusively. After the client disconnects, the service instance is de-allocated.

Dynamic services: It follows the cloud computing service model. They are owed on demand for limited use when a user needs them. In ITS-Cloud the resources are responsible for allocating and managing dynamic services.

Multi-dynamic service allocation: The new service type in the ITS-Cloud was required to handle numerous users, web service, but should still be allocated dynamically. When a client wishes to invoke a multi-dynamic service it sends an appeal to the Service Discovery System (SDS), which then controls if such service occurs in the cloud. The service handle contains all information essential for the user to connect to the service and communicate with it.

2.2. Service discovery and deployment.

The ITS-Cloud platform relies on a centralised SDS to provide service discovery functions – Identifier:

A unique numeric value being the primary key of the service record in the database.

- **Service name**

A character string uniquely identifying the service instance in the system. The SDS will prevent the creation of two services with the same name.

- **Service class**

The allocation class of the service. It can either be static, dynamic or multi-dynamic.

- **Service type**

The type of the service identifying its function in the ITS-Cloud, for example resource, sensor service, intersection management service. [3]

3. CLOUD BASED TRAFFIC MANAGEMENT SYSTEM (CTMS)

- **Intelligent traffic flow management**

The chief goal of the CTMS is to manage the traffic flow with aim to improve road utilisation, reduce average journey periods and dynamism consumption

- **Scalability and Reliability**

The traffic management system should be fully scalable and reliable. It should be possible to add or remove components such as sensors, VMS or even whole intersections from the system without having to shut it down, able to provide a reliable and uninterruptible service.

- **Traffic data gathering and control decisions generation**

Traffic control the traffic situation on roads has to be constantly monitored. The CTMS is tasked with gathering traffic data from the road network and maintaining an up to date traffic situation image.

- Meso Scale Prediction Service(MeSPS): This is regarded as a service in the CTMS it is not a dedicated cloud service in ITS-Cloud but a functionality of the ICS that allows them to advance the class of the constructed situation images. MeSPS allows the ICS to provide advance vehicle flow information to their counterparts down the traffic stream. When a signalling stage is activated, an appropriate message is sent to every downstream ICS reachable from the given stage.
- Micro Scale Prediction Service(MiSPS): This is tasked with performing short term predictions of the situation image on intersection approaches, which are then used in the Two-Step traffic optimisation scheme. MiSPS predicts traffic situation on each approach road to the intersection. The initial road situation image is obtained by combining appropriate lane situation images. MiSPS uses a microscopic traffic replication engine, from the Traffic Simulator enveloped in a dynamic ITS-Cloud service.

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- Failure modes : CTMS was designed with security in mind. The system accounts for the possibility of component failure and aims to deliver best possible traffic management despite that. The first and the worst failure mode assume total unavailability of traffic management. The second failure mode deals with single CTMS component failure [3].

4. CLOUD SERVICE MODEL

Software as a Service

Consumer software is conventionally purchased with a secure honest payment for a certificate and a replica of the software on suitable media. This software authorization usually individual licenses the operator to connect the software on single computer.

Storage as a Service

Through stowage as a service, operators can subcontract their data storage supplies to the cloud. All dispensation is achieved on the operator's PC, which might have only a hard state initiative and the operator's principal data storing is in the cloud.

Processing as a Service

Processing as a service delivers users with the resources of an influential server for exact large computational tasks. The mainstream of tasks which are not computationally demanding, are accepted out on the operator's PC.

4.1. Cloud Benefits for traffic

Cost Savings — Companies can reduce their capital expenses and use operative expenditures for increasing their computing abilities.

Scalability/Flexibility — Companies can start with a small placement and grow to a large deployment fairly swiftly, and then scale back if essential.

Reliability — Services using numerous redundant sites can support business steadiness and disaster recovery.

Maintenance — Cloud service contractors do the organization maintenance, and contact over APIs that do not require application installations onto PCs, thus further reducing preservation requirements.

Mobile Accessible — Mobile workers have enlarged efficiency due to systems accessible in an infrastructure available from anywhere.

4.2. Cloud challenges in traffic

Security and Privacy — Possibly dual of the additional "hot button" issues surrounding cloud computing recount to loading and fortifying facts, and monitoring the usage of the cloud by the provision sponsors.

Absence of Morals — Clouds have standard boundaries; though, no morals are related with these, and thus it is improbable that maximum clouds will be interoperable. The Exposed Network Forum is developing an Exposed Cloud Computing Boundary to resolve this topic and the Exposed Cloud Association is waged on cloud computing ethics and practices.

Continuously Evolving — User supplies are unceasingly developing, as are the supplies for borders, networking, and storage. [5]

5. TRAFFIC MANAGEMENT SOLUTIONS

Resource Management: One of the vital solutions to overcome these difficulties is to assign the precise amount of capitals at right time as likened to the pre-allocation of possessions.

Road Safety and Warning: If there is an incident occurs on the road then the vehicle warn nearby vehicle and so on to the vehicular cloud concerning speed, location and direction of the incident.

5.1 The future of cloud computing

Forecasts of Equipment Energy Consumption

Major purposes are to maximize the transfer of services and hence income, at the same time minimalizing the costs of support and conservation, rack space, head load, and power depletion. It is common practice to periodically swap lower execution or high maintenance equipment with advanced apparatus.

Software as a Service

The power depletion of the software services include the power expended by servers, storage, transport, and the user terminal. The user terminal is constructed using 2009 technology and its projected power consumption is also comprised. [5]

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6. PROPOSED MODEL

i. Employment of original reinforcement knowledge based mediator interaction by setting up the data centre to analyse and uphold facts for effective results.

ii. Implementation of demonstrating and recreation methods for traffic flow for the estimate of traffic system.

iii. Application of GPS based communication for audio-visuals investigation and transmission system.

iv. Application of traffic background to recover traffic inspecting.

7. TRAFFIC ADMINISTRATION BASED ON VANET

The VANET is the significant fragment of ITS which transmutes the method of driving on the road [7]. VANET's disadvantages such as high flexibility of the vehicle and safety issue does not permit investigators to encounter these objectives. The mobile internet and social networking in vehicles gets public and motorists more close to each other. The driving experience is more enjoyable, comfortable, safe and environmental friendly than past but there are a lot of new paradigms to explore. The on board computing abilities, the automobiles are fortified with, are not fully utilized by the applications declared above. The TMSs are largely divided into three classes V2V, V2I and Hybrid.

7.1. Vehicular Cloud Computing in TMSs

An significant possessions of cloud computing is that no asset is needed because instead of ordering, capitals and facilities are borrowed on request. Vehicular cloud computing facilities of a particular cloud are reliant on the persistence for which the cloud is formed. Generally, vehicular clouds provide facilities such as PaaS, IaaS, SaaS, RaaS, and STaaS.

7.2. Taxonomy of Vehicular Clouds

The vehicular clouds have different kinds. On the foundation resolve for which a TMS form a cloud, the vehicular clouds are classified into dualistic core classes named as V2V clouds. The classification is done on the foundation of facilities for which cloud is to be molded, substructure used and participation of third-party clouds.

7.3. V2I Clouds. In this sort of vehicular clouds, the automobiles make use of highway side infrastructural transmission networks. These communication systems include DSRC, WIFI, 3G/LTE. If automobiles in cloud rely on RSUs for control information, then the cloud called as V2R clouds and if automobiles in cloud rely on 3G/LTE networks then the cloud called as V2Cellular cloud. Both of these cloud categories have their own aces and ploys and it hinge on the resolution for which clouds are being molded. These sensors can work together to form a cloud to share real time information with TIS and vehicles.

7.4. Comparative Study of VCC Based TMSs

Comparison is made on the source of whether the TMSs is using V2V or V2I substructure, justifying traffic cramming or providing flow control and type of services accessible. In "PaaS"the vehicular clouds delivers a stand for other associated services like gratified downloading and distribution. This also offers stage for traffic organization establishments to have access to all of the vehicles on the road.

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SMART MOBILE COMPUTING: TODAY'S AND UPCOMING ERA TO SOLVE OUR FUTURE PROBLEMS

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ABSTRACT
Smartphone has become a habitual among today's era. Mobile applications have turn out to be a worldwide fashion in these days's internationally. Due to the growth of mobile technology life has become easier.

Portable processing has been given expanding consideration; it has added massive growth in the development of concept of mobile computing. Cellphone application research has enormously extended over the most recent years and it will also get enormously extended in upcoming years.

The features of this examination incorporate research examination of smartphone and also health related issues, future technology which will be helpful for next generation.

The fundamental key focuses talked about in the exploration paper are different technologies used in current smartphone and future of smartphone that will helpful for all of us.

This paper presented with the vision of positive future and new innovations.

Keywords: The hybrid display (AMOLED display and e-Ink), Integral mobile epidiascope, Air charging in mobiles, Malleable device, Stretchable Screen techniques.

1. INTRODUCTION

Mobile computing is a technology that provide us a network infrastructure and different computing functions from anywhere. Nowadays mobile computing has a lots of uses and drawbacks. Day by day mobile computing technology is increasing, needs of peoples are also increasing and may be some technologies can be implement in future as per the raising problems related to mobile computing. It includes security related issue, health issues, education etc. Mobile Application Development refers to the technique of creating software program for handheld devices collectively with mobile telephones and Personal Digital Assistants. Through using cellular apps, the consumer is provided with numerous features with a purpose to permit him to meet all his needs and plenty greater. Cell phones have critical effect on buyers and their way of life in light of the fact that the telephones can works as little PCs. According to this, all over we are on the conclusion that mobile technologies are strongly bonded with human life. If further we implement more innovative things in future which is related to portable devices then the problems will solve which we suffer like Health issues, display size, presentation issues, multitasking. We can try to overcome it with the ideas which has been mentioned in this paper.

2. SMART PHONE TECHNOLOGIES

A. The hybrid display

AMOLED (Active-Matrix Organic Light-Emitting Diode) display and e-Ink are the two different technologies. The e-Ink technology is specially used for reading purpose and it is embedded in a particular devices like kindle. If we see the ratio of the today's use of mobile phones which includes AMOLED and LCD display then it goes on approximately 99%. In that, most of the students uses the mobile phones for study purpose and intentionally it harms to their health because AMOLED display emits blue light which is harmful for human body. So to overcome this blue light damage, we must implement and use the normal screens and new e-Ink screen together i.e. "The Hybrid display" using AI (Artificial Intelligent).

It means that if a person wants to read a document in smartphone then automatically using AI technique, the display of the smartphone will change in e-Ink format and when the person wants to handle the smartphone for other purpose such as gaming then the display will turns into AMOLED display on the same screen. In other way to handle this technique, there will be an option on the screen through which a user can change the display according to their need. If we implement this technology in a single display then the problem which we face of handling two different devices get decreases and also the health related issues will reduced.

B. Integral Mobile Epidiascope

In today's Era the projector has end up being useful for some reasons. A projector or picture projector is an optical gadget that ventures a picture (or moving pictures) onto a surface, ordinarily a projection screen. Most projectors make an image by shimmering a light through a little direct point of convergence, however some fresher sorts of projectors can extend the picture legitimately, by utilizing lasers.

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To overcome this we should look forward to have same inside in mobile i.e. “Integral Mobile Epidiascope”. The concept of Integral Mobile Epidiascope is very simple. In today’s life, mobile has turn out to be a fashionable trend so if we move forward and integrate Pico projector inside the mobile then it may solve our problems. Projector telephones are anything but difficult to convey when contrasted with home projectors yet there are very few choices accessible to purchase. We can use this type of smartphone in office, home or school presentations. Using this technology, we can watch our photos and recordings or give a power point presentations in work-office or play computer games etc.

C. Malleable device

Now a days, we face a lots of size problems related to smartphones. As we see the technology is getting developed and the size of smartphones is also getting difficult, it’s been very difficult to carry such a device, so a solution on this problem is a foldable device.

A foldable device is a flexible and easy to carry. For extra than a decade, slate-fashioned smartphones and devices have dominated the cellular international. But matters are changing as groups focus on developing foldable techniques. Instead of rectangles product of glass and metallic, it could be those bendable telephones that we hold in our pockets.

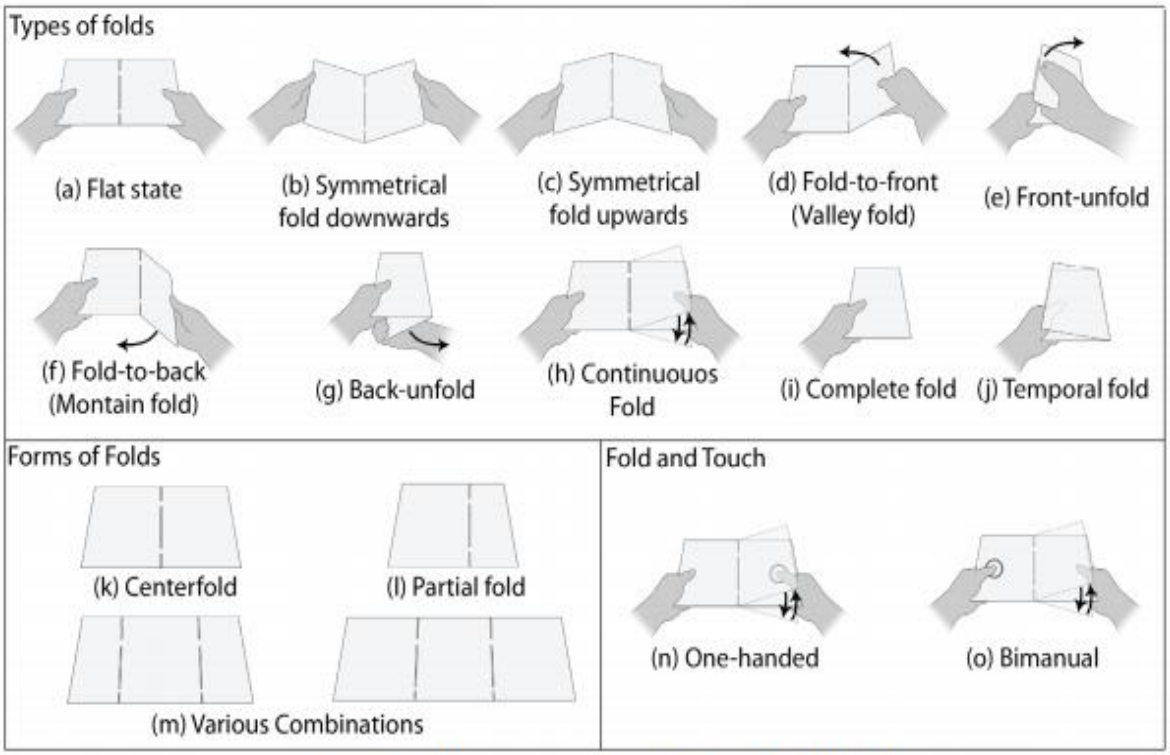

Figure 2: Physical design space of double-sided foldable displays

Instead of carrying today's rigid display smartphones, if we carry foldable smartphones then according to me we will get the following advantages:

1. Gadgets become slimmer and expend less space.

2. Flexible displays are significantly lighter in weight.[5]

3. Foldable techniques can reduce battery consumption.

4. Durability is one of the major advantages as these devices can take accidental drops without shattering the displays.

As we are focusing on foldable devices but in future if we implement the "Stretchable Technique" in smartphones then it will be more beneficial for us. For example, if we talk about gamers the size of mobile screen is not sufficient for handling games like PUBG (Player Unknown's Battlegrounds) Mobile players has crossed 200 million downloads and has achieved over 30 million daily active users. These numbers consist of download and plays on both iOS and Android platforms globally.[3] From above survey we conclude that, this stretchable technique is beneficial for both health and enjoyment. Not only for gaming purpose, we can use this technique for reading e-books, google maps, watching videos, better for e-learning apps etc.

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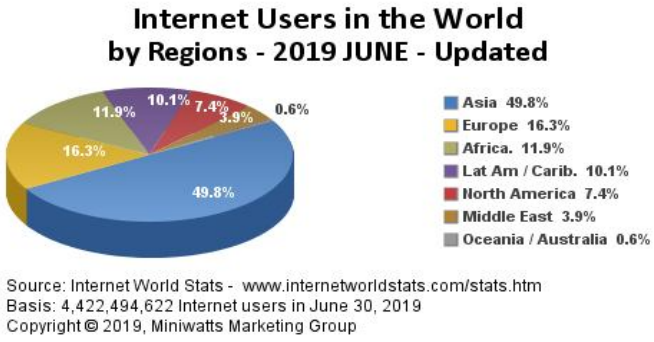
D. Air charging in mobiles



INTERNET USAGE STATISTICS
The Internet Big Picture
World Internet Users and 2019 Population Stats

WORLD INTERNET USAGE AND POPULATION STATISTICS JUNE, 2019 - Updated						
World Regions	Population (2019 Est.)	Population % of World	Internet Users 30 June 2019	Penetration Rate (% Pop.)	Growth 2000-2019	Internet World %
Africa	1,320,038,716	17.1 %	525,148,631	39.8 %	11,533 %	11.9 %
Asia	4,241,972,790	55.0 %	2,200,658,148	51.9 %	1,825 %	49.8 %
Europe	829,173,007	10.7 %	719,413,014	86.8 %	585 %	16.3 %
Latin America / Caribbean	658,345,826	8.5 %	447,495,130	68.0 %	2,377 %	10.1 %
Middle East	258,356,867	3.3 %	173,576,793	67.2 %	5,184 %	3.9 %
North America	366,496,802	4.7 %	327,568,628	89.4 %	203 %	7.4 %
Oceania / Australia	41,839,201	0.5 %	28,634,278	68.4 %	276 %	0.6 %
WORLD TOTAL	7,716,223,209	100.0 %	4,422,494,622	57.3 %	1,125 %	100.0 %

NOTES: (1) Internet Usage and World Population Statistics estimates for June 30, 2019. (2) CLICK on each world region name for detailed regional usage information. (3) Demographic (Population) numbers are based on data from the United Nations Population Division. (4) Internet usage information comes from data published by Nielsen Online, by the International Telecommunications Union, by GfK, by local ICT Regulators and other reliable sources. (5) For definitions, navigation help and disclaimers, please refer to the Website Surfing Guide. (6) The information from this website may be cited, giving the due credit and placing a link back to www.internetworldstats.com. Copyright © 2019, Miniwatts Marketing Group. All rights reserved worldwide.

According to the survey[4] there are 7,716,223,209 peoples in world who uses the internet, which consume some percent of energy. In the present age peoples prefers to use mobile phones rather than other devices for office document presentation, learning, gaming, etc. The below survey shows there are 813.2 millions mobile users(in India). So if we consider the amount of energy consumed by this mobile users it may be 10 times of 813.2 million or more than that. If we implement the concept of Air Charging in smartphones then we can save huge amount of energy that will solve our energy problem in future.

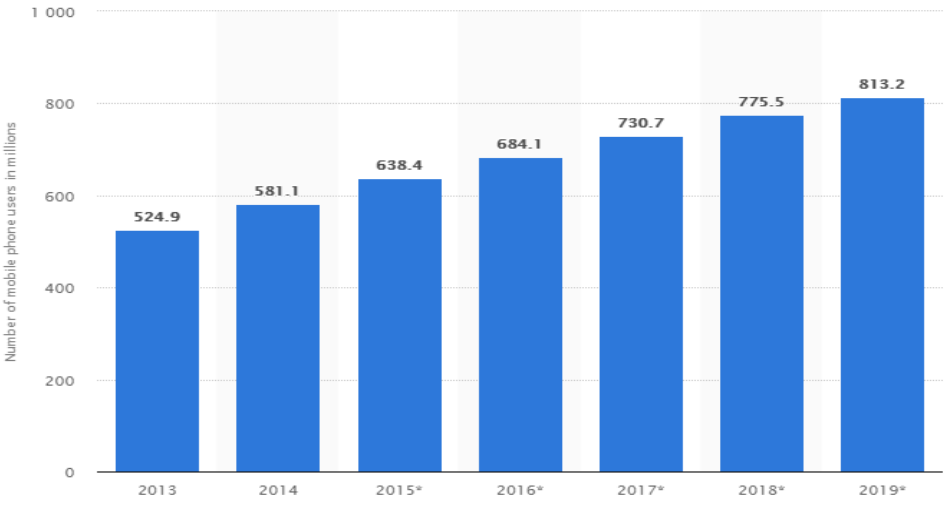


Fig: Number of mobile phone users in India from 2013 to 2019 (in millions) [6]

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E. Mobile Health

What is mHealth?

There is no standard definition of mHealth or mobile health. According to the World Health Organization (WHO), mHealth is a medical and public health practice supported by mobile phones, patient monitoring devices, and other wireless tools.[8] Many applications are available on smartphone. For example, Friends2Support.org app which is very helpful to find nearest blood donar information, also anyone can register his information to donate the blood. Such types of apps will become a very useful in human health monitoring and provide a solutions on problems directly or indirectly in the form of first aid.

3. CONCLUSION

Using Smart Mobile Computing technology, it is very important way in our future for solving different problems that we faced in today's era. In upcoming era the smartphone will be our m-Doctor (Mobile Doctor). This Smart Mobile technology will provide fast and accurate result, suggestions, solutions, interface related to be our health, office work, entertainment etc. In this paper I mentioned some ideas and app name that will definitely solve our future problems.

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BIOMETRIC SYSTEMS: ITS THREATS AND COUNTER-MEASURES

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ABSTRACT
In today's era, security has great significance on everyone's forum. Biometric is emerging as a propitious tool for 3D Authentication System to further increase the degree of security. Several biometric features like face recognition, fingerprint recognition, iris recognition, heartbeat recognition etc. are widely used. Biometric authentication and verification systems have gained immense popularity and acceptance ever since their inception as the biometric data are distinct and separate from personal information but also have vulnerabilities and are susceptible to threats. Threats can either be spoofing-which changes or replaces the physical appearance and features of the biometric or Biometric processing attacks, which is used to cause incorrect processing and decisions or Software and networking vulnerabilities attacks are based on the information against the computer and networks on which the biometric systems run or Social and presentation attacks which fools the authorities using the systems. The increase in high profile use of biometrics for security purposes has provoked new interest for hackers in researching and exploring vulnerabilities of biometric systems. The paper precisely describes the threats biometric system is exposed to and their counter measures.

Keywords: biometrics, authentication, encryption, vulnerabilities, counter-measures.

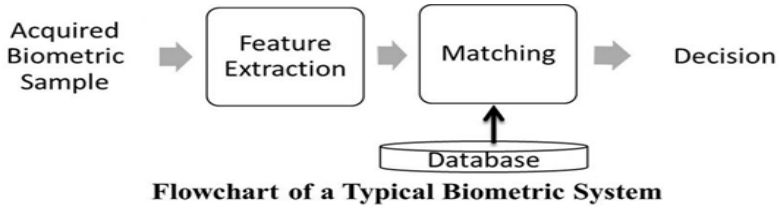
I. INTRODUCTION
Biometrics is the technical term used for body measurements and involves statistical analysis of unique physical or behavioral trait which is used for identification and access control. Reliable authorization and authentication can be achieved by this automated method which in its nascent form has a number of tractable aspects like security, system recovery and data integrity. Biometric traits have an undeviating link between an individual and his identity and these traits cannot be easily faked, since biometric systems require the user to be present at the time of authentication. There are various Biometric technologies used in day to day life which vary in capability, performance and complexity.

The basic two purposes of Biometric system are verification and identification[1]. The system has the ability to authenticate quickly, accurately and without any radical changes to the existing database. Biometrics based on fingerprint, face recognition, iris scan, hand geometry, signature or voice modulation of individuals have shown promising results and thus replaces the traditional systems. In verification, the input is a query biometric and an identity. The system verifies whether the ID is consistent with the query biometrics and further allows access control. In identification, the input is only a query biometric and the system tries to search if there are any biometrics in the database that resembles the query fingerprint [2].

All Biometric systems have an enrolment process which is followed either by identification or verification. The efficiency and accuracy do not alone depend on technology, rather technology and developers together play an important role in maintaining the effectiveness of the security system. A loophole in any of the areas can majorly affect the working and effectiveness of the system.

There are four modules required in biometric system

1. Sensor Module takes input of raw biometric data and converts it to digital form.
2. Feature extraction Module generates a biometric template and identifies the essential key features, suppressing all the noise in the sample.
3. Matcher Module compares the features of the input sample to the biometric template stored in the database using a matching algorithm and produces a score.
4. Decision Module compares the score to the security threshold followed either by accepting or rejecting the sample.[2]



Flowchart of a Typical Biometric System

Fig-1: Modules of Biometric System

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II. ATTACKS ON BIOMETRIC SYSTEM

Biometric Systems offer great advantages but are also vulnerable to attacks. The different types of attacks can be Direct or Indirect.

A. DIRECT ATTACKS

These attacks can be formulated without any proper knowledge about the operation and functioning of the system.

1. **Attack at the Sensor:** The sensor level is more prone to attacks as it has no digital protection. It involves producing a false biometric trait or input sample to bypass the authentication system. Such unnecessary requests can flood the system and hinder its functioning. Sensors lack the ability to differentiate synthetic fingerprints or facial images.
2. **Denial of Service Attack:** This involves exploitation of network weaknesses by adversaries to a point that legitimate users can no longer access the resource.

B. INDIRECT ATTACKS

These attacks require the attacker to have deep knowledge and understanding of the operating system in biometrics.

1. **Replay Attack:** The raw input data from the sensor module is transmitted to the feature extraction module via a communication channel. In replay attacks, this communication channel is intercepted to steal the input data and later, replay the stolen data to bypass the system.
2. **Feature extractor module attack:** In this, the module is replaced by a Trojan Horse program. A Trojan horse is any malware that misleads user of its true intent and dupes him to execute it which is disguised as the original program. Trojan horses can be controlled remotely and it compels the feature extractor module to produce manipulated results [3].
3. **Attack on the channel between the feature extractor and matcher:** This involves the interception of the communication channel between the feature extractor module and matcher module. The extracted features of a legitimate user are stolen and replayed to the matcher module later to bypass the entry.
4. **Attack on Matcher module:** In this, the matcher module is replaced by a Trojan horse in order to produce high matching scores and enable the imposter to bypass the authentication system.
5. **Attack on system database:** The security of the database where all the biometric templates are stored is compromised. This is only possible when the vulnerabilities of the database software or database management system are exploited. The attack can also allow addition, removal or modification of any biometric template. The biometric templates are digitally protected by steganography, watermarks, cryptography, etc. which makes hijacking the identity of an individual complex.
6. **Attack on the communication channel between system database and the matcher:** The communication channel between the matcher module and database is compromised thus allowing the imposter to tamper or modify the transmitted template which can further lead to increasing the matching score
7. **Attack on the channel between the matcher and the application:** This attack involves interception of the result passed to the decision maker based on the produced score of the matcher module. An imposter may overwrite the result or match score which directly effects the final decision (accept or reject).
8. **Attack on the Application:** The fact that bugs are the consequences of programming can not be denied. Thus, any software comprises of bugs. Since biometric systems are not 100% accurate, sometimes it uses traditional authentication system as backup**.**

III. COUNTER MEASURES

Biometrics extend valuable security approach amid of vulnerabilities, which can be reduced by the following counter measures:

i. Biometric sample data is transmitted to local and remote workstations for processing and it is imperative that this transmission is secure and not interfered. To protect it from alteration or interception, anti-spoofing methods and encryption are deployed.

ii. Multi factor authentication like the use of multiple biometrics or use of biometrics in conjunction with PINs can be deployed. Also, designers should focus on randomisation of activities or cued challenges.

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For example- Verification data could be randomized, such as asking for three fingerprints one day and a different combination of two fingerprints the next day. Additionally, all the cued challenges could be paired with certain task or conduct causing unusual observation- such as stillness, lack of movement during the acquisition of biometric data. Technologies can still make advancements and improvisations for monitoring and sensing micro-movement.

Dynamic challenges could be paired in conjunction with measurements of intelligent response time. For example, voice verification biometric systems would be used to measure the time taken for a prospective entrant to recite a randomly generated phrase in order to try to fight playback attacks pieced together from various recordings. If the response time for manifestation exceeds the minimum threshold or varies significantly from an average time estimated over a series of sample submissions at enrolment, the biometric system could issue a denial message and require recitation of a new phrase.[4]

The cause can also be biometric dynamics/ variability i.e. the differences in the observed features at one instance to another. The variable can either be random or systematic due to underlying factors[5].

iii. Use of cancellable biometrics i.e. use of algorithms to distort the proffered image and record it and not store the original image anywhere. The basic idea is, even if a template is stolen it would not be of any use due to its distorted features. Only a legitimate user can access or generate the original biometric sample from the distorted biometric as long as the algorithm stays protected. However, this is not a fool proof solution because if the original image is captured, it could theoretically be re-enrolled to generate a new, distorted template.

iv. As Biometrics rely on sensitive equipments that get overloaded easily, attacker might induce system failure. Overloading is an attempt to bypass a system by damaging the input device or shattering it in the attempt to generate errors. Systems should be designed such that, during buffer overflow attacks, fallback processes are enforced.

Fall back procedures are used for aborting and recovering from unsuccessful changes and ensures that the systems revert back to what they were prior to implementation of changes.

v. Hijacking and manipulation of database system can be cut short by using hashing and encryption technologies.

vi. The DOS attacks targeted at the back-end subsystems can be controlled by traffic analysis and monitoring.

TARGETS	**THREAT**	**COUNTER-MEASURES**
1. Sensor Level	Spoofing	Detection of life
	Overloading/ Buffer overflow/ Denial of Service	Robust devices
2. Transmission channel	Insertion or manipulation of input sample	Strong tested algorithm.
	Eavesdropping attack	Path encryption.
	Replay attack	• Use of timestamp. • Authentication using symmetric or asymmetric key.
	Man in the middle attack	Binding biometric to PKI certificate.
3. Matcher Module	Sample Replacement	Digitally Signed sample
	Brute Force/ Guessing attack	• 1:1 matching • Time-out policy • Multifactor authentication
4. Decision Module	Manipulation of threshold setting	Protected access control
5. Back-end System	Compromise of stored database, insertion or deletion of template	• Hardened server • Encryption and hashing of templates • Storing data on smart cards or other objects.

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IV. ERRORS IN BIOMETRIC SYSTEM

Occurrence of Intra-class variations i.e. when two samples from the same person at different instances vary. The causes can either be imperfect imaging conditions, sensor noise or dry, bruised finger or improper interaction between the finger surface and the sensor. Also, Inter-class variations due to overlap of similar ridges or minutiae can occur and these can lead to errors like False Rejection Rate (FFR) or False Acceptance rate (FAR). FRR is the probability of a genuine user being rejected due to intra-class variations whereas FAR is the probability of an imposter being validated as genuine user due to inter-class variations. FRR and FAR are functions of system threshold.

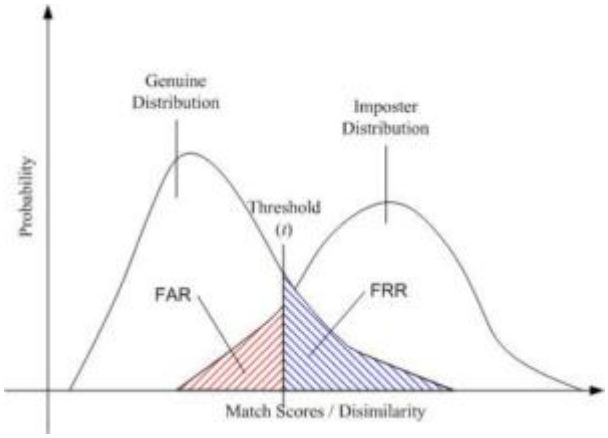

Fig-2: Trade-off between FRR and FAR

V. CONCLUSION

Biometrics faces many security threats and thus makes the acceptance if its credibility hard. To prevent such exploitations, the above discussed counter measures are formulated and are being improvised on a daily basis. The threats imposed are not impossible to deal with because the system has been created by man and therefore can be prevented by man. It is important even for a layman to understand these threats and not fall prey to such malicious activities, thus serving the purpose of technological advancement to the fullest.

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TECH HELMET: THE SMART HELMET

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ABSTRACT

The current experimental study was carried to make a type of helmet that gives the Indian Traffic Policeman a Innovative support, To support the needs of up growing delivery Bikers(Food delivery Bikers-Zomato,Swiggy,etc),To make the trip of typical rider with fun, secure and safe. The descriptive-analytical study was conducted on 20 Typical riders,10 Delivery Riders and 1 policeman. The Data were Collected by a valid and reliable questionnaire, question about daily workhours,Network operator signal, communication protocols. The Experiment were Carried on 2 steelbird helmets and 1 Honda Aviator. This paper shows the design, features of the helmet that provides support and Services with its integrated smart hardware. The findings indicated that Bikers Ride to be upgraded. The TECH HELMET has been designed with all featured requirements. The Helmet that connects to the Biker Smart phone through Bluetooth and access the services and allows the rider to perform all the operation through voice command without touching their Smart phone. The Helmet is made with two different variant for three different types of riders. Its two variants(Tech Helmet 1.0 and Tech Helmet2.0).The Research paper show the Study of cross platform data transfer through a single voice controlled Bluetooth Helmet, Named "Tech Helmet" with advance level of IoT Integration Technique.

Keywords: (Helmet, Communication, Mobile, Navigation, Bikers, Device)

INTRODUCTION

Study Biker and Requirement with their needs makes the ride safe and amusing with gratification. The Current research was carried out to build smart helmet that fulfils the needs of Typical biker, Delivery biker, and Traffic policeman. To provide faster then the fastest way of communication between cross platform devices. The Idea was to make a voice controlled Smart Helmet Which will connect mobile, vehicle and garage devices together, with fully loaded features which are mostly fulfil the requirements for people who like to go for long drive on motorcycle. The features like GPS Navigation ,weather forecast, texting, messaging, calling, Garage Device control, vehicle control, music system, Emergency mobile charging system. These features are implemented in designed to integrate in a safer, comfortable and affordable manner. After a Successful Build of TECH HELMET, with least modification this helmet will be helpful for delivery service man, In today's growing world because of e-commerce online sales of product and for their consignment delivery, service mans are growing in huge number for their delivery in faster, safer and convenient to reach their destination, the helmet which has GPS navigation will be more helpful. Serviceman of (Swiggy, Uber eats, Zomato, BlueDart, and many other) will get some technological upgradation by providing tech support, With high-tech modifications the tech helmet will be helpful for Indian traffic policeman which will provide an Innovative support for faster than the fastest communication of data and makes the process of processing system more faster.

A] Helmet

A helmet is a hard protective cover made up of carbon fiber to protect the Skull of the human brain in case of emergency. There are different types of Helmet for different uses helmet is widely used by Bicycle Riders, Soldiers, Policeman and Motorcyclists.

B] Microcontrollers

A microcontroller is a small minicomputer designed to perform the operation of embedded systems in robots, motor vehicles, office machines, complex medical equipment, mobile radio transceivers, vending machines, smart home appliances, and various other electrical devices. A microcontroller includes a memory, processor and peripherals. A microcontroller is a self-component system with peripherals memory and a processor process the functions that can be used in an embedded system. Most like other available consumer electronic products or gadgets including phones, fit bit, laptops, automobiles and smart home appliances for computer systems are programmed using microcontrollers that are used in today's world embedded circuit. Due to which, another name for a microcontroller is "embedded processor". Some embedded systems are highly volatile and more sophisticated, while some others have minimum requirements for RAM, memory and programming code and a low software complexity and with minimal maintenance which brings higher compatibly in the whole electronic circuit.

Input and output devices includes solenoids, relays, LCD displays, speakers, camera and sensors for data like humidity, temperature sensors, light level, sound, ultrasonic and most others.

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C] Batteries

An battery is an electronic device consist of electro chemicals with one or more cells with external power supply connections provides power to electronic devices such as robots, portable speakers, smartphones, electric bike and cars. The battery supplies powers with its positive terminal know as cathode and its negative terminal know as anode. The terminal marks negativity is the source of electron that when connects to an external circuit it flows and delivers energy to an external device, by flowing electrons from negative terminal to positive terminal. When a battery is connected to an external circuit, an electrolyte are able to move as ions within the cell and allows the chemical reactions to get completed at the different terminals and so deliver energized power to the external circuit. There are different types of batteries used in various devices in today's world. The Types of batteries are lithium-ion, lithium-polymer and nickel-cd.

D] Bluetooth (ISSC IS2020S)

The IS2020S is a highly integrated ultra-low power, single-chip RF and baseband IC for Bluetooth v3.0+EDR Single/Dual-MIC applications. The IS2020S builds in an audio processor and high performance stereo codec to support the enhanced audio and speech. To provide superior audio and voice quality, it also integrates a DSP co-processor, a PLL, and a stereo CODEC to process voice and audio applications. For voice, not only basic A-law/μ-law/CVSD encoding/decoding but also enhanced noise reduction and echo cancellation are implemented by the built-in DSP to reach better quality in the both sending and receiving sides. In addition, a power management unit and program ROM/RAM are integrated to reduce BOM cost for various Bluetooth applications.

E] Speakers

The Device used for sound output. With the help of amplifiers the frequency signals are converted into voice.

F] MIC (microphone)

The Device used for sound input. With the help of de-amplification technique the voice are converted into frequency signals.

METHODOLOGY

The descriptive-analytical study was conducted on 20 typical riders, 10 Delivery Riders and 1 policeman. The Data were Collected by valid and reliable questionnaire, question about daily work hours, Network operator signal, communication protocols. The Experiments were carried on 2 steelbird helmets and 1 Honda Aviator.

The Components used are:

- Helmet
- Jumper Wires
- Bluetooth Module
- GSM module
- Relay module
- Lights Bulbs
- Honda Aviator
- ESP8266 WIFI Module
- Speakers
- Microcontroller
- Microphone
- Wi-Fi Router
- 3.7v battery
- V3 charging Slot
- Button

Tech Helmet is a motorcycle Helmet that is build by integrating with inbuilt 2*3w speakers, high definition microphone, 1100mah battery with safety power cut off circuit, Bluetooth (4.0v) Issc smart chip and Atmega8

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microcontroller. The Helmet connects to user smart phone through Bluetooth and accesses all the services with advance modified version of text-to-speech function through mobile assistance.

Example: 1=>In Windows phone the TECH HELMET connects to Cortana.

2=>In Android Phone TECH HELMET connects to Google assistant.

3=>In IPhone TECH HELMET connects to siri.

The range of connectivity to mobile and Helmet is 10meters of Diameter, The in-built 1100Mah lithium polymer battery of 3.7v provides 8hr and 11 minutes of work time and 168hr and 31 minutes of standby time, it has a safety power cut circuit even if there is any meagre malfunction in the function main motherboard circuit and battery which provides full safety precautions. It has single Button that turns ON/OFF the helmet. To put the Helmet into pairing mode the button is pressed for 5sec in OFF state. The helmet operator fully on voice commands, and user perform all his function operation without touching his/her mobile phone. As by least modification in the user vehicle an user can also control the vehicle Engine and keep monitor on the vehicle with the help of GPRS and GPS.The TECH HELMET has 2 variants Tech Helmet 1.0 and Tech Helmet 2.0.

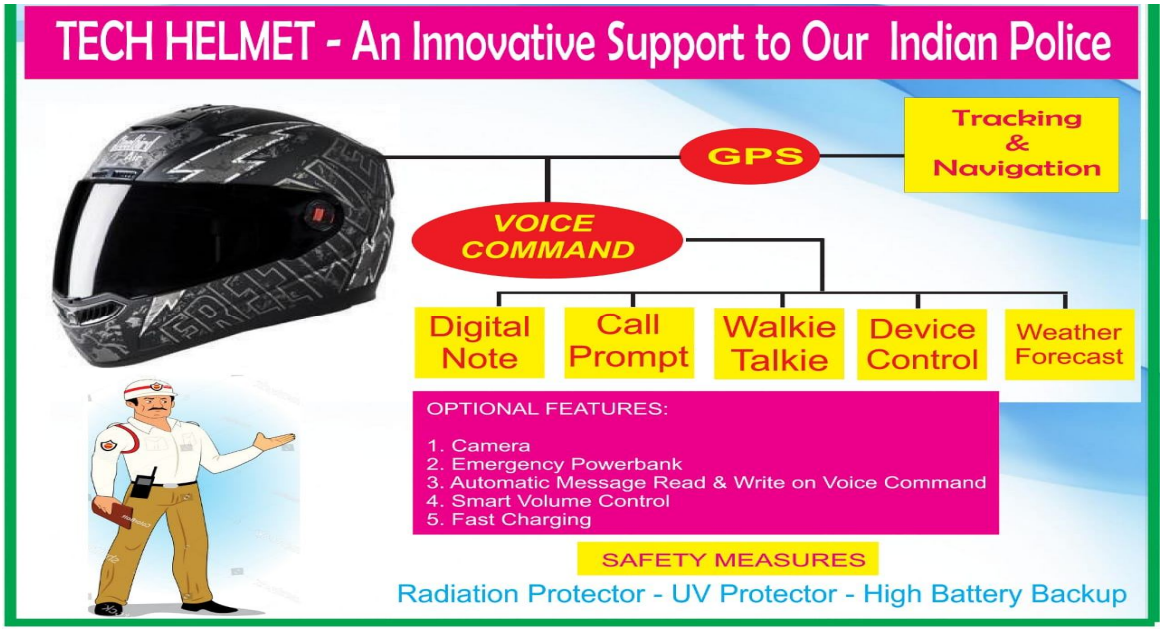
Tech Helmet 1.0

Features like GPS Navigation,Calling,texting,message passing in whatsapp,weatherforecast,music,volume control. In GPS Navigation, helmet prompts the direction towards the rider destination location. To use the map Navigation an user just need to say "take me to (location)" it will start navigating to the location without touching the mobile by prompting the direction through in built speakers, for calling-"call (Name of the person in the contact list)",Text-"Text (Name of the person in the contact list)" the things that spoken by rider will be written and sent. Weather-"what's the weather outside" it checks the location and prompts weather from AccuWeather server. Garage control-"open garage" it opens the electronic shutter of the user. Music-"play (music)or(name of the track)"it plays offline songs, for online songs-"play music from saavan" it opens the app automatically can plays music from defined online music app like gaana,saavan,hungama,etc.volume control-"volume up"/"volume down".TECH HELMET 1.0 is for Typical bikers, Long drive Riders and Delivery Bikers.

Tech Helmet 2.0

Features like GPS Navigation,Calling,texting,messaging,weatherforecast,Digital note direct to server, volume control, vehicle control, Traffic signal control(option),Walkie Talkie, Device control. Similar working of same features of Tech Helmet 1.o,the Extra features are Digital Note-"note (number or message)" Example-"note MH47 01234" helmet saves the data and forward it to database through mail,Walkie Talkie mode-it converts the output to Radio Frequency Mode, Signal Control-Traffic signal lights can be controlled through location and unique ID numbers.TECH HELMET is Specially designed for Indian Traffic policeman with IoT Techniques.

Both the variant has an Emergency bi-directional V3 charging port for charging battery from helmet to mobile and from mobile to helmet and fully waterproof and UV protector visor prevents the harmful uv(ultra violet) rays from sun and provides clear vision even in sunny climate.



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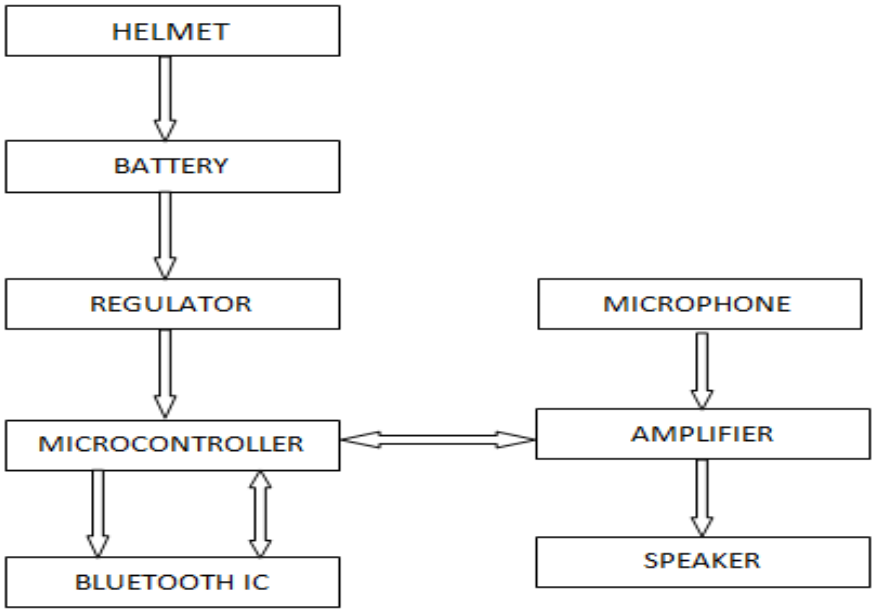
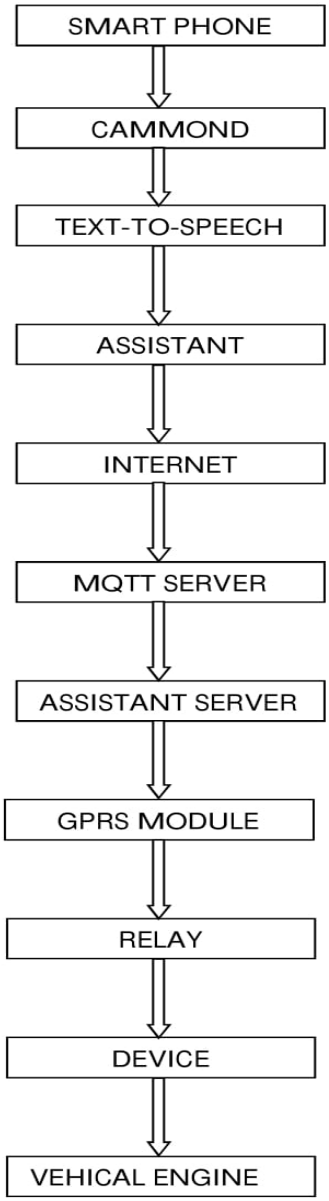
BLOCK DIAGRAM-1.0



BLOCK DIAGRAM-1.2



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Hardware Features

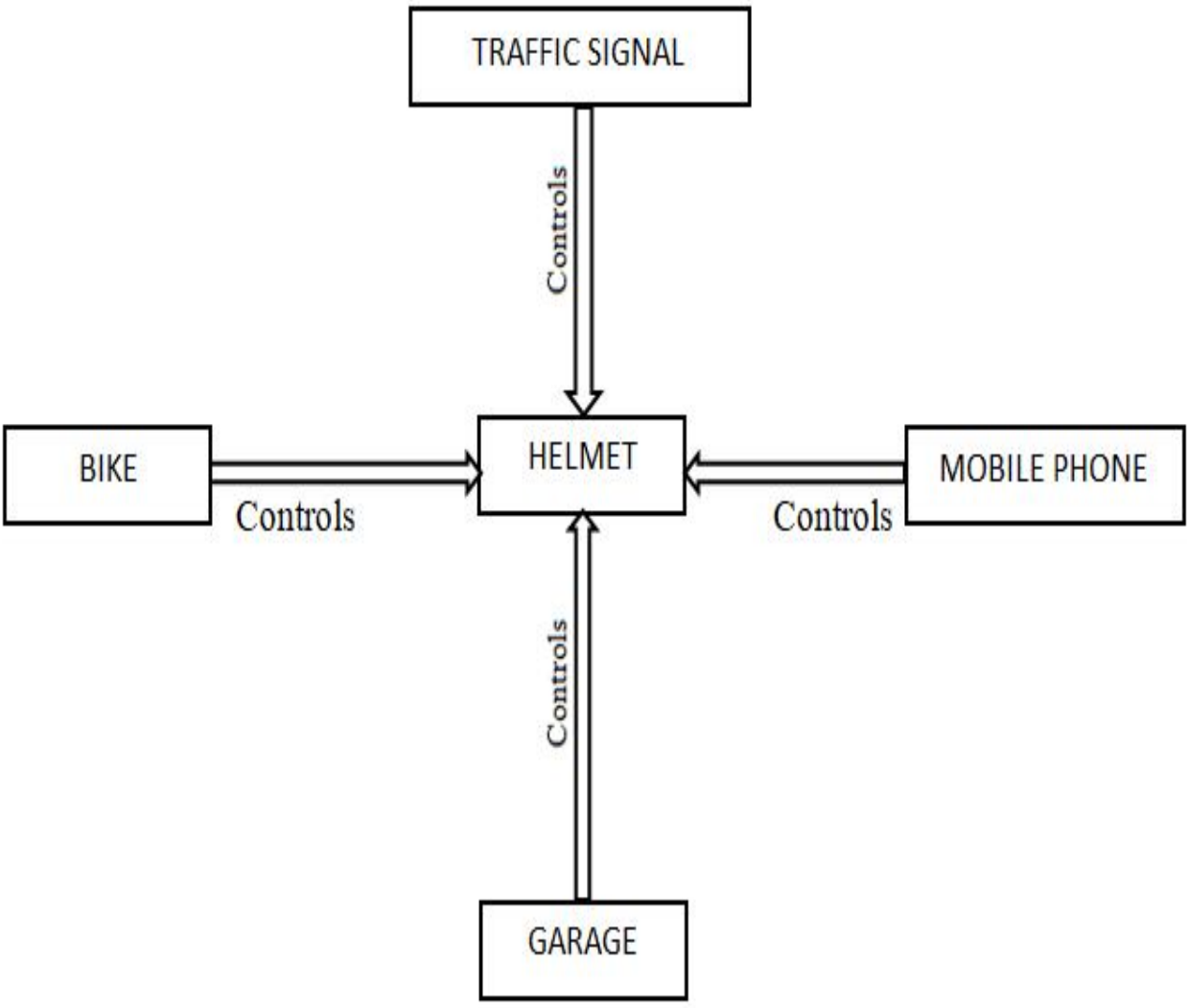
- 3.3V to 5V I/O.
- PIO (Programmable Input/Output)
- UART interface with programmable baud rate.

Software Features

- Slave default baud rate : 9600 bps
- Data bits : 8
- Parity : No parity
- Auto connection establishment to last device as default on power ON
- Permit pairing device on power as default
- Auto pairing mode pin code: "null" as default.

RESULT

The most of the typical Rider were reported to have music system, calling function, and navigation system in there helmet. The Delivery Bikers reported to have calling and navigation system in there helmet. The Policeman reported to have Navigation,calling,E-Note,GPS,lock,Bike Engine Control, Weather forecast, Walkie Talkie feature in their Helmet.Hance to fulfil all these needs and requirement the Tech Helmet is Designed and build, that brings inter-connection of devices with the help of Iot devices and its techniques.



The helmet Integrates the Vehicle ,Mobile phone and Garage Devices through Mqtt server together were each devices can communicate with each other through the Mqtt broker with subscribe and publish protocol it is use full for M2M(machine-to-machine) communication.

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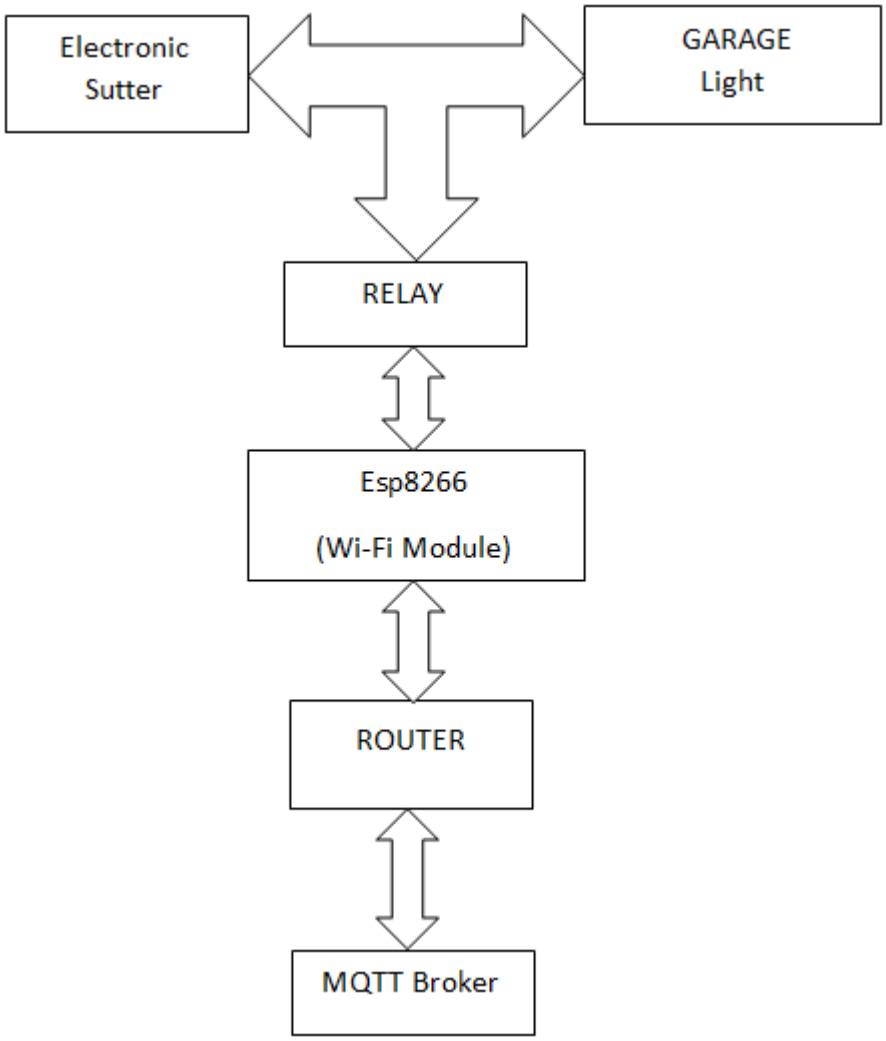
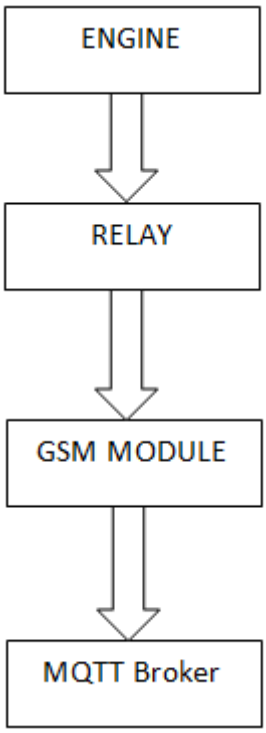
GARAGE BLOCK DIAGRAM



BIKE BLOCK DIAGRAM



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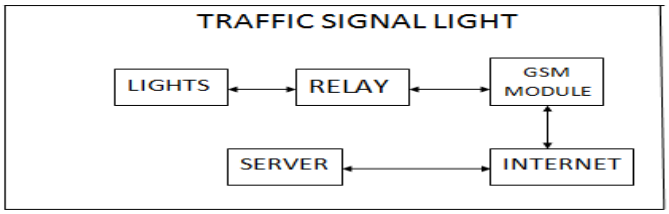
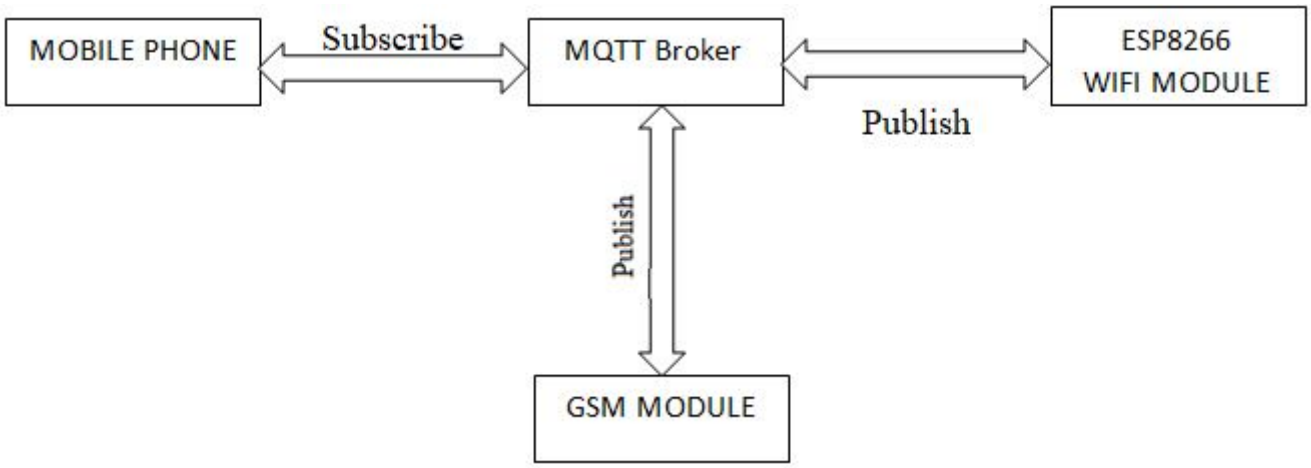
SIGNAL BLOCK DIAGRAM

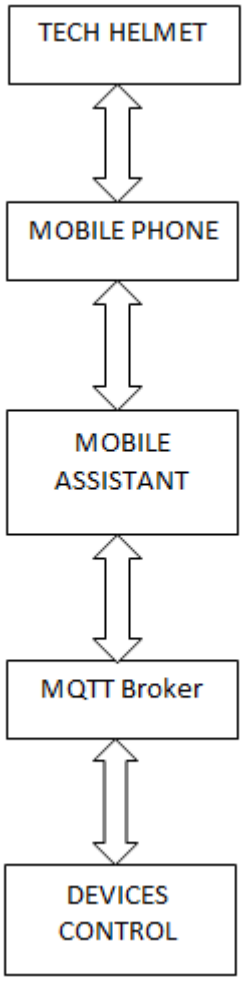


The MQTT Broker is the important protocol for message passing and data communication between cross platform devices.

MQTT Broker



TECH HELMET BLOCK DIAGRAM



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Hence the Helmet made to bring the various cross platform devices control through the voice of the user by its Text-to-Speech voice recognition system.

CONCLUSION

The findings indicated that Bikers Ride to be upgraded and to support Indian traffic police with today's modern technology. The TECH HELMET has been designed & built with all featured requirements. The Helmet that connects to the Biker Smart phone through Bluetooth and access the services and allows the rider to perform all the operation through voice command without touching their Smart phone. The two different variant of Tech Helmet for three different types of bike rider are-

1] Tech Helmet 1.0=>Typical Riders & Delivery Bikers(SWIGGY,ZOMATO,POSTMAN...)

2] Tech Helmet 2.0=>Indian Traffic Policeman.

"***To provide smart work in the work & Full fun in the fun, in safety***"

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A STUDY ON POTENTIAL ROLE OF ICT IN EDUCATION SYSTEM

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ABSTRACT

During the last decade of the twentieth century there was an extraordinary development in information and communication technology (ICT) which led to a transmutation of processes and practices in almost all aspects of human activities.

ICT increase access to learning opportunity in a way like:

- *Education opportunities in dispersed locations where conventional schools are not viable*
- *A safety net for school dropout so they do not lapse into illiteracy*
- *Second chance education*
- *Standardized curriculum materials*
- *Lifelong learning concept*
- *Limiting fraud in assessment process*

To study "A potential role of ICT in education system" we have undertaken a survey of 20 Schools, 10 Colleges and 100 respondents from Navi Mumbai region. After the survey we found that, Majority Schools/Colleges are not using the ICT for Classroom transactions as well as do not have the Parents Portal. Exposure of the relevant officials to the use of technology in education is relatively low resulting in low acceptance of the concept of using technology. Absence of qualified and trained support personnel and Lack of awareness of Government Schemes.

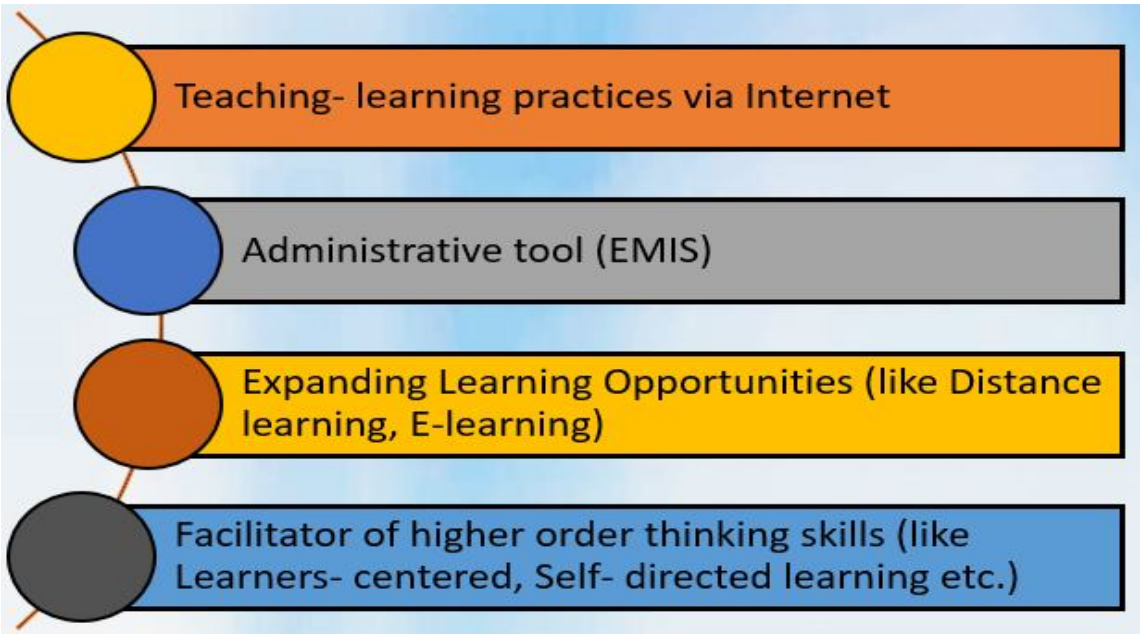
So, there is a necessity to create awareness of government schemes. Continuous use of ICT on a daily basis by learners make them acquainted to face the competitive world. Practical aspect of ICT needs to be taken care of and its use in solving day to day problems should be encouraged.

Keywords: ICT, Learning opportunities, government schemes, competitive world

INTRODUCTION ON ICT

During last decade of twentieth century there was extraordinary development in Information and communication technology (ICT) which led to a transmutation of processes and practices in almost all aspects of human activities. Information and communication technologies (ICTs) are the technologies used in the conveying, manipulation and storage of data by electronic means.

BENEFITS OF ICT IN EDUCATION



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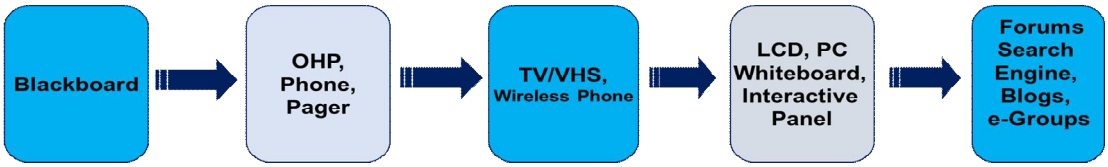
TEACHING LEARNING RESOURCES FROM TRADITIONAL TO ICT TOOLS



ICT INCREASE ACCESS TO LEARNING OPPORTUNITY

1) Education opportunities in dispersed locations where conventional schools are not viable
2) A safety net for school drop-outs so they do not lapse into illiteracy;
3) Alternative venue to schools
4) Second chance education
5) Standardised curriculum materials
6) Lifelong learning concept
7) Limiting fraud in assessment process
8) Promote technology literacy of all citizens, specifically for students

COMPARISON TRADITIONAL V/S ICT EDUCATION APPROACH

Basis	Traditional Approach	ICT in Education
Classroom	Physical – limited size/seats Synchronous	Unlimited Anytime, Anywhere
Content	PowerPoint/ Transparency etc Textbooks/ Library Video	Multimedia Digital Library Synchronize and asynchronized communication
Personalization	One learning Path	Learning Path and pace determined by learner

AIM

To Study the Potential role of Information and Communication technology (ICT) in enhancing higher education in an academic setting

OBJECTIVES

1) To Study the awareness of ICT in Learners of Schools and Colleges
2) To study the outreach of ICT in Academic and Supportive services
3) To determine shortcomings in the application of ICT technology
4) To determine future Scope

HYPOTHESIS

H_0 ICT is not very popular among learners of Schools and Colleges

H_1 ICT is very popular among learners of Schools and Colleges

H_2 All Schools and Colleges have ICT facilities

H_3 Some Schools and Colleges have ICT facilities

RESEARCH METHODOLOGY

Data Collection

Primary Data: Questionnaire

Secondary Data: Web, printed articles, etc.

Sample Size:20 Schools, 10 Colleges and 100 Respondents

Methodology of Data Collection

Sampling Method: Random Sampling: 5 ICSE school, 5 CBSE school, 5 Private school, 5 Government School, 5 Autonomous Colleges, 5 Mumbai university colleges and 100 Respondents (learners and Parents)

Data Analysis and Interpretation: Tabular form and Pie chart

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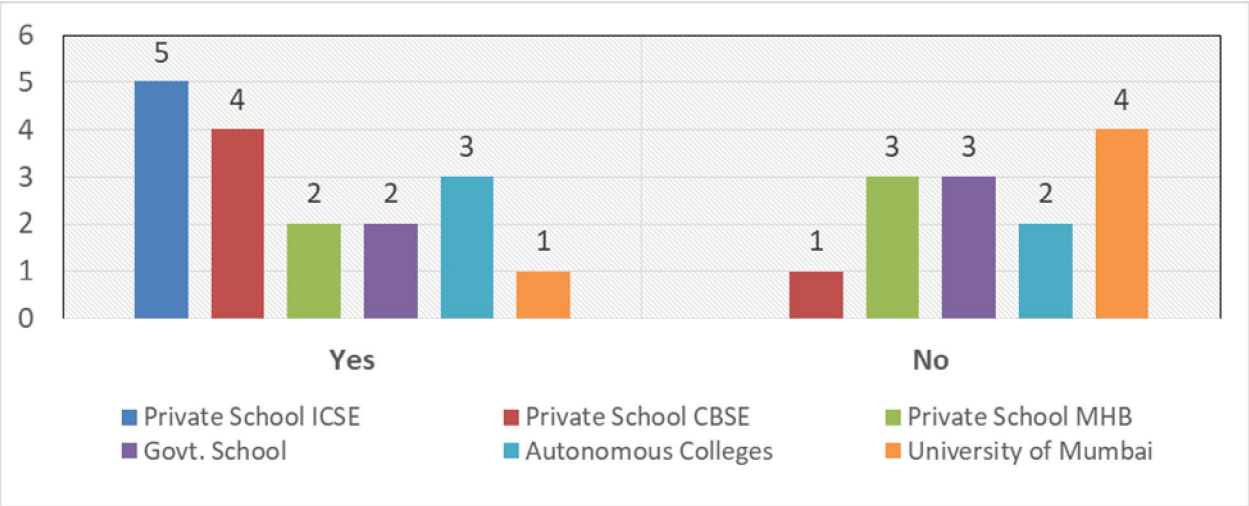
LIMITATIONS OF THE STUDY

1) The study is limited to the sample size of 20 Schools, 10 Colleges and 100 respondents (learners and Parents)
2) The research is restricted to the 'Navi Mumbai' region
3) The respondents involved learners and Parents

DATA ANALYSIS AND INTERPRETATION

(FROM SCHOOLS AND COLLEGES)

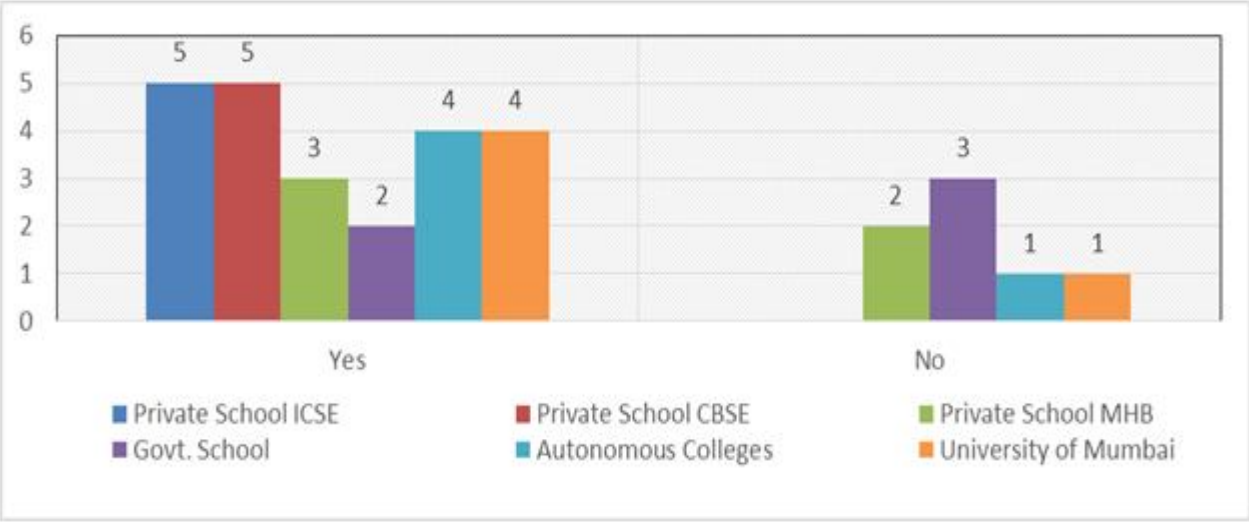
Q: 1 Is the school, making use of ICT for classroom transaction?



Q: 2 If yes, then mention the relevant facility you use of ICT in class room transactions

Option	Private School			Govt. School	Autonomous colleges	University Of Mumbai	Total	PERCENTAGE
	ICSE	CBSE	MHB					
Star Board	5	4	1	-	3	2	15	50%
Visualizer	4	4	2	-	2	2	14	47%
Portal for learning resources	4	3	1	1	2	1	12	40%
E- Content	5	4	1	1	3	1	15	50%
Self-learning tools for Students	3	3	1	1	2	2	12	40%
Digitized format for library content	5	4	-	1	-	1	11	37%
Class time-table	5	3	1	-	1	1	11	37%
Non-instructional hours of a teacher	4	2	-	-	1	-	7	23.3%

Q: 3 Is the school making use of ICT to provide services other than classroom transaction?



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Q: 4 If yes, then mention the relevant facility you use of ICT in other than class room Transactions

Option	Private School			Govt. School	Autonomous colleges	University Of Mumbai	Total	Percentage
	ICSE	CBSE	MHB					
Student enrollment	5	4	3	2	5	5	24	80%
Student attendance	5	5	2	1	4	3	20	80%
Tracking Student academic progress	4	3	-	-	2	1	10	33.3%
Fee payment	4	5	3	1	4	2	19	63.3%
Teacher recruitment	4	5	2	1	4	3	19	63.3%
Teacher attendance	5	5	4	2	3	4	23	77%
Capacity need assessment for teachers	4	3	1	-	-	1	9	30%
Salary transfer	5	5	4	3	4	4	25	83.33%

Q: 5 Is the school making use of ICT to provide services to Parents (Parents Portal)?

Option	Private School			Govt. School	Autonomous colleges	University of Mumbai	Total
	ICSE	CBSE	MHB				
YES	5	3	3	1	3	2	17
NO	-	2	2	4	2	3	13

Q: 6 If yes, then mention the relevant facilities you use of ICT?

Option	Private School			Govt. School	Autonomous colleges	University Of Mumbai	Total	percentage
	ICSE	CBSE	MHB					
SMS System for Parents students interaction	5	4	2	1	3	2	17	57.00%
Students Grade	4	3	4	3	1	1	16	53.33%
Academic Student Progress tracking system	4	2	3	1	2	2	14	47.00%
Authority based access to different users	4	2	1	1	2	1	11	37.00%
Non- Academic Progress report	3	4	2	1	4	3	17	57.00%
Vehicle tracking with the help of GPS	2	1	1	-	2	-	6	20.00%
Tracking system for fees payment	3	1	-	-	2	1	7	23.00%

Q:7 In your opinion, has there been any impact in the functioning of school after making use of ICT for school services?

Option	Private School			Govt. School	Autonomous colleges	University Of Mumbai	Total
	ICSE	CBSE	MHB				
YES	5	4	2	1	4	3	19
NO	-	1	3	4	1	2	11

Q: 8 Has the use of ICT helped in improving involvement of the stakeholders for better decision making and improving school performance

Option	Private School			Govt. School	Autonomous colleges	University of Mumbai	Total
	ICSE	CBSE	MHB				
YES	5	4	2	1	2	2	16
NO	-	1	3	4	3	3	14

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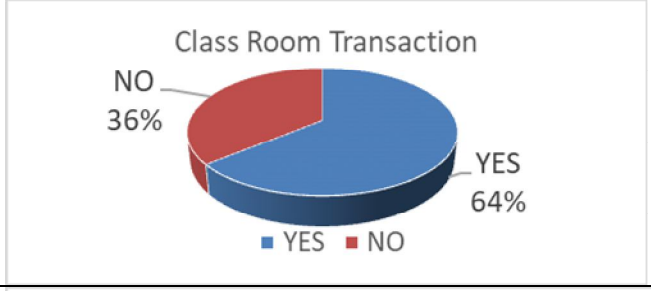
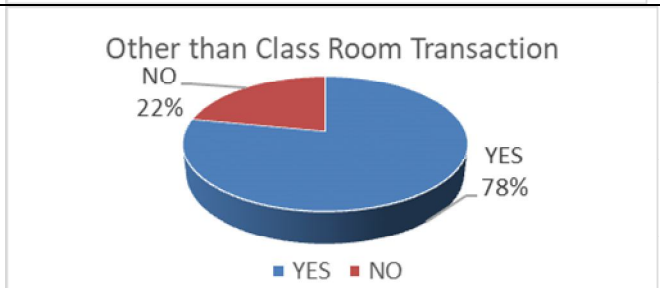
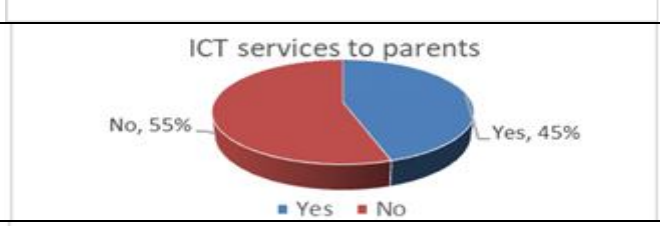
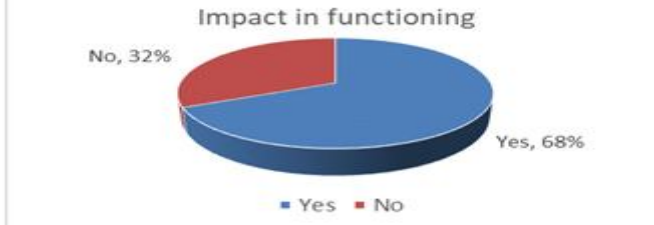
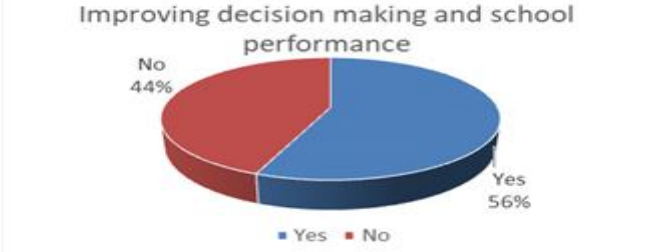
Q: 9 In your opinion has there been an improvement in value delivered to the end stakeholders - (Board Members, Parents, Students and Teachers)?

Option	Private School			Govt. School	Autonomous colleges	University of Mumbai	Total	percentage
	ICSE	CBSE	MHB					
Result has Improved	5	5	3	2	3	2	22	73.33%
Approach towards study has changed	5	4	3	3	4	2	21	70.00%
Reward and Recognition of learners boost confidence	5	5	2	2	5	1	20	67.00%
Parents – Teacher repo become Strong	4	5	4	2	3	3	21	70.00%
Easy access to information	5	3	2	3	4	3	20	67.00%
Time Saving	5	5	3	2	3	2	20	67.00%

DATA ANALYSIS AND INTERPRETATION (FROM LEARNERS AND PARENTS)

Q: 1 Is the school, making use of ICT for classroom transaction?	
Q: 2 Is the school making use of ICT to provide services other than classroom transaction?	
Q: 3 Is the school making use of ICT to provide services to Parents (Parents Portal)?	
Q: 4 In your opinion, has there been any impact in the functioning of school after making use of ICT for school services?	
Q: 5 Has the use of ICT helped in improving involvement of the stakeholders for better decision making and improving school performance	

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FINDINGS

1) Majority Schools/Colleges are not using the ICT for Classroom transactions as well as do not have the Parents Portal
2) Less Affordable
3) Exposure of the relevant officials to the use of technology in education is relatively low resulting to low acceptance of the concept of using technology
4) Absence of qualified and trained support personnel
5) Lack of awareness of Government Schemes

CONCLUSION

In conclusion it maybe said that key factors to be kept in mind if ICT is to be used for school management and providing learning support to students

1) Using of Distance learning mode for regular and refresher trainings
2) Regular Refreshment of course curriculum in line with Global Trend
3) Practical aspect of ICT needs to be taken care of and its use in solving day to day problems should be encouraged
4) Usage of already available free content on Internet can be promoted

ICT FORESIGHT

While the internet has changed the way we communicate, we need to empower the next generation of students with technology that enables interdisciplinary collaboration for lifelong learning and will help learners to get jobs easily

HYPOTHESIS TESTING

H_0 ICT is not very popular among learners of Schools and Colleges is **disproved**

H_1 ICT is very popular among learners of Schools and Colleges is **proved**

H_2 All Schools and Colleges have ICT facilities is **disproved**

H_3 Some Schools and Colleges have ICT facilities is **proved**

SUGGESTIONS

1) Describing the benefits of ICT to promote it in Schools/Colleges
2) Creating Awareness of Government Schemes
3) Continuous use of ICT on daily basis by learners make them acquaint to face the competitive world
4) Providing training on timely basis to management/Supporting staff on latest technology
5) Gradual implementation of the ICT due to lack of affordability

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CYBER CRIME, SECURITY & HUMAN PSYCHOLOGY: INTERNET ADDICTION, LITERACY ON CYBER CRIME AND SECURITY

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ABSTRACT
The word "cybercrime" itself saying it's a crime. In India as well as in a world it's a business now i.e. to trap the people using fraud mail, phone call, social sites and many more. Because of only bad psychology, they are trapping people. On it we have to provide proper education on cyber-crime and security. We have to spread awareness in society. We always use "Precaution is always better than cure" using same thing we have to take more precaution. In simple way we can say that cybercrime is unlawful acts wherein the computer is either a tool or a target or both. [1] This paper illustrates and focuses on cybercrime, its impact on society, types of threats, and cyber security and Human Psychology.

Keywords: Cyber-crime, Cyber security, Internet Addiction, Human Psychology and Privacy.

INTRODUCTION
Basically word "Information technology" showing Information with Technology.

If any new thing then it will relate with its positive and negative shades. Same way cyber is not an exception. In regular life we are taking precaution same way we have to take precaution for cyber world i.e. security so we can use anti-virus, firewalls and different digital equipment's for our computer or mobile. Information technology has eased out almost every humanized action.[2] Human is using internet facility and its access is also easy to everyone. In India person is using internet from IT background, non IT background, literate, non-literate, educated, uneducated. But we do not know how to handle security, cyber-crime and how to face it if we are victim. For it we have to spread awareness in a security.

Now a day's Internet is addiction to all and we are finding in youngsters and teenager. Internet addiction might include an extreme fondness for pornography, online relationships, online gambling, online games and some non-essential activities.[3] Because of non-literacy, non IT background and uneducated people are fall victim to illegal activities like pirated files downloading, downloading illegal software[3] and simple they don't know sign out or log out option. They are directly closing the window. Some skilled humans might fall in such activity and they are violating the law. If our psychology is good then we will do such malicious work.

INTERNET ADDICTION
Are you playing games on internet is excess? Are you compulsively shopping online? Cannot stop checking Facebook, twitter, WhatsApp and like such social media? Are you surfing daily? Is your excessive computer use interfering with your daily life? If your answer is yes for any question then you may be suffering from Internet Addition Disorder, also commonly referred to as Compulsive Internet Use (CIU), Problematic Internet Use (PIU), or disorder. Originally debated as a "real thing," it was satirically theorized as a disorder in 1995 by Dr. Ivan Goldberg, MD who compared its original model to pathological gambling.[4] We are psychologically engaged with internet. It's harmful to us. We are isolating our family and doing our work. Person is living in virtual fantasy world and trying to connect with real life human.[3]

CYBER CRIME
Like any crime if we are doing any crime with computer, digitally by internet or electronically i.e. any criminal activity where a network, computer, mobile or electronic machine is target and we are making wrong activity.

There are many types of cybercrimes which are following

1. Denial-of-service [5]
2. Cyber stalking [5]
3. Phishing scams [5]
4. Fraud and identity theft[6]
5. Malicious and Malware code[7]
6. Email Harassment
7. Financial crimes

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8. Selling illegal articles
9. Spoofing via E-mail

IMPACT ON SOCIETY

Simply, we can say i.e. loss of anything e.g. Personal data loss, Money loss and etc. it's a disturbance or interrupt to human with smooth life. It is breaking vulnerability, availability and confidentiality of our data.There has been an increased clamping down on cyber-piracy related to the film and music works.[8] This is serious issue to down a business. It is said that the next war is cyber war.

After demonetization in India, Cyber-crime rate in India was increased. Post-demonetization of the Rs. 500 and Rs 1,000 notes, a majority of banks, mobile applications and e-wallets have been targeted by scamsters," said PavanDuggal, a supreme court advocate and an expert in cyber law.[9] "Cybercrime has grown to an alarming extent since note ban," said Pawan Duggal, cyber expert and Supreme Court lawyer.[10] More than 27,000 cybercrimes were reported in first half 2017, according to data released by the information and technology ministry. The figure was 50,362 for the entire 2016. If the 2017 data were extrapolated for a year, it would be an almost 10% increase in cybercrime, highest in recent years. The average jump in the past three years stands below 1.5%.[11]

LITARACY ON CYBER CRIME

According to me in India less literacy in cyber-crime. We want to spread awareness in society because if any person is doing such activity then he or she doesn't know we are doing cyber-crime or we are doing against the rule. If any person is doing such crime and it works then possibly he is serious criminal and his interest will also increase. He gets stuck into crime. But if we provide proper education, awareness or psychological treatment on the cyber-crimes then at least we can minimize the crime. We must aware them on cyber laws and about its act.

CYBER SECURITY

We are always maintaining security everywhere in our general life same way if we are using computers, mobiles or laptops, etc. then we have to protect or maintain the data from the unauthorized access, attacks, and vulnerabilities delivered via the Internet by cyber criminals. Because of less literacy about cyber crime and security, we are not maintaining the security properly.

Prevention tips for cyber crime

1. Install licensed copy of Operating System.
2. Install licensed copy of antivirus.
3. Read the fine print on website privacy policies.[12]
4. Keep your software updated.[13]
5. Talk to your children about the internet.[13]
6. Review financial statements regularly.[14]
7. Please sign-out or log-out your account.
8. Keep your firewall up-to-date.[14]
9. Maintain strong password and different password for every account.
10. Change your password regularly at least once in a month.
11. Don't reply to unfamiliar emails.
12. Update your browsers regularly.
13. Don't share your personal information via email, social sites or phones, etc.
14. While using any website please check weather website connection is secured or not.
15. Turn off or log out your computer when not in use.

CONCLUSION

We must take precaution of our self. We have to handle unlawful activities effectively. We must provide awareness in the society on internet use so we can change the psychology of user and disinclinethem. We need to increase cyber literacy. We have to follow rule. i.e. "Safety and Security First on Cyber"

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EXPLORING NEW TECHNOLOGICAL SOLUTIONS TO THE PROBLEMS OF A SMART CITY

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ABSTRACT
The paper will unwrap the various concepts associated with the term 'Smart City'. The present study will try to explore the idea of a smart city by providing definition and meaning to a smart city based on its different overarching missions and how its function is optimized. In building these megacities more efficient, equitable, liveable some obvious hindrances can occur. These obstacles identified as challenges to turn these technological utopias into giant dystopias. Cities around the world magnetize a large number of people for various reasons, and the rising population put a strain on urban infrastructure and public services. This leads to the challenges of managing transportation, sanitation, health care, energy and water consumption, job opportunities, education and problems of environmental change. Emerging trends such as automation, internet of things, artificial intelligence can provide solutions to make big cities smart enough to deal with these challenges. The role of these flowering technologies will be analyzed, pertaining to the economic growth and improved quality of lifestyle of the citizen of these megacities.

Keywords: Smart, big cities, challenges, solutions, IOT, AI, automation

The definition and concept of the smart city differ as per its mission, requirements of the citizens, visions of local government and most importantly, its technological advancement. It is really difficult to specify the elements that constitute the perfect definition of a smart city because of the great variety in the technologies used and diversity of the goals aspired by the smart city. The term 'smart city' is labelled to an urban area that integrates information and communication technology (ICT) and, IOT enabled sensors in its various systems to improve the quality of its different services and ultimately ameliorate the urban environment for the city dwellers.

Deakin defines the smart city as one that utilizes ICT to meet the demands of the market(the citizen of the city) and that community involvement in the process is necessary for a smart city. (Wikipedia,2013).

According to the report released recently, 60 percent of the world's population will likely to live in cities by 2030. This summons for cohesive planning,sustainable improvements, logical schemes to make the infrastructure robust enough to deal with all challenges and provide the best of facilities to its denizens. The concept of a smart city looks promising but has to deal with various challenging areas where perfect reliable solutions have to be provided to keep pace with the growing and developing activities in the cities. The main problems are difficulties of traffic, energy, water, and waste management, to provide efficient health care services, to develop a productive educational system, to find and practice rational solutions to control environment change. Swift urbanization has mandated the need for smart solutions. Various smart city solutions are developed and designed, keeping in mind the growing importance of ICT.This paper will unpack the box of challenges occur in the smooth functioning of a smart city and try to explore various technology-based solutions. Following are the areas that require perfect management by the city government to make a giant city into a smart utopia.

1. TRAFFIC MANAGEMENT

One of the most severe and irksome problems of any urban citizen is getting caught in minor to gigantic traffic jams. The daily commuting on the roads has become tossing and turning in the sea of vehicles. This leads to unnecessary delays and getting in an uncalled-for activity boils and evaporate every drop of patience out of many citizens. It results in non- productive performance in various activities for most people as they get stuck in traffic jams. Traffic congestion is also responsible for increased numbers of road accidents. Blocked traffic breeds more problems of air pollution, noise pollution and also interferes with the passage of emergency vehicles. Traffic congestion has become such a big issue that should be addressed in a very meticulous way by the city planners. Following are the technology-based solutions to curb the problem of snarled up traffic.

a.) Adaptive traffic control systems- It is a traffic management strategy in which traffic signal timing changes, or adapt, based on actual traffic demands. The traffic signals work smartly on a vehicle to infrastructure technology. This technology enables the cities to understand the flow of traffic also the time is calculated for the vehicles to halt idle at lights. This information can be used to adjust the timing of the traffic signal so that they coincide with traffic patterns during the day.

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b.) Smart Corridors- With the advancement of technology, it has become easier to make motorist commute faster. One such emerging tool is the 'smart corridors' that can alert motorist of accidents, weather events, and other obstacles. The motive of this technology is to make transportation official vigilant about traffic congestion and in turn they alert motorist of the same and give real-time feedback about the traffic.

c.) Autonomous Vehicle Technology-Autonomous vehicles are the most ambitious project of coming time. An autonomous vehicle is likely to reduce congestion with fewer accidents and driver caused traffic.Apart from it, there are various technological solutions like vehicle sharing apps, pedestrian tracking systems to defeat the traffic demons in megacities and help people to save their energy and time(Giarratana,2019).

2. WATER SUPPLY MANAGEMENT

Smart water management methods can provide more reliable and efficient water supply systems that can reduce the manual drills of managing water supply, lower the cost and improve sustainability. High- technology solutions in water distribution sector range from digital meters and sensors, supervisory control and geographic information systems.

a.) Smart Meters and Sensors- These are used to collect and transmit information in real-time. Smart water meter not only measures water flow but also uses wireless communication to connect to local or wide area networks allowing remote location monitoring and infrastructure maintenance through leakage detection and automatic billing and customer management including detection and countering tempering attempts(Jung Ho Kim,2018).

b.)Smart Technology to manage stormwater or excess rainwater- This technology combines weather forecast monitoring with real-time, automated control of stormwater infrastructure plus comprehensive data reporting. In Philadelphia, stormwater is managed smartly by a software. This software in the cloud continuously monitors the national weather service forecast and when it predicts rain, the pond's outlet valve closes automatically. After the storm, the software gauges the water level in the pond and open the valve to gradually release water at an optimal rate that the combined sewer can handle.

3. WASTE MANAGEMENT.

Due to population growth, it has become mandatory for megacity management to look for sustainable solutions for waste management. Waste management schemes should be zeroed down by keeping in mind cleanliness, recycling and segregation and collection of waste to give city dwellers, required and desired city atmosphere.

a.) Smart Bins- Smart bins can be equipped with the latest sensor technology or solar panels. Many European cities have installed smart solar-powered compacting bins. The solar panels work on solar energy and use sensors to continually compact the waste, that is deposited. The smart bin generates alerts for collection when the bin is full. It reduces the number of futile collection trips and truck routes can be optimized.

4. ENERGY DISTRIBUTION MANAGEMENT.

As smart cities are the future of humanity, it demands meticulous schemes to manage their resources and supplies. The current scenario of megacity challenges all the archaic patterns of energy distribution and look for a redefined efficient system to play a key role in the development of these giant cities. With the population rise in the big cities, the demand for energy has also increased. It has become compulsory for these megacities to develop a strong electrical infrastructure to pacify the high demands, to supportthe economy and integrate renewable sources. Here comes in picture the smart city concept that uses data and digital connectivity to improve its core functions, including sustainable energy management.

a.)Smart Grid-It is an electrical grid which includes a variety of operation and energy measures including smart meters, smart appliances, renewable energy resources. Electronic power conditioning and control of the production and distribution of electricity are important aspects of smart grids. Creating a smart grid is necessary to support smart city infrastructure. Smart sensors connected to IOT installed across the city will collect and analyze data so that city agencies can react to changes in the need of the citizens. Smart grid use sensors that collect data about consumers' energy usage ad requirements. Simply, a smart grid is more economical, reliable, sustainable and secure. It allows real-time communication with technology and consumers to create a more personalized service(*Wilkins,2018*)

b.)Smart Meters- A smart meter is an electronic measurement device installed by the utility to maintain two-way communication between the consumer and the utility and also manage the electrical system of the consumer. A smart meter is capable of communicating the real-time energy-consumption of an electrical system in very short intervals of time to the connected utility. In the electronic meters/electromechanical meters, the cumulative number of electricity units was recorded at the end of a month (or more) whereas a smart reader is connected to

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the utility which is capable of transmitting the electricity usage on a real-time basis.Smart meters thus facilitate real-time pricing, automated recording of the electricity consumption and complete eradication of errors due to manual readings and reduce labor cost and enable instant fault detection.

5. HEALTH CARE

A smart city system should include a strong health care facility program because healthy citizens are the focal point around which everything revolves. So the city managers should not only focus on smart infrastructure facilities but also on the well being of its citizens by providing them technology-enhanced health care services. Smart health care is not about curing a disease but to prevent it well in advance by early detection and prediction.

a.) IOT based health care solutions-Smart health care services incorporate various digital and mobile devices. IOT has a vital role in upgrading the health care sector and making it capable to minimize response time, offer quick emergency services, cut short the long queues, give remote treatment and collaborate with doctors around the globe. IOT in health care collect the data of the citizens through various smart wearable devices and mobile apps. This data can be sorted and analyzed by doctors, researchers and health care professionals for correct diagnosis and cure. The biggest advantage of the collection of data by various technological means is that it saves the time of both patients and hospitals and this leads to providing personalized treatment and medication. Preventive measures can also be suggested through real-time data collection.

b.) AI(Artificial Intelligence) also plays a robust role in health care sectors. In the absence of specialized doctors, robots communicate with patients and analyze the data provided and diagnose the problem and suggest the treatment.

c.) Big data analysis- In smart city health care system all private and government sectors should connect and create an effective database system about patient's medical history, ailments, surgeries, and test conducted. By unifying the data, patients can use hospital services anywhere in the city and on a larger scale anywhere in the country.

Thus the concept of the smart city looks persuading and promising in providing hassle-free life to urban dwellers, but at the same time, it has a bigger role to play, which is beyond economical development. It has to support a clean environment and make sure that environment change is not caused due to its rapid development. Programs like e-governance and affordable education should be reinforced so that services by the government are made accessible to the citizens in a convenient, efficient and transparent manner, and education could reach to everyone. So in a smart city, there will be intelligent and environment-friendly ways of transportation, waste management, electricity transmission, and distribution without compromising the overall quality of the entire system.

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GREEN IT: AN INNOVATIVE APPROACH TO TRANSFORM INDUSTRIES IN MIDC, TARAPUR, INTO GREEN INDUSTRIES

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ABSTRACT
Green Computing is the study and practice of environmentally responsible use of resources. It is a practice of mechanizing and employing sustainable development. Maharashtra Industrial Development Corporation (MIDC) is the project of state Government of Maharashtra for corporate setup and expansion. MIDC, Tarapur is well known for chemical, medicine, steel, textile etc. industries. This research paper intends to bring the transformation from conventional practice to green practice in core business operations in MIDC area. This paper will focus on identification of key areas that needs to be change and will try to provide the solution. The major focus will be on the solutions such as Virtualization, Going Paperless and Greening the Information System.

INTRODUCTION
Green Computing is a broad concept that glorifies sustainable growth and promotes sustainable economies. It highly popularizes biodegradability, discards obsolete products, minimizes power usage, and enhances information system. MIDC Tarapur, is an industrial area having 1548(large and medium scale) and 18480(small scale) registered industries. Some of the large scale industries emphasizes on green initiatives, however major problem lies in small scale and large scale industries. Industries has traditionally looked almost exclusively at the bottom line "Profit", however green-industry can promulgate a triple bottom line: "people, planet and profit".

PROBLEMS IN IMPLEMENTING GREEN TECHNOLOGIES
1. Improved environmental sustainability is not valued in capital allocation decisions.
2. Goals of sustainability team is not stream lined with capital allocation decisions.
3. Lack of awareness about the impact of inefficient use of technologies on environment.
4. Conservative attitude to accept the change.

PROBLEM IN EXISTING SYSTEM
1. **Information System:** Big Ventures in MIDC Tarapur, mostly emphasizes on SAP for data storage, processing and retrieval. And, when it comes to medium and large scale some industry still prefer Tally ERP software. However, there are various efficient DBMS software available that needs to be implemented in industries.
2. **E-Waste Treatment:** Disposing of electronic device is a big and growing issue in industries. Electronic waste contains various toxic materials such as lead, cadmium, mercury etc. that has adverse effects on human health. If these generated e-waste is not treated properly it can cause diseases from exposure to toxic materials. Following are the factors due to which handling e-waste is necessary:

a. Landfill Space
b. Toxic run-off
c. Impact on workers
d. Use and reuse of landfill space

3. **Procurement System:** Purchasing IT devices is narrowly focused on price that often militates against green solutions. Even, personal relations especially for MSI and SSI affects the procurement system.
4. **Electricity Consumption:** The industrial sector utilizes more energy than any other sector. It is used in the industrial sector for a variety of purposes, such as product generation, packaging, product heating and cooling, IT processes and maintaining the temperature of buildings.

DIMENSIONS TO DEVICE GREEN COMPUTING IN INDUSTRIES
1. E-waste Treatment:

a. **3 R's**: *The three R's – reduce, reuse and recycle – all help to reduce the amount of e-waste thrown away. They protect natural resources, land space and energy.*

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i. *Reduce:* The attempt to reduce the production and the consumption is important for waste hierarchy. The reduction is directly proportional to recycling and reusing of equipment. There is one-fold thought behind this– if there is few amount of waste, then there is few amount to recycle or reuse. Here are some actions you can take in order to reduce the e-waste:

1. Take duplex printing to reduce paper wastage.
2. Use electronic mail to reach out to people instead of sending hardcopy.
3. Buy durable goods that have long warranty. They generally run longer and save landfill space

ii. Reuse: Before putting electronic gadgets to the scrap or recycling, check whether it has some life remained with it.

iii. Recycle: The last step of the e-waste hierarchy is recycling. Recycling means converting electronic components into raw material that can be used further to make a new finished goods. Selecting and using a products that can be recycled, can be a first step towards efficient recycling.

1. Buy products that are made up of recycled materials i.e. the product should be environment friendly.
2. Buy products that can be recycled.
3. Invent new ways to recycle different items.
4. Avoid buying hazardous materials that could pose difficulty to recycle. Buy non-toxic products, whenever possible.
5. Use recycled paper for printing.

b. **Refurbishment:** It means "old" or used equipment that has been restructured to brand new working equipment. It may also refer to any **computer** device with fault that has been returned by the customers.

2. **Minimizing Power Usage**: This is a core element of Green Transformation of Industries. In pursuing energy-saving efforts, three elements need to be kept in mind: *"Less money, Less risk... smaller footprint, better reputation."*

a. **Less Money:** The industries projects direct financial savings by cutting electricity and gas bills. For this, emphasis can be made on three main components- Reduce energy used by devices: Ample amount of saving can be achieved by substituting the existing technologies with greener compatible version. Virtualization is one of the solution.

i. Virtualization refers to the act of creating a simulated (instead of actual) version of something. Virtualization allows to have two or more computer systems, deployed with two or more completely different environments, on one single hardware. For example, with virtualization, both a Linux operating system and a Microsoft Windows operating system can be deployed on one server. Alternatively, even Windows 10 desktop and a Windows 8 desktop could be hosted on one workstation. Virtualization can be classified into 3 categories, namely:-

- Desktop Virtualisation
- Server Virtualisation
- Storage Virtualisation

b. **Smaller footprint:** Carbon Footprint is the amount of carbon-dioxide output generated in air from the fossil fuels burned to produce needed energy in industries. It is dependent on the total amount of energy utilized by industries which extends from cradle to crave operations of business.

c. **Better reputation:** The energy saving efforts of an industries will have a strong, direct impact on its reputation. One potential immediate impact is on hiring and retention. People want to work with smart and savvy organizations especially "green" is considered as a key value.

3. **Going Paperless:** Another solution for adopting green strategy is converting most of the existing physical copy of documents in an office into digital form and continuing with the same. This will not only decrease the environmental impact but also the paper clutter. It will reduce the requirement of storage space, utility costs such as printing, ink, paper etc. Multiple copies of paper can be created, stored and can be retrieved as and when it is required. Even industries can use various technologies such as cloud computing, SaaS, IaaS etc.

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4. **Green Procurement:** Before purchasing IT equipment, the supplier and the devices needs to be considered by checking up with the below mentioned green buying criteria:

a. Smaller Size, Lower weight

b. Longer battery life

c. Low power usage

d. Green and slim line packaging

e. Meeting energy star standards

f. Use of RoHS compliant substances

g. Ease of Repair, Product take-back and reusability

CONCLUSION

To transform industries into Green Industries in MIDC, Tarapur we need to focus on four main aspects i.e. Information System of Industries, solving E-Waste problem, minimizing power usage and procurement system.

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LIMITATIONS OF AUGMENTED REALITY

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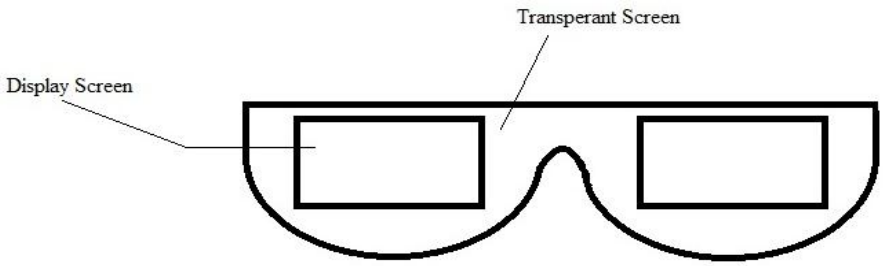
ABSTRACT
The technology of AR (Augmented reality) has grabbed the attention of the big giants of the technology sector in the recent years. The proof for this can be easily notice by their level of involvement in the development of the technology, the companies like Microsoft (Hololens, 2001) betting big on their products such as the Holo lens. They claims they'll bring computing to fields were it wasn't possible before like construction, medical, engineering etc. The field also has lot of future potential as it requires expertise in various fields. Also the industry helps boosting the growth of other industries such as Cloud Computing. The paper further discusses the usage of AR in the upcoming year as a tool for development at Industry Level.

LIMITATIONS OF AUGMENTED REALITY

Augmented Reality
Augmented Reality can be defined as combination of real world with virtual environment. Augmented reality can also be seen in the miniature forms in the apps such as snapchat wherein the user can add virtual stickers to images being shot in real time as well.

Functioning of the Augmented Reality headsets
The structure of augmented reality glasses work by projecting the light to display the content directly in front of the user eyes as shown in the figure 1, the headset then simultaneously processing the position of the head using the inbuilt sensors and also record (tracks) the movement of hands and the head and remembers the environment around itself. The virtual object being positioned around it is also noted down by the headset. The headset also analyses the hand moments directly using gesture based control or with help of joystick like controllers. The display is also transparent thus it serves only when the display is required or else the display is functioning as the glass.



THE USES FOR AR HEADSETS IN THE INDUSTRY
The application for AR headsets can be seen in many industrial avenues including Construction Sites, Advanced Machineries, development of satellites, etc. Some noteworthy applications would be

1) Studying and Collecting the Structural details of the building Virtually: Construction of some structures such as skyscrapers are be very expensive and time consuming so for that is requires high quality work and not even slight error as it could risk the lives of many thus using the AR headsets and collecting data and handing over details of the projects could help better visualize the projects and also help to collect data.
2) Repairing of the Advanced machineries without extreme expertise: The advanced machineries has many moving parts which causes wear and tear to itself, so, with the use of AR headsets the machineries could be repaired with understand the actual problem by running the simulations. Thus making the changes easier and simpler than before
3) Training the for advanced mechanical designing: The designs before had to be visualized before being constructed which imposed more probability of error as it allowed only very few people to understand the design and required lot of calculation and markings to be made also it required the design to be made in different projections. But the AR headsets could help people better visualize the project and improve usability of computers as it allows for multiple dimensions of 3D models to be super imposed directly on the field/are being worked on.
4) Better data collections of the physical environment: The camera and the sensors could help humans to collect more data points and then help to create a better model required as per the needs of the project.

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ADVANTAGES OF USING THE AUGMENTED REALITY

Ideally it includes the use of computing devices on a whole another level helping the users to identify the use of the available resources with ease and thus use the resources more effectively. Some other advantages include

1) Due to use of this of AR headset it would result in chances of lower the human error as the blueprint of the project could be handed to everyone easily and made understand in a more effective way.
2) As AR works in the conjunction with the natural environment it help with its super imposition of virtual objects and check the work with a simple glance
3) AR would also help to bring a computer (ubiquitous computing) for more fields and help computer come out of the existing zones to help and increase the productivity.
4) Live minor and major corrections could be made on projects and be transfer to everyone seamlessly.

CURRENT LIMITATIONS OF AR

1) Lack of Computing Power: The hardware being developed today is not sufficient enough to fulfill the computing needs. AR needs to calculate series of complex calculations such as the movement of the user and the placement of the objects around as well as it would also require changing the projections depending on the same.
2) Bulk of the Headset: AR headsets produced today are big in size due to amount of the hardware inside and it also doesn't have ergonomic design which makes it even more cumbersome to be worn for a long period of time.
3) Cost: AR headset are extremely expensive than tradition computer which paves a way for the potential users.
4) Lack of Availability: The AR headsets are mostly available for industrial usage and that to in selected countries (with proper facilities).
5) Low selection of software: As compared to traditional computer the availability of the software application is lower in AR. Very few selected companies are producing software for the AR technology to be used.
6) Limited Availability for Open Source System: The technology does offer any open source community or any type of the open source/design software/hardware which again leads to the slow development of the technology

SOLUTIONS

1) The computing needs to properly manage the gap between edge computing and cloud computing. The more data being processed on cloud the better as it would help the devices to live longer and be more compact.
2) The bulk can be reduced only by the use of advanced hardware which requires no to very little cooling. Also the weight distribution can also result in more comfortable experience of the users, the main display related technology can be added towards the front and the hearing aid could be added towards the sides and the processing and data transmission could be added at the back to more efficiently distribute the weight.
3) The cost can only be reduced when more OEMs start to roll out their versions of AR headset which lead to fierce competition and thus the AR headsets getting mass produced.
4) The initiative of creating a pen source software community around the AR could motivate hobbyist developers as well as the existing open source developers to look into AR software which will also help gain attention of ISV.

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IMPROVING EFFECTIVENESS OF ICT IN EDUCATION

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ABSTRACT
The term "Information and Communications Technology (ICT)" refers to audio, visual, and interactive mediums that work together to for sharing and presenting information.

Integration of ICT in teaching will surely help teachers in achieving the highly important global requirement of replacing traditional teaching methodologies with an ICT enabled teaching-learning environment. For developing countries like India, ICTs can surely prove to be significant in increasing the access to and improving the quality of education. It thus represents a potentially equalizing strategy for developing countries.

ICTs have the potential to motivate teachers and learners in the teaching-learning process by enabling easy access to relevant and up-to-date teaching materials. ICTs can help in developing a learner-centred environment.

This paper will shed light on use of ICTs in education system, factors that affect the successful implementation of ICT and ways in which the effectiveness of ICT can be improved. It will also help to analyse teachers' perception on effectiveness of ICT integration to support teaching learning process in classroom.

INTRODUCTION
UNESCO, 2005 defines ICT as the combination of all the computers, telecommunication and media technologies.

Information and communication technologies (ICTs) have provided society with a vast array of new communication capabilities, namely, instant messaging services, voice over IP (VoIP), and video-conferencing. It has proved to be useful in various fields such as education, research, agriculture, hospitals, sports etc.

World Bank (2018) states that, "The use of ICT in education can play a crucial role in providing new and innovative forms of support to teachers, students, and the learning process more broadly".

ICTs IN EDUCATION
Incorporating ICTs in education field relates to implementing IT based communication in routine instructional process. The usage of ICTs increases the efficiency and adds value to teaching and learning. It introduced an unprecedented dimension to learning. With ICT, creating a technology-enhanced environment in schools, students found learning more stimulating and engaging than in a traditional classroom environment.

UNESCO (2005) states that Information and communication technologies can complement, enrich and transform education for the better. It can help to ensure complete and unbiased access to education, enhancing quality of learning and teaching, professional as well as all-round development of teachers and improvement in the education management and administration process.

UNESCO, 2017 states that Information and Communication Technologies (ICTs) have the potential to transform special needs children's learning experiences. It provides varied alternatives for using information, understanding concepts, and giving feedback in learning.

ICT tools are available that can provide additional support to students with special needs. These tools include features such as easy-to-use interfaces and instructions, consistent placement of menus and control features, substantial use of graphics integrated with text, audio, video. They also give users the ability to set the difficulty level.

TEACHERS' PERCEPTION ON EFFECTIVENESS OF ICT IN EDUCATION
A structured questionnaire made with Google Forms, was used as the data gathering tool with a sample size of 100. Teachers from 12 different institutes were asked to answer the questionnaire. The tool consists of 10 questions in line with the research.

The objective of the questionnaire was to obtain teachers' responses regarding the extent of ICT tools' utilization, to understand how effective they believe are the ICT tools in the education system and also to get an understanding of the challenges faced while using ICT tools.

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Table-2: Teachers' Perception on Effectiveness of ICT in Education

Sr. No.	Item	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree(%)
1	I have complete access to ICT for preparing lessons and teaching at my school / college	2	2	9.8	49	37.3
2	ICT supported teaching makes learning more effective	2	2	7.8	37.3	58
3	I find it easy to understand and use new and emerging ICT tools to incorporate in teaching	0	2	11.8	60.8	25.5
4	Use of ICT enables students to be more engaged and interactive	0	3.9	11.8	43.1	41.2
5	ICT enables teachers to explain the lessons in lesser time than with traditional methods	0	2	11.8	45.1	41.2
6	Using ICT improves teaching quality by providing access to relevant and updated teaching material	0	2	11.8	43.1	43.1
7	Teaching can still be effective without the use of ICT	2	11.8	29.4	45.1	11.8
8	Students pay less attention when ICT is used in teaching	9.8	52.9	25.5	11.8	9.8
9	ICT can be only used for technology related subjects and not for other subjects like languages and history	15.7	64.7	7.8	9.8	2
10	Teachers are given enough time to learn and be comfortable with the use of ICT in teaching	3.9	19.6	13.7	51	11.8

IMPROVING EFFECTIVESS OF ICT IN EDUCATION

To further improve the effectiveness of ICT in Education, following points must be taken into consideration:

Training teachers to use ICTs effectively: Teachers should compulsorily be provided specific training in order to increase their ability to use ICT for efficient teaching. Such training should provide guidance within each discipline of ICT teaching and learning. Education managers, supervisors and decision makers should also be trained for better ICT use.

Providing technical support to teachers to use ICT: Technical difficulties like low or limited connectivity, viruses and other malwares, and printer failure sought to become sources of frustration for students and teachers. It hampers the process of teaching and learning. If there is not enough technical assistance, teachers will refrain from using computers due to the fear of equipment failure.

Ensuring returns on ICT investments: The educational institutes must decide on a minimum acceptable ICT infrastructure that includes affordable and reliable internet connectivity and security systems. These institutes must also target teachers with sufficient ICT literacy skills, ICT use in pedagogical settings, and subject-specific requirements.

Use of incremental pathway to deal with the high cost of ICT ownership: Total cost of ownership of ICTs can be considerable: training teachers and administrators, providing technical support, and installing up-to-date versions of software, and many more. When ICT is to brought into classrooms, management policies should consider an incremental pathway, that involves starting with establishing a basic ICT infrastructure and bringing in sustainable and easily upgradable ICTs.

Use of ICT tools to help minority language groups: There is a growing need of developing digital content in local languages which reflect local culture. Students with a different mother tongue from the official language of instruction struggle to find contents online in the language of their choice. This discourages them and leaves them behind in competition with the majority who can easily obtain information, prepare and present papers, and communicate efficiently, putting ICT tools to good use. ICT tools can also prove to be helpful to students to

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learn and understand the official language of instruction using features like speech recognition, relevant audio-visual materials, and chats.

Inexpensive tablets/ laptops for students: Inexpensive tablets/ laptops with features like lower power consumption and free learning apps designed especially for school students.

Use of ICT enabled White Boards or Smart Boards: ICT enabled white boards are used to project computer images on screen. These images can be manipulated, dragged, clicked and copied. It is found that students' engagement is generally on the higher side when ICT is used in classroom.

E-readers: E-readers are electronic reading devices that can store hundreds of books in digital format. They are useful in delivering reading material. They include features like portability, extended battery life, response to text, and ability to define unknown words. Moreover, many classic book titles are available for free.

Flipped Classrooms: The flipped classroom model provides access to lectures at home through computer-guided instructions and doubt clearing sessions in classrooms. It helps in better learning the curriculum. Students like flipped classrooms as they prefer discussion in class than lecture.

Designing customized learning applications for students: With the popularity of BYJU's and Toppr, institutes should also design such applications for their students to transform serious studies into fun learning.

Promoting educational tools: Institutes should promote the use of applications such as Padlet, Seesaw, Google Classroom etc. for efficient and flexible learning process.

GOVERNMENT OF INDIA'S INITIATIVES FOR ICT IN EDUCATION

The *"Digital India programme"* initiated by the Indian Government on 1st of July 2015, has transformed the country into an empowered society digitally.

The *"National Mission on Education via ICT (NMEICT)"* was launched on February 3, 2009 at Tirupati, Andhra Pradesh as a Centralized Sponsored Scheme to leverage the potential of ICT in teaching and learning process. It was initiated by the HRD Ministry to fulfil all the education and learning related needs of students, teachers and lifelong learners.

The *"ICT in Schools"* was first launched in December, 2004 and was revised in 2010 to mainly develop the capacity of secondary stage students on their ICT skills to make them skilful through computerized learning process. The Scheme helps to reduce digital gap amongst students having social, economic and geographical barriers.

To promote and improve ICTs in schools and colleges, the government has initiated the *"National Award for innovative use of ICT"* in 2017 to motivate the teachers.

The key projects for e-learning by the MHRD are

E-pathshala

E-pathshala, developed by the National Council for Educational Research and Training (NCERT), focuses on all electronic educational resources like textbooks, audio, video, periodicals and a variety of other print and non-print materials. On 7th of November, 2015, The Hon'ble HRD Minister launched the Web based and Mobile based App of e-Pathshala during the National Conference on ICT in School Education System.

ShaGun portal

A web portal named ShaGun (derived from 'Shala' & 'Gunvatta') was launched in January, 2017 by the Union Government. The word 'Shala' means School and 'Gunvatta' means Quality. It acts as a repository and online monitoring website to capture and showcase innovative ideas in the elementary section of school and continuously monitoring of the Sarv Shiksha Abhiyan (SSA).

National Repository of Open Educational Resources (NROER)

The NROER initiated to bring all digital resources together among all stages of education.

SWAYAM

The 'Study Webs of Active Learning for Young Aspiring Minds' (SWAYAM) is an integrated platform for online courses, using ICTs and covering school (9th to 12th) to Post Graduate Level. It ensures that every student of our country should get the best quality in higher education at affordable cost.

National Digital Library of India (NDL)

The NDL is a project to come up with a framework of virtual hub of learning resources with a single-window search facility.

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CONCLUSION

Various initiatives have been taken to promote and use ICTs in education but ensuring that its application has to be efficient, is essential. Proper implementation of ICT by leadership of the academic institution is a must. If the technology integration implementation process is carried out properly from the very start and ongoing maintenance is properly supplied, ICT integration will benefit all in the education system.

Finally, the integration of ICTs needs serious attention in order to develop the education system. Teachers, being well educated and having excellent abilities, should expertise their teaching techniques and strategy to support efficient learning and satisfy the demands of the teaching competencies in 21st century.

RECOMMENDATIONS

The results in table1 show that most teachers are aware of the educational usefulness of ICT. Most teachers agreed that ICT can help improve quality of teaching, save time, provide updated and relevant teaching material and make students more engaged and interactive.

The study also suggests that around 24% teachers didn't get enough time to learn and be comfortable with the use of ICT and around 22% teachers agree that students pay less attention while ICT is used. To tackle this, teachers must be supplied with adequate training to better comprehend and use the ICT tools at their best, which will eventually allow students to be more focussed in the learning process.

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INTERNET OF THINGS: VISIONS, APPLICATIONS, FEATURES, EXISTING SOLUTIONS AND CHALLENGES

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ABSTRACT
Internet of Things (IoT) is used since over a decade, this technology has advanced and it is emerging at various fields like various enterprises, automation, super systems and many day to day gadgets too. The trending technology is widely accepted all around the world, as the people experience comfort living and are more dependent on technology for their every activity. It has led to building of such cities which are actually working smart, use of radio frequency identification (RFID) and many more.

This research highlights the application of Internet of Things and how it has impacted the human life and what are the challenges that will be faced in future. It describes the implementation of IoT in various sectors and what are the observations experienced by the individuals.

Keywords: Internet of Things (IoT), Smart System, Sensors, Radio Frequency Identification (RFID).

INTRODUCTION
Internet - the most powerful and important creation. The concept of Internet of Things makes life more favorable to live a smart life in every aspect. There are Smart devices, Smartphones, Smart cars, Smart homes, Smart cities, which tends to create a smart world. This idea has been adopted since many years.

The successful vision of IoT, will require computing to extend traditional scenarios which involved portable devices and smartphones to the connection of everyday physical objects and the integration of intelligence with the environment with the help of the internet. The IoT can be completely integrated with medical and other critical devices and will be noticed in majority of sectors.

This research seeks to investigate the features, challenges and applications facing the dynamic world of IoT.

LITERATURE REVIEW
- **(Akanksha Bali, Mohita Raina, Simran Gupta, April 2018)** The research paper highlights the study of various fields of application of internet of things (IoT), it describes the methods in which the technologies needs to be developed. If the technology is developed while keeping in mind all the problems and the requirements then a solution can be derived. It provides guidelines for developing or redefining a process or method for the application of innovative technology by using internet of things.
- **(Falguni Jindal, Rishabh Jamar, Prathamesh Churi, April 2018)** It showcases the growth of internet of things over the past years and the IoT information lifecycle. The paper discusses on the uncertain future of IoT and the business risk which is always present in any new technology. The challenges of internet of things are divided into three challenges – technological, business and social. It deals with the solutions to the factors that might bring down the future of IoT.
- **(Ebraheim Alsaadi, Abdallah Tubaishat, 2015)** Features, challenges and vulnerabilities of internet of things are discussed in the research. It investigates the features, weaknesses and challenges with the developing technology.
- **(Sachin Upadhyay, February 2018)** The future of internet of things in this research transforms the real world objects into intelligent virtual objects.
- **(Yusuf Perwej, Bedine Kerim, Mahmoud Ahmed AbouGhaly, Hani ali Mahmoud Harb, February 2019)** It provides an overview of internet of things with technical details and application in the new emerging areas.

OBJECTIVES
- To study the application of IoT devices used in daily routine.
- To understand the acceptance of devices by people.
- To study the challenges associated with the new technologies.
- To know the benefits of using IoT devices.

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SCOPE OF THE STUDY

- A pilot research was conducted with a small size of 50 samples of individuals.
- Most of the data was collected from Professionals and Students in PG level.
- Time period being an important parameter, this research was conducted for around 30 days only.

SOURCE OF DATA COLLECTION

The data was collected from both primary and secondary sources, where the primary source includes a questionnaire for understanding the use of Internet of things in today's life and what is the scope of it. Secondary source includes case studies and websites.

The survey was conducted to study the existing solutions which are in use and get a clear vision of internet of things and the various technologies which are available to provide a solution to all the human problems.

FEATURES

IoT provides various kinds of services, works with some technologies and has different meaning for different people. The most important features on which IoT works are connectivity, analyzing, integrating, active engagement and many more.

- **Connectivity:** Connectivity refers to the establishment of a proper connection between all the things of IoT to the various platforms it may be server or cloud. There is a need for high speed messaging between the devices and cloud to enable reliable and secure communication.
- **Analyzing:** After connection there is analysis of the data which is collected and using the data to build effective business intelligence. If there is a good insight of data gathered then it helps in building a smart system.
- **Artificial Intelligence:** The AI technology uses data along with internet of things to live a smart life.
- **Active Engagement:** IoT makes the connected technology, products or services develop an active engagement between each other.
- **Endpoint Management:** To avoid any kind of failure in the system we need to ensure that all the endpoints of all the IoT systems are well managed.
- **Sensing:** There are sensors present in almost all IoT technologies, the sensors detect the environmental changes and provides a report on the current status. Without sensors we won't be able to detect all such changes.

APPLICATION

The Application of IoT is visible in various sectors. Some areas where IoT is frequently used:

➢ **Smart Cities**

The smart cities are built with all well-developed IoT technologies which involve fields like monitoring the historical places, CCTV in all buildings and parking areas for security, consistent management of crowd and traffic and so on.

➢ **Smart Agriculture**

It involves the use of various technologies which are present in today's time to manage agriculture. There are various strategies and techniques which are tested developed in the laboratories that leads to monitoring the soil, studying the changing climatic conditions and weather, greenhouse present at different places which manage the temperature and also helps in the production of maximum organic and healthy fruits and vegetables.

➢ **Healthcare**

The IoT technologies are applied at different levels in medical field or healthcare like monitoring all the patients and checking their health status frequently through new technologies, monitoring and maintenance of medical fridges and keeping a track of the available medicines and vaccines.

➢ **House Automation**

There are various types of technologies developed for building a smart home with automated devices or appliances designed to save energy and avoid wastage of resources, monitoring devices for security and prevention of theft or robberies and many more which makes the human life comfortable and enhances smart living.

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➢ **Industrial Area**

In the industrial sectors the IoT technologies helps in dealing with the harmful gases present at chemical plants, manages and monitors the oxygen level and temperature, recognizes the problems and provides solutions for controlling the same.

➢ **Security & Surveillance**

There are CCTV cameras and various other devices or IoT technologies which restricts people from entering restricted or unauthorised areas, detects explosives or any harmful devices at various places, helps in maintaining the radiation level at nuclear power stations.

CHALLENGES

There are emerging challenges and vulnerabilities which are identified:

- **Security Challenges**

There is privacy and security challenges as the system would be in a threat for any physical manipulations or virus. There are sensors installed at many places which provide security, if any physical attacks occur the first thing to be destroyed will be the sensors.

As there is development in internet of things the number of possibilities for security rises as our lives are involved. There are a lot of unsecured devices which are available and network blocking which is a common threat of an unauthorised entry or a huge data loss.

- **Societal Challenges**

The society where we live, the customer requests and requirements keep on changing. It is a challenge to meet up to the dynamic requirements of the society. The human behaviour is most complex thing to understand and the technology needs to be developed in such integrated format that it could recognise the human habits and behaviour. There are governmental laws and rules for the societal welfare and to avoid any harm which might be caused due to the IoT technologies.

- **Software Development Challenges**

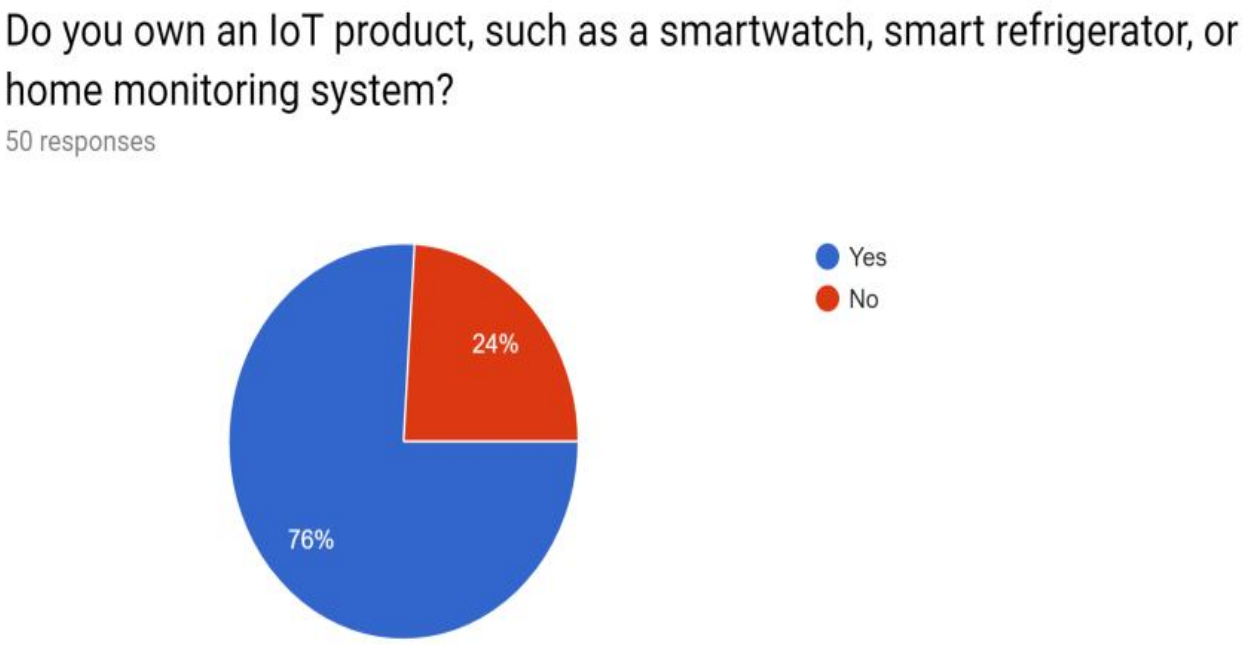
The big data and data analysis form a challenge which is of a large scale. There is a large volume of data and the velocity of the data is increasing with the number of increasing devices. The network connectivity to various devices is not scalable, as the current network structure will not be able to serve the future demand and software development of the people.

EXISTING SOLUTIONS

The existing solutions available in internet of things are in the form of new developed technologies which are used. To study the use of existing solutions a survey was conducted and the following results were derived.

Sample units consist mostly the youth who are more active to grab any new technology available in the market.

DATA ANALYSIS



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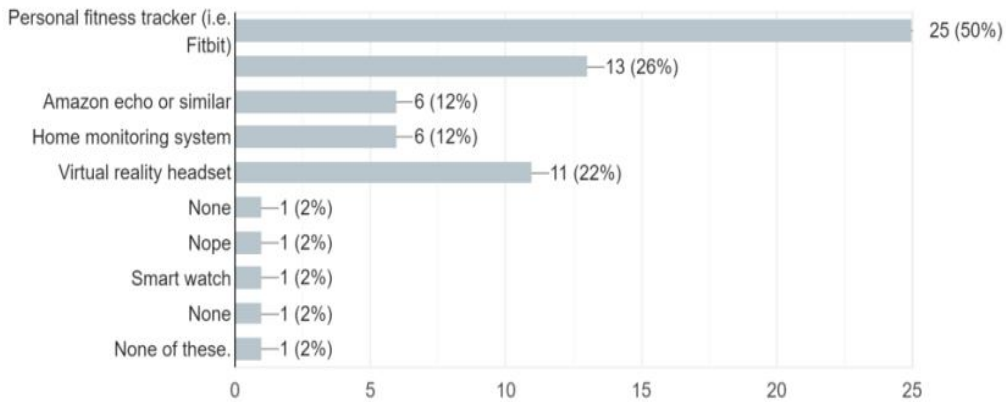
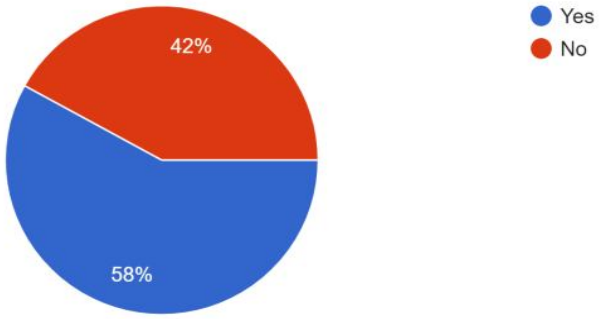
Which IoT product(s) do you own? Select all that apply.

50 responses



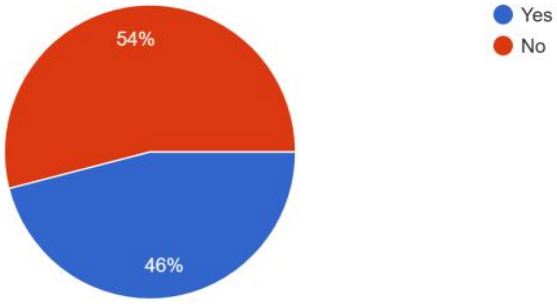
Do you use an app to manage your IoT devices?

50 responses



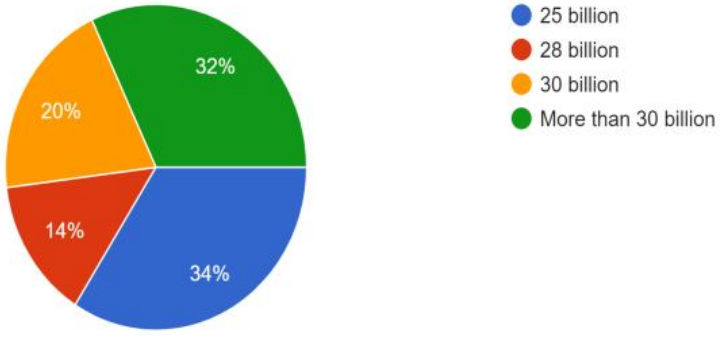
Do you regularly update the password on your home router?

50 responses



How many IoT devices are there estimated to be by the year 2020?

50 responses



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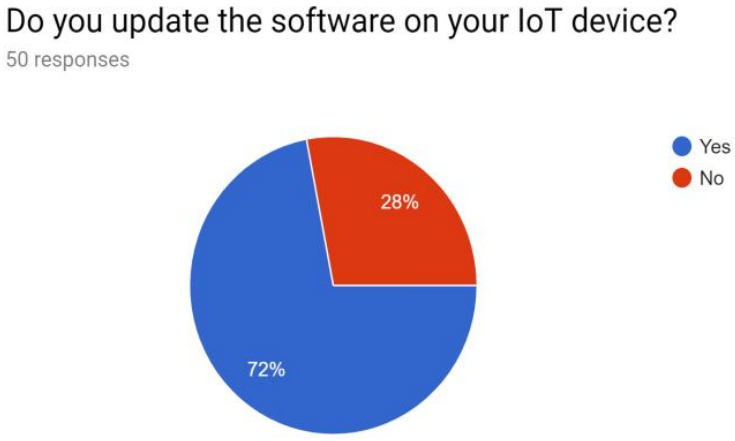

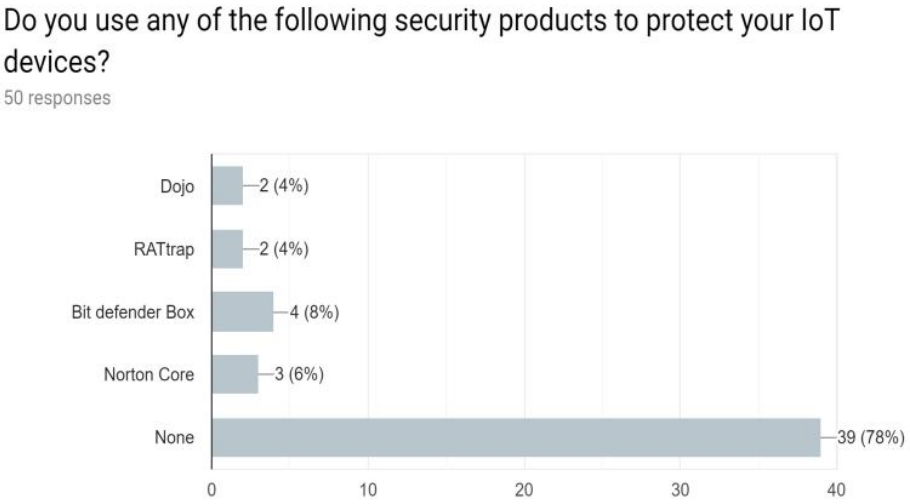

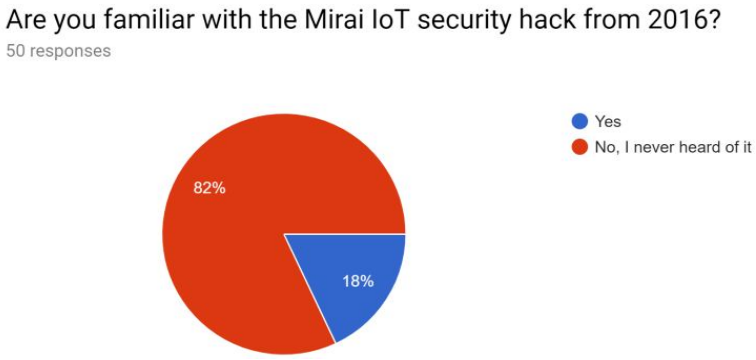

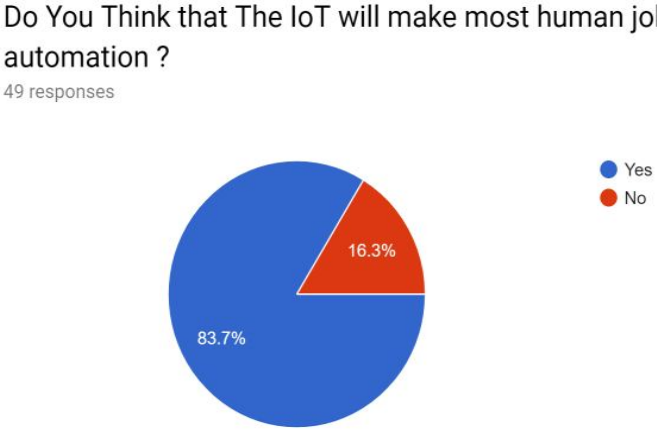

FINDINGS, SUGGESTIONS AND RECOMMENDATIONS

Throughout the survey it is observed that people are adopting a healthy lifestyle and 76 percent of the people use IoT technologies. The most commonly used devices mostly include smart watches (Fitbit), smart refrigerators and amazon echo.

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The only thing which is neglected is the security of the IoT device which contains huge amount of personal data. It is expected that in the future the number of IoT devices which are present will grow to more than 28 billion.

The devices which are developed should be ethically designed with the aim for making the human life better and should not be harmful to the society. IoT devices should be applied in various fields so that it will benefit the society, maximise profit and production of companies, lead to economic growth of the country.

CONCLUSION

This paper covers the analysis of various applications and features of IoT and what are the challenges faced. The future of internet of things (IoT) is uncertain as it all depends on the acceptance of technology by the people, if the people will not accept the changing technology due to their orthodox mind-set then the smart devices and gadgets will not be used and it will be a threat to the technology. The data collected by sensors, mobile networks and other IoT devices need to be secured by using various control options. The various challenges faced in IoT needs to be addressed and technological development will lead the threats to success. There is need for a secured infrastructure, network and connectivity, interoperability standards, heterogeneous devices and some other issues which are important and needs to be addressed. The privacy and security are the important aspects in IOT which will play a lead role in shaping the future of the way internet of things emerge in the next few years.

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ROLE OF LEARNING OPPORTUNITIES OF AN ENTREPRENEUR IN THE DIGITAL ERA

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ABSTRACT
Digital Literacy is the ability to use information and communication technologies (ICT) to find, evaluate, create, and communicate information, requiring both cognitive and technical skills. E-Skills refer to the ability to use and develop ICT to adequately participate in an environment that is increasingly dominated by access to electronically enabled information.

The digital era has started changing an entrepreneur from diffident to confident citizens. The air of change will free from most miseries in the digital era. This air has started blowing and will be blowing harder and pleasantly in less than five years from now. This will alter the destiny of India.

Focusing on women and ICT is a unique opportunity, where mobile phones along with the Internet are helping to address shortages of skilled workers, introducing low cost technologies that can tackle most of the women issues in employment.

Keywords: Entrepreneurship| ICT Based technologies |Opportunities| Women Entrepreneur

INTRODUCTION
The people who create businesses are called entrepreneurs. "The new business opportunities have encouraged entrepreneurship on a grand scale has been described as the "capacity and willingness to develop, organize and manage a business venture along with any of its risks in order to make a profit". An entrepreneur is Personal entrepreneurship which is carried out by one an individual independently who, rather than working as an employee, founds and runs a small business, assuming all the risks and rewards of the venture. The entrepreneur is commonly seen as an innovator, a source of new ideas, goods, services and business or procedures.

KEY ELEMENTS OF ENTREPRENEURSHIP
1. Innovation
2. Risk Taking
3. Vision
4. Organizing Skills

Entrepreneurs are gaining momentum all over the world, but at the same time they are facing a number of participate in a competitive situation. These challenges can be faced with making them and their family aware of the opportunities available to them

OBJECTIVES OF THE STUDY
1. To understand the role of an Entrepreneurs
2. To discuss the role of digitalization for an Entrepreneurs
3. To focus on the opportunities of employment for digitalization
4. To understand the Role of Social Media in the life of an Entrepreneurs
5. To discuss the areas in which are engaged as a business activities?
6. To focus on issues and Challenges faced by an entrepreneurs in digital world

RESEARCH METHODOLOGY

Data Collection	Survey
Type of Data	Primary and Secondary
Type of Questionnaire	Structured
Research Instrument	Questionnaire, Interview
Statistical Tools used	Tables, Columns,
Sample Size	50
Sampling Technique	Random Sample

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LIMITATIONS OF THE STUDY

- This study is limited with respect to Gender Consideration (Only Women are Considered)
- An engaged only in Entrepreneurship is taken into Consideration.

ROLE OF WOMEN BEING AN ENTREPRENEUR

1. Self-Identity
2. Social Status
3. Innovative Thinking
4. New Challenges for Opportunities for self-fulfillment
5. Employment Generation
6. Freedom to take own decision and being independent
7. Family Occupation
8. Need for an additional income
9. Role Model to others
10. Fright future of their wards
11. Success stories of Family and friends
12. Government policies and procedures

ROLE OF DIGITALIZATION FOR WOMEN ENTREPRENEURS

Digitalization is the use of digital technologies to change a business model and provide revenue is shown usually as the top item in an income and value-producing opportunities; it is the process of moving to a digital business. Social media are influencing each other computer-mediated technologies that facilitate the creation and sharing of information, ideas, career interests and other forms of expression via virtual communities and networks

i. Easy entry into the market
ii. It opens up new market
iii. Acquires new Customers
iv. Develops new products and services
v. Minimizes risks
vi. Improves skills and knowledge
vii. Easy accessibility
viii. Wide scope
ix. Easy sharing

OPPORTUNITIES FOR EMPLOYMENT /AREAS COVERED UNDER DIGITALIZATION FOR FEMALE ENTREPRENEURS

i. Clothing
ii. Jewelry
iii. Home Décor
iv. Food Items
v. Paper Bags
vi. Recipes of various food items to be uploaded on You-Tube
vii. Hobbies like Singing ,dancing, painting to be explored through Social media

ROLE OF SOCIAL MEDIA

The Internet and other new communication technologies are presented as remedying a good many problems and barriers encountered by women, such as through changing the traditional balance of power and opening up opportunities for less economically, socially and politically powerful groups, including women.

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i. Women have mainly used the Internet and other new communication technologies to create and develop virtual communities, within which they can now share experiences, concerns, beliefs and common interests.

ii. Developing numbers of women venture capitalists, business owners and consumers use the Internet to interact with and support each other, becoming key players in the online landscape.

iii. Women's groups are created online to offer by exchange information give an assistance through providing them, and especially entrepreneurs and executives, with information and lists of contacts.

iv. Women's connections via the Internet also have positive implications in real life.

v. By giving them a channel whereby they can share experience and information as well as commitment to a common activity, virtual social networking not only creates a visible and agency-laden community, but also improves their experiences.

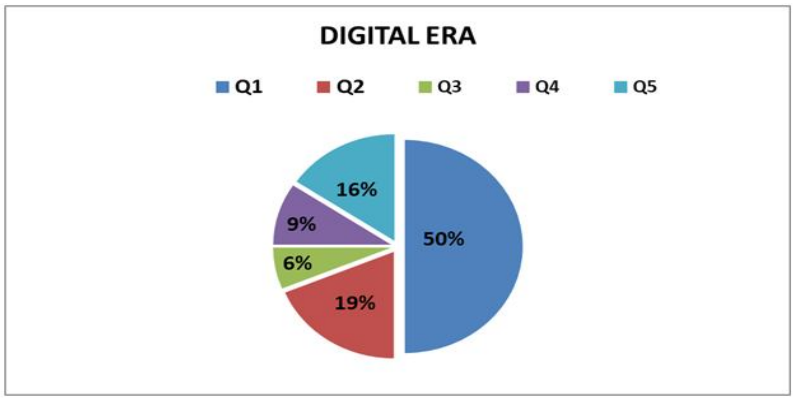
ISSUES AND CHALLENGES FACED BY WOMEN DUE TO DIGITALIZATION

1. Lack of training
2. Lack of information and knowledge
3. Lack of Exposure
4. Problem of Connectivity of Internet
5. Delay in delivery of Goods
6. Non-Compliance of Quality of product
7. Problem of Payment to the supplier
8. Dependency on others for technical aspects
9. Problem of exchange of products
10. Non-assurance of retention of the customers

QUESTIONNER

1. The digital gender divides at a glance?
2. The future of work for women: more at risk of automation?
3. Women at work in the digital era: less training but higher labour market returns?
4. Women inventors: a narrowing gap in patenting activity?
5. Bridging the digital gender divide: from national practices

GRAPH



FINDINGS

The present study illustrates that majority of the women entrepreneurs were married and belongs to the age group of 30-39 years.

i. It is found that majority of women entrepreneurs belonging to Hindu religion and most of them belong to open category and have autonomy to do the business.

ii. Among the women entrepreneurs having extensive information or understanding graduates and post graduates were dominating than others.

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iii. Most of the women entrepreneurs are living in a couple and their dependent children and the family size ranges between 1-3 members.

iv. The study from evidence and reasoning that a major group of respondents has got up to 10 percent of returns at their initial stage; later their returns showed an upward trend i.e. more than 10 percent. They are expecting a downward trend in returns due to growth of similar enterprises.

v. The main reason of women entrepreneurs in choosing the present line of activities are existence of similar business in neighborhood, no difficulty in securing technical knowledge, related to profession or occupation pursued so far and higher margin of profit.

vi. Another reason to start this Business, was financial stimulated desire helps their husband.

SUGGESTION AND RECOMMENDATIONS

i. Women should be educated enough to handle her own business in the field of digitalization.

ii. Every family should encourage and support their female family members for business activities as Digitalization gives them good opportunities

iii. Training programs of Digitalization should be attended by the women to get adequate information

CONCLUSIONS

Consequently, a number of actions and initiatives are recommended in order to enhance, promote, and support women's active participation as entrepreneurs and employees in the digital sector, as well as in the other sectors of the economy, by exploiting opportunities. The main fight to decide who is superior in terms of ability or strength, that will activate women in the targeted level of training, selection, and participation in entrepreneurship and employment with a focus on : the Actions that can benefit the participation of women in entrepreneurship, developing a common definition and understanding of what digital skills and competences are, improving the understanding and definition of digital skills needs, upgrading the digital skills of the labour force with a focus on professional-related digital skills, overcoming the obstacles and or limitations some people face to obtaining digital skills which including lack of interest, awareness, resources and knowledge, as well as fear of technology and, finally, providing relevant digital skills training opportunities for all.

Actions that will further improve the quality the role of women in the field of technology, either as an employee or as an entrepreneur, making the training and a formal qualification more attractive as a career choice, with a focus on encouraging more women to participate, increasing the number of young people trained for professions. New digital tools are an empowering and catalyze responses to complex global challenges, and can serve to support a new source of inclusive global economic growth. To seize this opportunity it is essential that no one, and especially no woman, is held back in trying to achieve their aspirations. What the future will hold for women depends on what policy does today. Now is the time to step up the efforts and take advantage of the digital transformation to ensure that it represents an opportunity for women and a chance to build a more inclusive digital world.

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A LITERATURE REVIEW ON IOT BASED SHREWD WATER QUALITY MONITORING SYSTEM

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ABSTRACT
The customary strategy for testing the water standard is to assemble tests of water physically and send it to the lab. This strategy is tedious, of wastage of labour, and not conservative. In this paper, the water quality estimating framework that we have scrutinized checks the nature of water continuously through different sensors to gauge the nature of water. The Wi-fi module in the framework moves statistics gathered by the sensors to the microcontroller, and transfers the information to mobile/PC. This framework can keep an exacting beware of the contamination of the water assets and have the option to provide a domain for safe drinking water.

Keywords: IOT, Water Quality, Water level, PH, Conductivity, Temperature, Turbidity.

1. INTRODUCTION
Water is one of the countless essential commodities that has been skilled to the humanity. However, some human exercises speeded up the sullying and crumbled the water assets. For this reason, water quality observing is important to recognize any adjustments in water quality parameters from time-to-time. The Central Pollution Control Board (CPCB) has built up a progression of observing stations for water bodies across the nation over which the water quality is checked on either month to month or yearly premise. Every one of the stations will work continuously and central station can get to information from any of the above stations utilizing GPRS/GSM administrations. The framework is meant for constant on location discerning and ongoing enumeration of water quality information where the ascendancy can get to the documentation on the smart phone/PC through Internet. This framework utilizes different sensors to gauge the parameters, is affordable and requires less labour. Internet of Things is characterized as the system of physical items installed with sensors that empowers these commodities to gather and exchange data. Remote advancements, for example, the Wi-Fi, Bluetooth, ZigBee enable the appliance to be associated with the Internet and to one another. In Ubiquitous Network Architecture savvy things are a piece of the Internet; approved clients approach data; servers go about as a plummet to congregate information from each item. One can make applications like sensor logging with the assistance of ThingSpeak. ThingSpeak can send sensor's information to cloud to store it in a channel utilizing sensors.

2. LITERATURE REVIEW
2.1 Smart Water Monitoring System Using IOT at Home [1]
The paper proposes a shrewd sensor interface gadget that integrates water tank level monitoring, water pollution monitoring and water pipeline leakage monitoring.[1] The framework mechanization is spoken to by utilizing Labview programming. The microcontroller is the central part which controls all the gadgets (ultrasonic, pH, temperature, stream sensor, motor, 22 GSM) that are associated with it. Microcontroller sends the information to phone/pc through the USB connector. In this model, the coding is written in Arduino IDE. The output here, is shown on serial monitor. The proposed framework keeps running on battery power and contains four sub circuits working synchronously; sensor circuit, controller circuit, SMS circuit and relay driver circuit.

2.2 IOT Based Water Quality Monitoring System [2]
The system enforced checks the standard of water in real time through varied sensors (one for every parameter: hydrogen ion concentration, conduction, temperature, turbidity) to live the standard of water. The sensor catches the data as analog signals. The ADC then changes these signals into digital formats. Microcontroller acknowledges and sends the statistics gathered from the sensors to the web page through Wi-Fi module. This can be done with the assistance of coding. The code is written in Embedded-C and Arduino programming is utilized to reproduce the code.

2.3 SMART WATER QUALITY MONITORING SYSTEM FOR REAL TIME APPLICATIONS [3]
A real time observation of water goodness by IoT is projected. Different sensors (turbidity, pH, temperature, conductivity) are used to access the data which is controlled by Arduino controller. The examined statistics is handled through the microcontroller in the Arduino module and is then transferred using GSM/Wi-fi module. The microcontroller in Arduino will examine itself and course the digital information and the GSM model will send the water quality factors to the smartphone/pc by the SMS, which can be observed on the LCD. The transmission is performed with the help of coding. Embedded-C language is used to writing the code and Keil u vision software is used to simulate the program.[3]

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2.4 IOT Based Low Cost System for Monitoring of Water Quality in Real Time [4]

The paper proposes a sensor based water quality observation system that is employed to measure physical and chemical parameters of the water. The parameters, temperature, pH, TDS and turbidity of the water can be estimated. The Raspberry Pi model is utilized as a center controller. The Raspberry pi will get to the statistics from various sensors and afterwards then form the information. The sensor information can be seen on the cloud utilizing ThingSpeak App.

2.5 Smart Water Monitoring System using IoT [5]

The paper presents a blueprint of an affordable system for real time observance of the water quality and amount of water using IOT (internet of things).The framework comprises of Arduino microcontroller, water stream sensor, pH, turbidity sensor and ultrasonic sensor. The Arduino is the primary processor of the framework which controls the information created by the sensors. Wi-Fi module is associated with the Arduino which helps to move the information over the web. The ultrasonic sensor estimates the water level when the water stream arrives at a certain level and other sensors like temperature, pH and turbidity sensor measure the water quality.

2.6 Smart Water Quality Monitoring System Using IoT Environment [6]

The paper presents a smart water quality monitoring with sensor interface device in Internet of things.[6] The proposed framework gathers the five parameters of water- pH, water level, turbidity, conductivity and temperature with different sensors utilizing ThingSpeak. The core of the equipment segments is the Arduino board and Wi-Fi module which helps in transmission of the information.

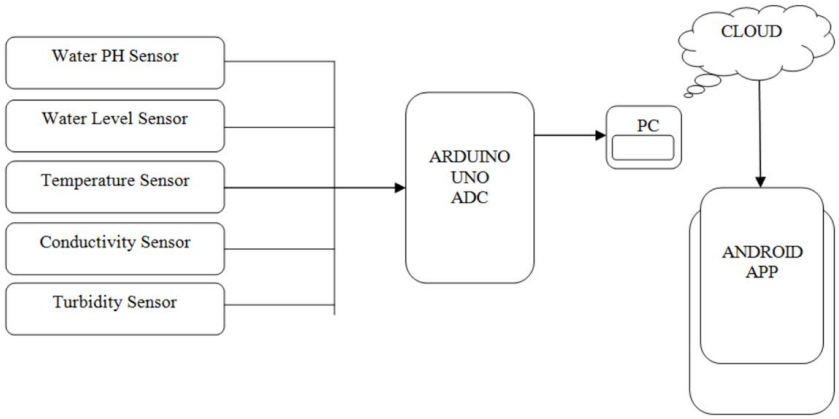

Figure-[1]: The illustration of smart water quality monitoring system in IOT environment [6]

2.7 Water Quality Monitoring System Based on IOT [7]

The paper presents a prototype and development of an affordable system for real time observance of the water quality in IOT. The framework has sensors that facilitate to compute real time values, Arduino atmega328 that converts the analog values to digital ones and a LCD showing the output from sensors. Wi-fi module provides the affiliation between hardware and code. BLYNK app is put in within the android version to envision the output.

2.8 Intelligent IOT Based Water Quality Monitoring System [8]

The system here employs pH detector and TDS meter for measurement of the water quality parameters concerning protons and total dissolved solvents. Additionally, machine learning algorithmic program K-Means agglomeration has been used for predicting the standard of water based on information sent from various water samples. The framework here comprises of three parts. First segment is the Arduino Microcontroller part where PH and TDS sensor sent in water are associated with microcontroller which gives the PH and total dissolved solvents output, based on Water Quality. The information received by Arduino is then sent to Edge level processor called the Raspberry Pi3 utilizing serial correspondence, which is second part. In Pi3, K-Means Clustering Machine, learning calculation has been utilized for anticipating the Water Quality dependent on PH and TDS. The last segment is recording the water parameter and to forecast it with date and time in the cloud server for water authorities to access from their phones to have information of water being utilized by occupants.

2.9 IOT Based System for Water Quality Monitoring [9]

The paper intends to present the blueprint and built of a low-cost system for real time recording of water quality in an IoT environment. The system consists of several sensors which are used for computing physical and chemical parameters of water. This system comprises of sensors like pH, temperature, conductivity, turbidity;

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these are associated with the Arduino microcontroller. The data will be transferred persistently from the WSN through microcontroller and Wi-Fi. We can control and transfer this information to cloud and clients can get to this information through Blynk app.

2.10 IOT BASED WATER QUALITY MONITORING SYSTEM [10]

The system consists of some sensors which measure the calibre of water parameters such as pH, turbidity, conductivity, dissolved oxygen and temperature. The computed values from the sensors are handled by microcontroller and these values are transmitted remotely to the core controller that is raspberry pi using Zigbee protocol.[10] The proposed framework here presents wireless sensor networking utilizing sensors to measure water quality; microcontroller and Zigbee module which make sensor network simple, of low finance and more productive. Moreover, to screen information from everywhere throughout the world, IOT environment is given utilizing raspberry pi for creating gateway and cloud computing technology to monitor data on the internet.[10]

3. CONCLUSION

The effective, low cost and constant water grade discerning structure has been studied. Through this framework, the authorities can monitor the degrees of contaminations happening in the water bodies and send quick alerts to the general population. This can help in averting illnesses caused because of contaminated water and presence of metals. Brisk moves can be made to check extraordinary degrees of contamination like on account of the Ganga and Yamuna streams. The framework can be effectively introduced with the base station held near the objective territory.

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A STUDY ON EMERGING SOFTWARE ENGINEERING TECHNIQUES IN SOFTWARE TESTING

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ABSTRACT
Software engineering deals with organized, self-controlled, measureable view to the growth, action, and preservation of software. Software testing is the process of evaluating the developed system to assess excellence of the final product. Unfortunately, duration of software testing process is sustained and becomes extortionate. As the systems grow, software testing and maintaining the quality becomes very difficult. Therefore, there was an urge to reduce the testability time by using some proper technique. ISO:9001, Six Sigma, CMMI, IEEE, etc. are some of the Standards which is followed by software company to give confidence to the user that the end product is up to mark. ISO provide used system Audit. Six Sigma objectives is to solve specific product or process connected disputes within the framework of complete organizational process enhancement. CMMI intentions at process progress in specific self-controls or process areas. IEEE standard is used to understand the necessities of good software application during the various lifecycle. Continuous evolution is required in standard procedure to improve the product and process quality.

Keywords: ISO: 9001, Six Sigma, CMMI, IEEE

INTRODUCTION
In early of 21st century, many people deal with software. It might be calculator, mobile and so on. As time has passed, requirements and updates in software also increase. So software manufacturer brings new software in market. But users do not get satisfied by using them because of their poor quality and does not work as expected. Mean time software engineering concept came in picture. Software engineering deals with organized, self-controlled, measureable perspective to the enhancement, operation, and preservation of software. This implies that if you want to produce fresh software, there should be some systematic way to develop the cycle of software engineering. It says that your first step must be to understanding users requirement, after in-depth analysis of requirement, we can move for design part and then implementation and at last deal with maintenance and after that we start with testing. In this last part we come to know that software is not according to the users requirement and fixing of this defect is very expensive at this phase , and it's quality is not up to mark. To overcome this defect, testing was done at extremity of every phase. And two -different team were form called as Software Quality Control and Software Quality Assurance. Software quality control team deals with identifying defects where as assurance team deals with preventing defects. And for preventing defects different milestones were set called as Standards.

Figure-1

Quality
Traditionally, Quality of product is defined in terms of its appropriateness of purpose. That is a good quality product does exactly what the users expected to do, since for almost every product, fitness of purpose is interpreted in relation to contentment of the necessities settle down in the SRS document. Although fitness of purpose is acceptable delineation definition of quality for many products such as a car, a table fan, a grinding machine, etc but is not wholly true for software product. For example if a software product correctly performs

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the entire functions that have been encompass in SRS document, cannot be consider as quality product if it has unusable user interface, incomprehensible and un-maintainable code. So modern view of quality is defined by the factors such as the following:-

- **Portability:-** A software product is said to be portable, if it can be effortlessly work in different hardware and operating system environments, easily interface with external hardware devices and software products.
- **Usability:-** A software product is understood to be usability, if different categories of users can straightforwardly quote the functions of the product.
- **Reusability:-** A software product has good reusability, if distinct modules of the product can be easily be reused to ripen new products.
- **Correctness:-** A software product is right when different specifications have been accurately enforced as indicated in the SRS document
- **Maintainability:-** A software product is maintainable, if errors can be easily corrected whenever they originate, new functions can be easily added to the product, and the functionalities of the product can be easily modified.

Why we use Standards

Software standards consists of certain terms, ideas, information formats, document styles and methods agreed upon by software designers so that their software can comprehend the files and information produced by a distinct computer program. A group of developers who contribute to the definition and maintenance of the standard must accept and incorporate a certain protocol to be deemed a standard.

ISO 9001 Certification

ISO 9001 is awarded by an international standard body. The ISO 9000 requirements are based on the principle that excellent quality products are evident to automatically follow if a correct manufacturing method is followed. Standard reliability certification ISO 9001 by demonstrating to clients that their products and services fulfill expectations. Certification is legally necessary document in some cases or in some sectors.

The certification method involves implementing ISO 9001:2015 criteria and then fulfilling those criteria by finishing a successful registrar's audit confirming the organization. Requirement to certify by ISO 9001 standards are:-

1. Management responsibility

- Management must have an efficient policy of quality.?
- Person or team whose work responsible for quality must be defined.
- A management representative, responsible for quality system can be work in unbiased manner if that representative is not from development process team.
- Audits must periodically review the efficacy of the featured system.

2. Quality system

It is necessary to maintain and document a quality system.

3. Contract review

To know the required terms and conditions, an organization must review the contract.

4. Design control

The design process must be correctly monitored, including code control, excellent configuration control, verified inputs, verified designs, output of quality design, and controlled design modifications.

5. Document control

Proper procedure must be followed for document approval, issue, removal and changes. For that necessarily configuration management tools can be used.

6. Purchasing

Purchased material and checked that bought-in material is according to requirement.

7. Purchaser supplied

Material provided by a buyer must be managed and verified correctly

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8. Product Identification
At all phases of the process, the product must be recognizable.

9. Process control
Development must be correctly managed and meet the requirements of quality as set out in the quality plan

10. Inspection and testing
Required effective software testing and should maintain test records.

11. Inspection, measuring and test equipment
It must be correctly maintained and calibrated if integration, measurement and test equipment are used

12. Inspection and test status
The status of an item must be recognized.

13. Control of non-conforming product
Keeping out of published product untested and defective software.

14. Corrective action
Requirement for both fixing and error causes when detected and recommend enhancement if necessary.

15. Handling
Clause deals with software package storage, packing and shipment.

16. Quality records
Recording the steps for controlling, quality of process in order to confirm that they have actually take place.

17. Quality audits
Audits must be carried out to find the effectiveness of quality system.

18. Training
It is necessary to define and fulfill the training requirements.

These all requirements are summarize in terms of Document control, Planning, Review, Testing and Organizational aspects.

Capability Maturity Model Integration (CMMI)
The CMMI is used to implement quality Assurance in an organization. The CMMI explains an evolutionary route from an adhoc, immature to mature, disciplined process which identifies the foundational pillars of an optimal software system. The CMMI provides as an input for developing software and servicing planning, engineering and executive which helps boost the institution's capacity to achieve expenditure, schedule, functionality and product quality requirements. The CMMI helps to assess the maturity of the software development process of an organization and compares it to the industry's state of practice. The CMMI categories five levels of process maturity:-

- **Level 1-Initial**

The process of software is described as both adhoc and messy. There are few or no procedures that are defined and followed.

- **Level 2-Repeatable**

The fundamental methods of project management such as cost and schedule monitoring are created. In projects with comparable apps, the same method is used to repeat previous achievements .

- **Level 3-Defined**

The management and engineering application development method is recorded and incorporated into the organization's normal system development process. All projects use an authorized, customized software development and maintenance process version.

- **Level 4-Managed**

Detailed software process technique and product quality that is understood and monitored are gathered.

- **Level 5-Optimizing**

Continuous process improvement is accomplished through ongoing process feedback and creative concepts and techniques are launched.

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Six Sigma
Six Sigma is a advance that sets a framework and process for improving established metrics in manufacturing, service, or economic procedures in a disciplined and quantitative method. Six Sigma's principles are executed like a workflow through techniques, or development plans for improvement.

DMAIC and DMADV are both the main principal techniques
DMAIC focuses on step by step improvement in existing processes. It is the technique that is most extensively accepted and connected with six sigma.

Here's an acronym breakdown
D: Define client needs, specifications and project purposes.

M: Measure the input of the current process.

A: Analyze data. "You really dig into what types of errors occur and where they occur so you can target the big ones"

I: Improve processes. Test and verify that the improvements work.

C: Control future implementations of the processes to ensure that errors don't creep in again.

DMADV focuses on effective use of new products or processes to Six Sigma principles. Here's a breakdown of the abbreviation:

D: Define customer or company goals.

M: Measure CTQ's features critical to the quality of product measurement capacities in the manufacture of processes and hazards.

A: Analyze your measurement data.

D: Develop a fresh technique based on past step's analysis.

V: Verify the design, propose new cycle, and hand it in to the method operator via a pilot chase.

IEEE
IEEE maintains the procedures and data recommended for the Specification of Software Requirements (SRS) document and its format. Use the criterion to know what makes for a healthy software requirement and how these conditions can be implemented across the whole lifecycle of the software.. IEEE standards are the consequence of dozens of professionals globally working together.

They are intended to represent the best of what is known about how to address a particular domain of software engineering. In general, IEEE standards for SRS documentation are viewed as representing the collective understanding of many smart people who have been working on software projects Over the previous few decades. Instead of constructing your own SRS model from root to tip, it is proposed that you start with existing technologies, such as IEEE standards.

PROPOSED APPROACH
To contribute to improving company performance, we suggest a process-based strategy. This strategy includes ISO 9001, CMMI, Six Sigma and IEEE. Figure 2 help to assist create this suggested strategy, the similarities and distinctions between the ideas of these methods are brought together.

The Process is defined first but the strategy required implementing for improvement in process. Here six sigma approach is applied where DMAIC focuses on incremental improvement in existing process. Customer needs and goals are find out and then analyze, what type of defect occur and where it is. Test and improve that process and take preventive measures so that it should not occur in future. DMADV focuses on effective use of new products or processes. Here customer or company goals are defined, then find different aspects such as product or process capabilities and risks. Design the new method after evaluating the various elements and check that it is running correctly.

If the process and information related to software requirements specification needs to hold in specific format then IEEE standards works. To gain the confidence of customer that proper process is followed, ISO 9001 Certification helps. A different level of CMMI tells that system status that's what kind of enhancement is needed to make progress in process quality measurement.

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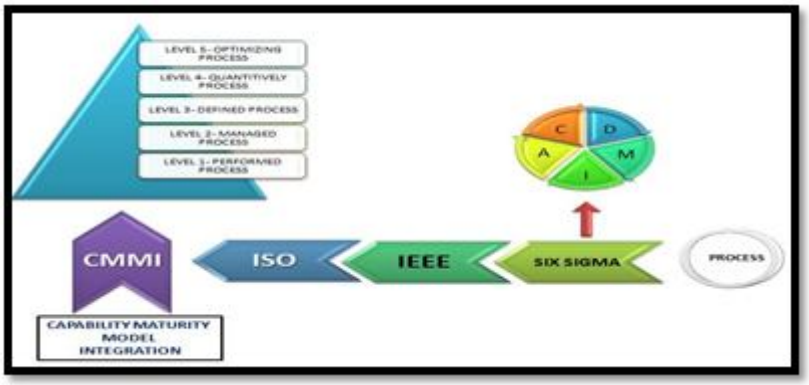

Figure-2

CONCLUSION

The proposed approach does not tell that one and other is substitute of each other. It tells that if system process required improvement then different standards help to achieve it. If we combine the different approaches of it, we can get well improved quality process. Standards are milestones of organization that after achieving it get well improve process which gives benefits to organization in terms profit and customer confidence and pride to be part of that process.

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DIGITIZATION OF HEALTH RECORDS OF PATIENTS AND AUTOMATION OF MEDICAL PROCEDURES OF PATIENTS IN BMC HOSPITALS USING MACHINE LEARNING

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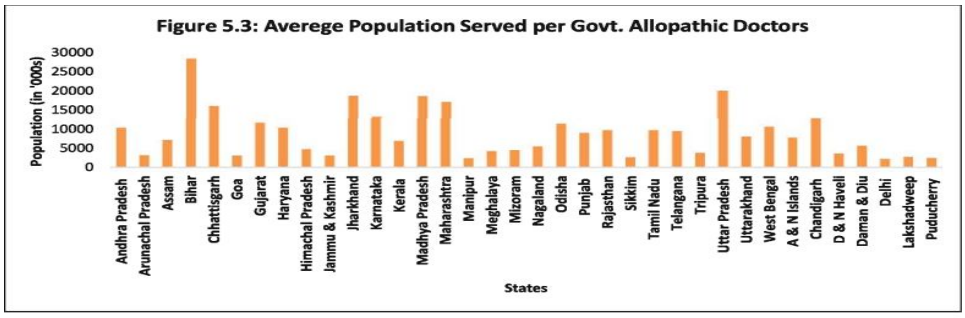
ABSTRACT
In BMC hospitals patient's health records are kept in the form of case papers. Doctors writes History of patient's disease, whole body profile, prescription on case papers. The same prescription assistant doctors copies in their register for their reference which is very time consuming and an ambiguous task. This research paper would explain the method to digitize the health records of each patient systematically on Cloud with the help of Big data concepts.Each patient would have his own unique id through which he himself or Doctors can check his electronic health records.

Another problem govt.hospitals faces imbalance ratio of Doctors& Patients. To overcome that we need to use machine learning to prescribe the medicines by examining the electronic health records of patients.

Keywords: Cloud Computing, Big Data, Machine Learning, Electronic Health Records..

INTRODUCTION
In India, statistic there is one government allopathic doctor for every 10,189 people, one government hospital bed for every 2,046 people and one state-run hospital for every 90,343 people. India has a little over one million modern medicine (allopathy) doctors to treat its population of 1.3 billion people. Of these, only around 10% work in the public health sector that is 1.1 lakh doctors work in public health sectors,to which india's 900 million rural population goes for treatement.[2]



Source: Directorate of State Health Services

[3]

The above mentioned problem indicates that the public hospitals are always overcrowded due to lack of man power it includes Doctors,Nurses,componders,Security guard which creates mismanagement.

A skewed doctor-patient ratio in our country is the major cause of trouble. In almost all leading countries of the world a doctor in a government hospital checks a maximum of 30 patients a day. In India, any doctor on an average checks at least 150 patients a day. [9]

Doctors need obvious assistance of artificially intelligence in Out Patient Department(OPD)which will study the patients electronic health records which includes patients body profile, history of current disease, previous medicines taken & will prescribe the medicine.

LITERATURE REVIEW
According to Ministry of Health & Family Welfare,eHealth section Electronic Health Record Standard has been revised in 2016.

The goals of standards in electronic health record systems are:

- Promote interoperability and where necessary be specific about certain content exchange and vocabulary standards to establish a path forward toward semantic interoperability
- Support the evolution and timely maintenance of adopted standards
- Promote technical innovation using adopted standards
- Encourage participation and adoption by all vendors and stakeholders

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- Keep implementation costs as low as reasonably possible
- Consider best practices, experiences, policies and frameworks
- To the extent possible, adopt standards that are modular and not interdependent.[1]

Till date we have the following techniques in medical science.

- **Preventative care…** Predicting disease outbreaks on both the individual and the community level.
- **Diagnostic care…** Automatically classifying image data, such as scans, x-rays, etc.[6]

OBJECTIVE OF STUDY

With the help of Electronic Health Records, we can create case studies under " Impact of a specific medicine on certain health conditions" with the help of Supervised Machine Learning.

- Create Electronic Health Records to Guide newly joined Doctors for prescribing medicines
- Create Machine learning system to prescribe the medicines to patients.
- As a result, there has recently been significant effort to alleviate doctor's workload and improve the overall efficiency of the health care system with the help of machine learning.

SYSTEM ARCHITECTURE

There is no differentiation of patients. We get primary, secondary and tertiary patients even from remote areas in the state.It is important to categorize the patients.

Primary healthcare facilities: Primary care services rapidly increasing in both the developed and developing countries depending upon the increasing number of adults at greater risk of chronic noncommunicable disease like diabetes, asthma, back pain, hypertension, anxiety, depression etc.

Secondary healthcare facilities: This healthcare is provided by the **medical specialists** and other health problems who do not have direct contact with a patient like urologists, dermatologists, cardiologists etc. According to National health system policy, the patient required primary care professional's referral to proceed further for **secondary care** [11]

As the population of Primary healthcare patients are more in number than Secondary healthcare patients, it is very difficult by Doctors to manage all the patients very smoothly**.** Hence we are creating automated machine learning system to assist doctors.

SUPERVISED LEARNING is the machine learning task of learning a function that maps an input to an output based on example input-output pairs.[1] It infers a function from *labeled training data* consisting of a set of *training examples*.[7]

To solve the problem with Supervised learning one has to perform following operations:

1. Gather Training Set: Determine the kind of data to be used as a training set.

In medical science, consider the patient having fever. We should have the following training data for patient.

a. CRP

b. PCT

c. prescribed Medicines

2. The training set needs to be representative of the real-world use of the function. Thus, a set of input objects is gathered and corresponding outputs are also gathered, from expert Doctors Dieticians and other experts.
3. The accuracy of the learned function depends strongly on how the input object is represented. We can get above mentioned data from Electronic Health Records.
4. Determine the structure of the learned function and corresponding learning algorithm.

We need to create a strong dataset for Rules with all minute details so that it can be referred to draw a conclusion.

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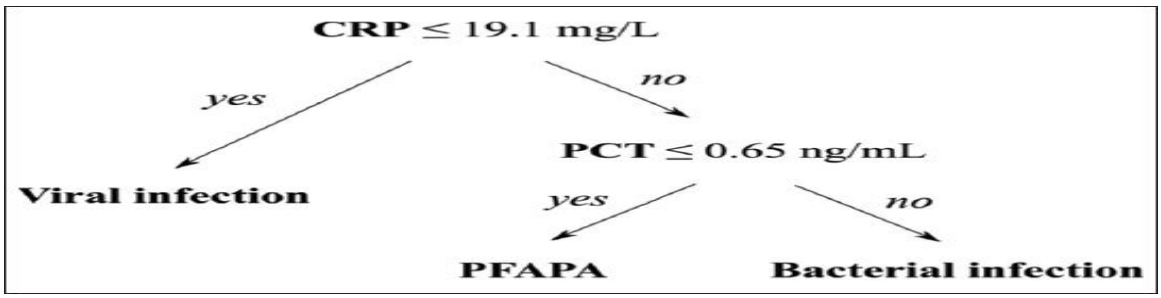
DECISION TREE

A decision tree is a flowchart-like structure in which each internal node represents a test on a feature (e.g. whether a coin flip comes up heads or tails) , each leaf node represents a class label (decision taken after computing all features) and branches represent conjunctions of features that lead to those class labels. The paths from root to leaf represent classification rules

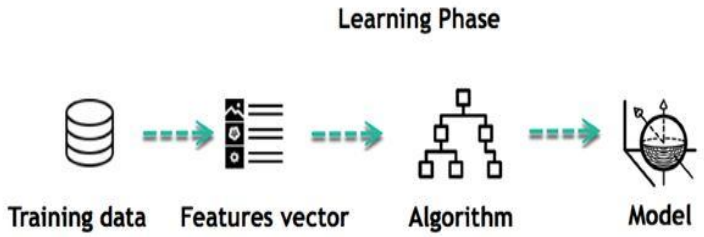
Below is the example of Decision Tree



Decision trees splits a data set based on different conditions. It is one of the most widely used and practical methods for supervised learning. Decision Trees are a non-parametric **supervised learning** method used for both **classification** and **regression** tasks.

Tree models where the target variable can take a discrete set of values are called **classification trees**. Decision trees where the target variable can take continuous values (typically real numbers) are called **regression trees**. Classification And Regression Tree (CART) is general term for this.**[10]**

STEPS TO ACHIEVE RESULT OF ABOVE MENTIONED DECISION TREE



[11]

1.Gather Training data: The data should be accurate with respect to the problem statement.The data should be huge in no.

```
training_data = [
['CRP', 19.1mg/L, 'Viral'],
['CRP', 19.0mg/L, 'Non-Viral'],
['PCT', 0.65, 'PFAPA'],
['PCT', 0.66, 'Bacterial Infection'],
]
# Header = ["Factor", "Level", "Label"]
# The last column is the label.
# The first two columns are features.
```

2.Calculate uncertainty of our dataset : Gini impurity is a measure of how often a randomly chosen element from the set would be incorrectly labeled if it was randomly labeled according to the distribution of labels in the subset.

3. Generate list of all question which needs to be asked at that node: We need to create a class of question, also we need to frame the output.

Lets try querying questions and its outputs.

```
Question(1, 3)
In this the column no.is first parameter.
Value of the column is second parameter.
Question(1, 19.1) ## Is Factor <= 19.1?
def partition(rows, question):
```

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```
    """Partitions a dataset.    For each row in the dataset, check if it matches the question. If so,add it to 'true
rows', otherwise, add it to 'false rows'.
    """
    true_rows, false_rows = [], []
    for row in rows:
        if question.match(row):
            true_rows.append(row)
        else:
            false_rows.append(row)
    return true_rows, false_rows

  # Let's partition the training data based on whether rows are Red.
  true_rows, false_rows = partition(training_data, Question(1,19.1))
  # This will contain all the 'Red' rows.
  true_rows ## [['CRP', 18.9, 'viral'], ['CRP', 19.0, 'viral']]
  false_rows ## [['CRP', 19.2, 'non viral'], ['CRP', 19.3, 'non viral']]
```

Algorithm for constructing decision tree usually works top-down, by choosing a variable at each step that best splits the set of items. Different algorithms use different metrices for measuring best.

4 Partition rows into True & False rows based on each question asked.

5. Calculate information gain based on uncertainty as mentioned in step no.2 and partition of data from previous step.

6. Update highest information gain based on each question asked.

7. Update best question based on information gain.

8. Divide the node on best question.

9. Repeat again from step 1 until we get pure node.

Advantage of Decision Tree

- Easy to use and understand.
- Can handle both categorical and numerical data.
- Resistant to outliers, hence require little data preprocessing.

Disadvantage of Decision Tree

- Prone to over fitting.
- Require some kind of measurement as to how well they are doing.
- Need to be careful with parameter tuning.
- Can create biased learned trees if some classes dominate

CONCLUSION

It is important that the government makes concerted efforts in improving primary and secondary healthcare facilities.This system first need to maintain Electronic health records of patients in a standard format which could become easily available to Doctors & patients for further treatment.

This system would create a machine learning algorithm to prescribe the medicines to primary healthcare category of patients.As we discussed in India, availability of Doctors is very less (1 Doctor for 150 patients per day) this system would be very helpful to them.

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GREEN TECHNOLOGY: AN ESSENTIAL GREEN-COMPUTER HARNESSING FOR THE NATION'S DEVELOPMENT

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ABSTRACT
The Concept of green is the centre for every achievement. Everything around us is mainly green. We are controlled by the green herbs, tress, etc for our life. Making sure their existence is a mandate as the goodness of human living depends upon green around us. Going green is not a choice but a constraint for humanity constant survival. The Paring of information technology (IT) and the environment is now raised as green IT. A green IT infrastructure is incomplete without green software. A Major Constraint for computer harnessing is now a computing 'platform' that is prepared up of hardware, software and other technologies that permits software to run.

Knowing about e-waste, which include unsafe chemicals substances like cathode rays, beryllium, barium, nickel, arsenic, lead and mercury. Whenever such chemicals are disclose in lowland, they run to outflow these risky material into our atmosphere, creating highly unhealthful surroundings.

The need behind green Computing exercise admit cutting the use of risky materials, proper utilization of product energy during the product's lifespan and encouraging the biodegradable usage of unwanted products. It is important to place on us the role to promote green education to ensure the surveillance of nation economy and ourselves in particular.

Keywords: Green Computing, Hazardous material, Nation Economy, Green Education, Creating Awareness.

INTRODUCTION
Green IT is the report of scheming, manufacturing/engineering, using & discarding of computing devices in a direction that cuts their environmental affect. Suchexercisesinvolve the execution of energy – efficient central processing units (CPUS), servers &equipment's as well as minimize resource usage& proper administration of electronic waste materials (e-Waste). The aim of green IT is to minimize/ eliminate the harmful effect of IT working's on the surroundings by scheming, manufacturing, functioning & disposing of computers & Computer-related equipment's in an eco- friendly manner.

Disposing of computer equipment's is dynamic so that the unsaferesources in your computer are cleaned in a good way. There are lots of risky materials in our computer system, few of them are:

* Chromium: Chromium can be discover in the metal plater & housing of the actual computer, as well as circuit boards, switches & relays. If not properly disposed, chromium can be a reason for DNA damage, if it spreads the blood stream, it harms blood cells by corrosion reactions, which therefore can cause kidney & liver failure.

* Beryllium: Motherboards & connectors often contain beryllium. Chronic berylliosis is a pulmonary & systemic granulomatous disease affected by inhalation of dust or fumes polluted with beryllium.

* Cadmium: It is commonly found in chip resistors, semi-conductors infrared detectors, stabilizers, cables& wires.

* Mercury: Products include – auto parts batteries, fluorescent bulbs, medical products, thermometers, etc.

* Lead: cathode-ray tube observers may contain up to eight pounds of lead. Newer LCD & flat panel monitors typically don't have much lead. It can also invent in circuit boards.

Exposure to great lead levels can cause severe damages to brain & kidneys in adults or children & ultimately cause death.

GREEN EDUCATION
Greening Computer for the nation's development
It is necessary to create awareness for green computer education (Green IT). In count to its harmful effect on the environment & its illegal use, researchers in developing nations have now connected e- waste with negative health impacts, such as inflammation& oxidative stress, leads to heart diseases, DNA damage & possibly cancer.

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It is the exercise of making efficient use of computing power

It is the process of Designing, manufacturing &managing computer, Computer disposal, servers that have no environmental impact. Green computing's main goal is to reduce the use of risky materials, maximize energy efficiency during the lifetime of products.

Need of Green Computer Education

- Computer energy is regularly wasteful –Leaving the computer on when not in use.
- Printing is often wasteful – Are you all printing your messages or agendas for meetings.
- Pollution – Due to manufacturing, packing, disposal techniques.
- Toxicity- Because of toxic chemicals in the manufacture.

Reducing Energy Consumption

- Turn off the monitor if not in use
- Use mode to save energy.
- Use hardware /software with energy Star label
- Don't print unless necessary. (if you are not ready)
- Use LCDs as they are more energy effective rather than CRTs.

Green Disposal

- Reuse: Donate parts of your laptop to individuals who may not have or have pcs of lower quality.
- Refurbish:Instead of discarding the upgrade of your laptop. Change some of its components to make it new.
- Recycle: Recycling printed circuit boards from electronic waste is one of the main problems.The circuit boards comprise valuable metals like silver, platinum, etc., and base metals like copper, iron, aluminium, etc.

For Creating Awareness & to know how much people understands about the green computing a survey has been conducted using google form.

OBJECTIVES & METHODOLOGY

This paper is an attempt to figure out the awareness of green Computing among the people. This survey was carried out on 73 people randomly selected who are either working in different sectors or studying in collages.

Link for Google form survey: https://forms.gle/2BJQTxkwJBJbsMdP7

The Survey research focuses mainly on the following questions: -

Questions:

1. The use of computer & technology by the people
2. Green Computing knowledge of the people
3. Green computing practices by the people
4. Attitude of the people towards green computing.

To seek answers to these questions, 2 section were prepared each with 10 questions and distributed to students of the university. The survey consists of the following 2 sections:

(A) A Computer Use Section

(B) A Green Computing Knowledge & practices section.

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(A) A Computer Use Section

(i) How many years have you been using a computer?

(ii) How many hours per day do you usually use the computer?

(iii) How many hours per day are you normally connected to the internet?

(iv) How many years have you been using your current personal computer?

(v) How many computers have you owned in total?

(vi) What is the average number of pages printed per day?

(vii) How many hours per day are you normally playing speaker?

(viii) How many software do you install in a day?

(ix) How many times you are scanning your Computer in a month?

(x) How many times did you format your computer in a year?

(B) A Green Computing Knowledge & practices section

(i) Is Use of laptops instead of PC is better?

(ii) Can we use efficiently Eco-friendly search engine?

(iii) Do you have knowledge about green Rated equipment's? If Yes Mention Any (Optional)

(iv) Is E-Waste leads to heart disease?

(v) Who is the father of Green Revolution in the world?

A. Norman Borlaug B. M.S. Swaminathan C. Raj Krishna D. R.K.V Rao

(vi) Green Computer Revolution refers to _____

A. Use of green manure B. Grow Crops C. Using Computing resources efficiently. D. Green Vegetation

(vii) Do you Know what is blackle is?

A. A Energy saving Search engine B. Green Vegetation C. Resources D. None of the above.

(viii) Refurbishing and reusing of old computers and properly recycling of unwanted computers and other electronics equipment is referred to _____.

A. The 3R's B. Resources C. Electronic Product efficiency D. None of the above.

(ix) Computer virtualisation is the process of running two or more logical computer systems in one set of physical hardware, which is an approach to _____ Computing.

A) Green B) Virtualization C) Reusing D) Energy Saving

(x)_____ is a pulmonary & systemic granulomatous disease caused by inhalation of dust or fumes contaminated with beryllium.

A) Chronic berylliosis B) Mercury C) lead D) None of the above.

RESULTS

A) A Computer Approach Section

In this section we come to know that 26% People are using computer from last 4-5 years. 30% people are using computer day for 21 hours, 20% people are using Internet for 24 hours, 20% people are using speakers daily for minimum of 1 hour, 20% people are installing software minimum 5 times in a week, 21% people are formatting their computers once in a year.As depicted in fig[1].

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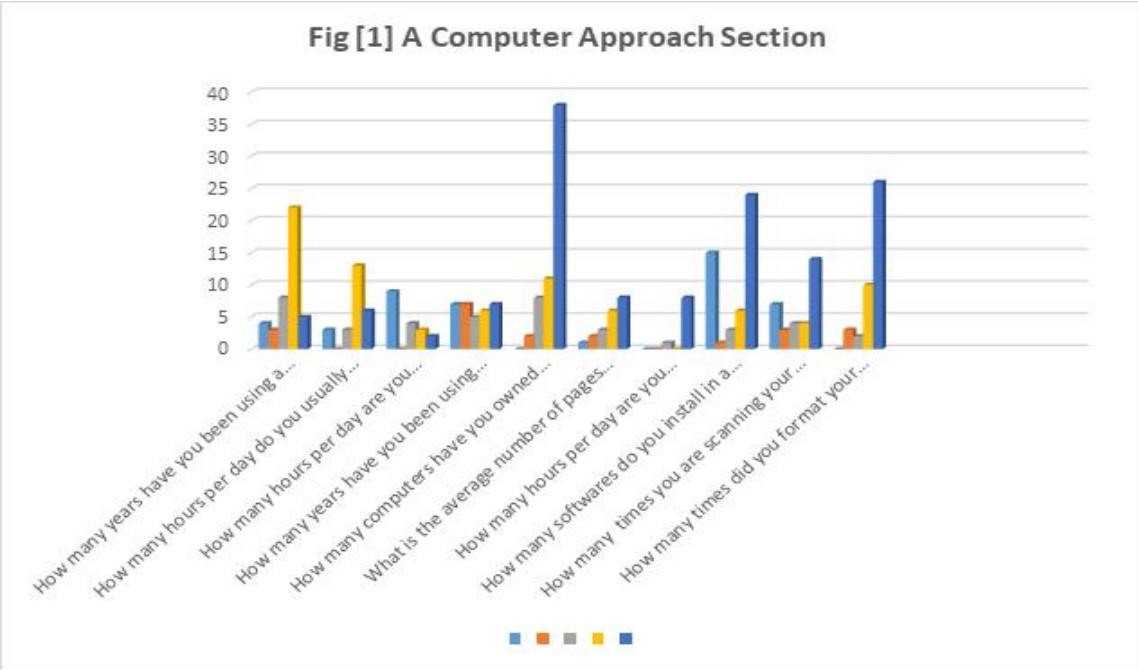


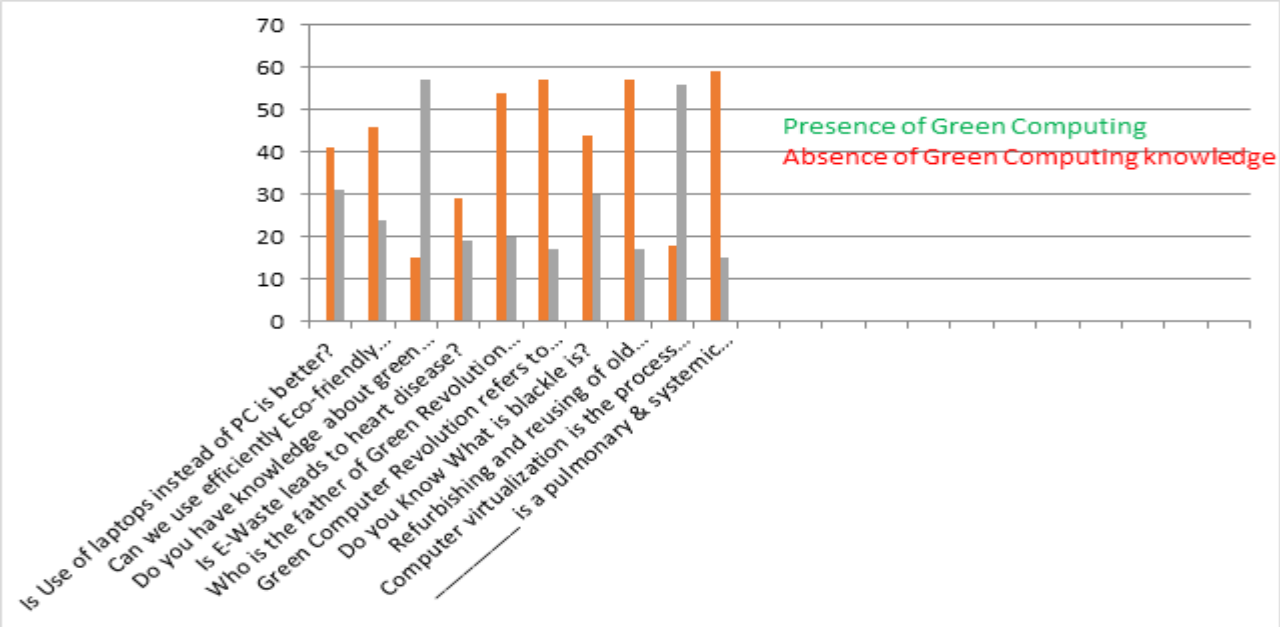
(B) A Green Computing Knowledge & practices section:

In this section we come to know about, people are having knowledge about green computing, this we came to know from questions that were asked in survey,

Which include

- Is use of laptops instead of PC is better?
- Can we use efficiently Eco-friendly search engine?
- Is E-Waste leads to heart disease?
- Who is the father of Green Revolution in the world?
- Green Computer Revolution refers to _____
- Do you Know What is blackle is?
- Diseases caused by fumes contaminated with beryllium.
- The 3'Rs.

Report ofA Green Computing Knowledge & practices section: Fig [2]



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But most of the people are unaware about green IT Rated Equipment as depicted in Fig [2] , 78% people are not knowing about green it equipment such as ESPRIMO Q956 is the ultimate desktop PC, EX Series Ethernet switches , The ColorQube Xerox technologies,etc.

CONCLUSION

The main aim of the paper was to create awareness levels among people with respect to green computing, in particular, green computing knowledge of the people & green IT practices by the people. A questionnaire was designed and distributed among the people and results were analysed. On whole, we observed that the people have moderate knowledge of green computing, but out of practices.

FINDINGS

As the aim this paper, we observed that

- People have less knowledge about the green IT equipment & software.
- People are unaware about green Computing Technologies.
- There is less awareness for Green Computing & its Research.
- The design of green IT should include new electronic products & services.

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INSIDER THREATS IN CYBER SECURITY

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ABSTRACT
While many administrations focus their security efforts on their network edge, it is the insider that perhaps pretenses the most threat to cyber-security. People have a affinity to trust people they know, leading them to stake passwords or other data that they shouldn't. Insider need admission to profound information and precarious systems for many reasons and a level of trust has to be allied with that access.

Strong security controls reduce risk, and enable data allocation in an association. There are three categories of insider threats; spiteful insiders who intentionally snip data or causes damage are malicious insiders, Exploited insiders and Careless insiders. Organizations must tackle the reality that insider spasms are a significant threat and having increase in complexity.

This approach should involve a range of solutions that address uniqueness and admittance management and information protection. Tools to manage individualities, access and information can enable an organization to find the accurate balance between enablement-and the allocation of delicate data-with the controls needed to reduce the risks of insider security breaches.

Least privilege access will reject actions and keep limit to the damage done by all types of insider attacks, including unintended but damaging actions. A sensitive data directly controls and businesses can prevent such data from being exported out of their network by USB drives or even email. A significant cause of security breaches is unsuitable rights.

This can be caused by improper initial admission rights settings, accretion of privileges over time, or even inappropriate admission rights for a user that were purposely set by a rogue cooperating administrator. Most corporations focus their possessions and defensive strategies on defensive the limit from outsider attacks but often the extreme damage can be done by somebody already inside these defenses. System Administrators can be a company's most trusted unite or their worst dread depending on their motivation or personal interest.

Keywords: Insider attacks, Insider risk factors.

1. INTRODUCTION
An association are continuously suffering from Outdoor threats to the cyber- infrastructure whose are evolving regularly. The greatest threat, which is the problematic of insiders who misappropriation their rights for malevolent purposes.

Viruses and worm outbreaks as the most stated security incident overtaken by Insider attack. A lot of research in computer security has focused and performed activities on the means of preventing unauthorized and prohibited admission to systems and information. Regrettably, the most damaging malicious action is the outcome of interior misappropriation within an organization; possibly far less consideration has been focused inward.

Despite definitive interior operating system security mechanisms and the literature on formal specification of security and access control policies. we still have an extensive insider attack problem. Indeed, in many circumstances, proper security strategies are imperfect and implicit or they are deliberately unnoticed in order to get commercial objectives accomplished.

There pretended to be little mechanization available to direct the insider menace problem. The ultra-modern techniques seem to be unmobile detected by forensics analysis after an attack, rather than preventing, detecting, and deterring insider attack of technologies. The inside assailant has been defined in many different contexts with no standard description decided upon by the investigation community.

How it is conceivable to make technical development if the problem itself is imprecise? There are many known specimens of insider attacks which is acquainted to most individuals. In this paper, a malicious insider is classified into two modules of malfeasant users; conspirators and masqueraders. A conspirator is a legal user within an association who has been permitted to access systems and information capitals, but whose activities are behaving like jetton to strategy, and whose aim is to adversely affect confidentially, reliability, or accessibility of some data asset.

The conspirator uses his/her legal credentials when executing their malicious actions. Stealing someone's credit card information does not disclose the amount and frequency of what the sufferer typically buys and from

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whom. Hence, if one of the profiles that the typical buying patterns of a customer (and keeps this historical information secret) is acting like an identity thief, a masquerader has a comparatively low chance of misusing the taken excavation in a manner consistent with the victim's comportment that will go unnoticed.

Fraudulent transactions are thus equitably easy to spot even given proper credentials and esteem availability. It is survey that the credit card companies admitted couple of decades ago when designing early humbug warning systems, and this indication has mostly been the piloting subject for much ensuing exploration on pretense detection.

On the other side, a conspirator is apparently acting normally and hence reporting a user to detect important change as a means of sensing malicious actions may not be the best policy for identifying this class of insider attack. The intelligence and military bodies are challenged with detecting traitors and have conceived a host of means of using entice and trap- based defenses to attract and outwit users into leaking their criminal actions.

Far fewer work has been reported in the computer security literature on developing entice network defenses beyond early work on honeypots and general ideas on the use of honeytokens of various forms. The discovery of traitors is an area tender with challenges imploring for new research.

2. INSIDER ATTACKS

In order to comprehend how to discover malicious insider activities, we have to comprehend the many forms of attack that have been described for example:

- Unsanctioned withdrawal, repetition, or exfiltration of information
- Illegal changes to data or records.
- Deletion of critical resources.
- Taking data from unapproved foundations or use of plagiarized software which might comprise way in or malevolent code
- Prying and packet snuffling
- Pretending to be other users
- Attacking with the use of trick to operate people into illuminating confidential or private data for fraudulent purposes.
- Misuse of funds for non-business related or illegal activities
- Purposefully adding malicious program Each of these actions can be considered malicious, but not every one of them may leave an assessment trace which can be easily caught.

Many of these actions leave some trace in some log file which can be connected to the actions of a user after the fact. Hence, when a malfeasance is detected, there is some hope forensics could tip to the criminal. Log examination remains the hi-tech in insider attack discovery, after a break has been exposed.

Naturally, erudite attackers may disburse much effort exasperating to shield their paths and attacking the logging or auditing sources to remain stealthy. If an association is not dynamically monitoring their organizations (and operators) with adequate controls avoiding meddling with monitor logs, an inside attacker will unquestionably hardly be identified. In an insider threat study in the investment and finance sector. list the characteristics of insider attacks.

Their analysis of insider attack showed that: • Most events required little technical complexity

- Activities were intentional
- Motivation was capital gain
- Acts were committed while on the job
- Events were usually noticed by non- security employees
- Incidents were usually detected through manual procedures. These explanations should encourage any association to field monitoring systems to have any expectation of inevitably and constantly noticing, and preventing, insider attack.

We annotation from this study that most insider attacks on hosts seem to happen at the presentation level and not at the network-level and hence host-based checking is not a desideratum, it is a obligation.

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2.1 Overview

This report will emphasis on people who temper the system to commit computer disruption, sabotage, blackmail, fraud or to steal private information Insider attacks are a major concern for organizations; they debatably stance a far greater jeopardy than outsider attacks.

Colloquially, network sanctuary can be labelled as having a “firm outer covering [with] a soft gristly middle”. Most network security processes emphasis on avoiding admission from external network. However, there is conventionally far less importance placed on safeguarding rudiments against malevolent admittance from privileged the network itself.

An employee with authorized interior admission has previously exceeded the more difficult contest of attainment exterior admission into a network. In accumulation to this they are also acquainted with the systems and networks of the organization and know where the important data can be found (Spritzer, 2003). It has been projected that insider attacks charge organizations hundreds of thousands of dollars in lost income and efficiency each year.

This sequence, only a traditional approximation; it is supposed that meaningfully advanced, as many incidents of insider attack go unreported and are allocated with within to avoid the consequences of adverse publicity. In order to deal with and minimalize the risks related with insider threat it is critical for governments to have the suitable tools to classify and notice signs of insider threat and to also device policies to avert insider outbreaks from stirring.

These cautionary symbols are not only practical symbols that can be outlined through organization logs and interior reviews, but also include noticeable behavior's and distinct and character predilections The goal of this account is to control what character factors, disposition tendencies and instigators may incline persons to obligate insider attacks and what distinguishes this cluster of people from other staffs.

The account also goals to deliver an impression of preemptive measures that may decrease the threat of insider attacks. These cautionary signs and preemptive measures and strategies will be labelled in greater detail in this article.

2.2 Categories of insider

Insider threats are not all the similar There are three categories of insider threats, malevolent insiders who intentionally snip data or cause mutilation, insiders who are accidentally utilized by peripheral parties, and insiders who are offhand and make unintentional errors:

2.2.1 Malicious insiders are the slightest recurrent, but have the possible to cause important impairment due to their insider admission. Administrators with privileged personalities are expressly risky.

2.2.2 Capitalized insiders may be “tricked” by third parties that providing data or passwords they shouldn't.

2.2.3 Remiss insiders may simply press the incorrect key and unintentionally delete or modify dangerous data.

Insider threats may also come from confidential users (overseers) or regular users with access to delicate data. Administrators often cluster complete privileges to perform primarily any operation on many critical systems. People of all types often have accrued more entitlements than they need for their current job role, leading to increased risk that is entirely avoidable. Insider risk factors.

3. All organizations face common challenges when attempting to reduce their risk of insider security breaches

3.1 Unsuccessful organization of advantaged users

All IT milieus have fortunate users (admin, root) that have total access to key schemes, applications, and data. This remains not only a harmless keeping risk, but it can also make obedience much more difficult. Sharing overseer passwords is another common problem which could lead to inappropriate access to your systems and information and an powerlessness to identify definitely who achieved which accomplishment on each system.

3.2 Inapt role and entitlement obligation

The administration of handler roles and titles is one of the biggest challenges that many IT establishments face. Overlying people and repeated or unpredictable titles are all common problems that can lead to improper access to, and use of, sensitive information. In addition, the lack of automated de-provisioning can lead to immoderate entitlements or stray accounts, both of which provide openings through which dissatisfied insiders can launch an attack

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3.3 Unfortunate general identity supremacy
In effect guard against inappropriate entree or use of data requires strong control over employer characters, entrée, and information use. Maximum officialdoms have some gearshifts in these zones, but fix not have united and strong approach to truly safeguard their records effects.

3.4 Poor information classification and policy application
Many establishments do not even know where all their sensitive info is, and often have poorly defined and connected policies for how that sensitive gen should be touched. But, most outstandingly, many officialdoms have no controls in place to detect and prevent unsuitable payment or revelation of subtle info.

3.5 Inadequate auditing and analytics
Numerous corporations have no method to unceasingly audit access to help ensure that only properly official persons are ahead access, as well as that their usage of data complies with established policy. Even if they have checking tools in place, the absolute volume of log data produced makes it very problematic for formations to select through the facts and classify breaks or intimidations.

3.6 Review log difficulty
The complete capacity of review and diary data obstructs forensics examination and discovery. Sorting all IT activity is an significant first step in tackling insider attacks and today's extremely dispersed and complex IT surroundings make huge amount of classification data, but the absolute capacity of data is very problematic to achieve.

3.7 Reactive response
Most current methods for addressing insider intimidations are sensitive, not analytical. While this may help hugely in criminological investigations, the delinquent is that the outbreak or burglary has already happened. Therefore, administrations should be watching for answers that can offer more logical and prognostic competences that even if not able to avoid insider spasms, may still identify “vulnerable insiders” and then appliance more comprehensive registering on those persons in reply.

3.8 No inclusive written adequate use rules
All officialdoms should have detailed acceptable use policies for all employees and should make staffs appraisal and symbol the policy yearly. This is a basic step but one that administrations often overlook. Consuming a printed safety procedure will not essentially avoid insider assaults, nonetheless it container still be beneficial for providing the entire organization with a starting point of what is satisfactory of different usage and the good procedures for handling perspective data.

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THE CHALLENGES OF SECURITY IN INTERNET OF THINGS (IOT)

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ABSTRACT
IoT is an intelligence enabler appended to many key characteristics of the modern world, such as hospitals, towns, grids, organisations and structures. IoT devices and facilities are facing growing numbers of threats and mitigations. IoT is not new to cyber threats, but IoT will be intertwined with our own life and societies and therefore cyber security needs to be stepped up and taken seriously. There is therefore a true need to safeguard IoT, resulting to comprehend threats on IoT facilities comprehensively. In addition to analyzing and characterizing intruders and assaults facing IoT equipment and services, this paper is an effort to classify kinds of threat.

Keywords: Security attacks, cyber-crimes, Internet of Things.

1. INTRODUCTION
IoT enables us to communicate regularly through the internet with various devices. This guarantees that the devices are intelligent and send the data to a centralized scheme, which will then monitor and take action in accordance with its assignment. IoT can be utilized in a broad variety of fields including healthcare, transport, entertainment, energy grids and intelligent buildings [1, 2]. IoT is anticipated to behave as a catalyst for future technological developments and its use in the coming years is anticipated to increase exponentially.

The vast spread of connected devices in the IoT has developed enormous demand for robust safety in reaction to increasing demand. [3,4] As the amount of prospective attackers increasing along with the size of networks, the instruments accessible to prospective attackers are also becoming more advanced [5, 6]. Therefore, in order to increase the potential, IoT must be safeguarded against mitigations [7]. This paper is meant to promote a better understanding of threats from various intruders such as organizations and intelligence and their properties.

The method of recognizing system and system vulnerabilities threats is essential to specify a robust and also aids to establish whether the safety solution is safe from malicious attacks [8].

2. BACKGROUND
Entities, Devices and Services [5] are important IoT domain concepts. An IoT entity may be a person, animal, vehicle, chain element, electronic appliance, or a closed or open environment [8]. Hardware components called devices [6], for example mobile telephones, sensors, actuators and RFID tags, permit communication among entities, enabling individuals to relate to the digital globe. In addition to all the benefits of the IoT application, there are several security threats [8].

For several reasons, the linked phones or machines are highly useful for cyber-attackers
a. Most IoT devices are operated unattended by humans, so physically gaining access to them is simple for an attacker.

b. Most IoT parts interact through wireless networks where eavesdropping could allow an attacker to acquire private data

c. Because of low power and computing resource capabilities, most IoT components cannot support complicated safety systems.

Collected data from sensors integrated in heating or lighting systems could tell the intruder when someone is at home or out. The transition to IoT for customers and suppliers is an increasingly difficult issue for safety and privacy [8]. It is well known that the adoption of IoT in our homes, working environments or enterprise environments opens new doors to security problems.

2.1. Understanding IoT Devices and Services
2.1.1 IoT device
This aspect of hardware allows the entity to become part of the digital globe [6]. An IoT device can communicate with other IoT devices and ICT systems. These gadgets interact via different means, including cellular technology (3 G or LTE), WLAN, wireless, etc. [7].

2.1.2. IoT services
IoT services allow entities to be embedded easily into the world of service-based architecture and service

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technology [4]. An IoT service is a transaction between two sides, : the service provider and the service consumer. It creates a prescribed function, allowing communication with the physical globe by evaluating the state of entities or initiating actions to initiate a shift in organizations.

2.1.3. Security in IoT devices and services

IoT devices and services have three main issues: confidentiality of information, privacy and trust.

In IoT devices and services, confidentiality of data is a basic problem [8]. The IoT device must be able to confirm that it is permitted to access the service by the entity (individual or other device). To establish a safe link between a number of devices and services, authorization and access control are essential. The main issue to be addressed in this scenario is to facilitate the creation, understanding and manipulation of access control rules. Another aspect to consider when dealing with confidentiality is identity management and authentication. In reality, in IoT, this is crucial because different users, objects, and devices need trustable services to authenticate.

Because of the omnipresent nature of iot setting, privacy in device and services, is an important problem. Entities are linked and information is conveyed and exchanged over the internet, making user privacy in many research works a delicate topic. When a number of issues interact, trust plays an important part in establishing secure communication in an unsure IoT environment.

In IoT, the trust between entities and the trust in the system in terms of users should be considered as trust in two ways.

2.2. Security Threats, Attacks, and Vulnerabilities

2.2.1. Vulnerability

In a scheme or its design, vulnerabilities are weaknesses that enable an attacker to perform orders, access unauthorized information, and/or deny service attacks. IoT systems are the basis of two main components: system hardware and system software, both of which often have design defects. Even if the attack is acknowledged for hardware compatibility, interoperability, and the effort needed to fix it, hardware mitigations are hard to identify and retain. There is a myriad of factors that add to software design errors, such as human factors and software development. Technical vulnerabilities are generally caused by human weaknesses such as bad communication between designers and customers, absence of funds, abilities and understanding, and absence of system management and control [4].

2.2.2. Threats

A threat is an action that takes benefit of a system's safety weaknesses and adversely affects it. There are two primary sources of threats: humans and nature. Natural attacks such as hurricane earthquakes and fire could cause serious harm to computers. Disaster recovery plans such as backup plans and contingency plans are the finest approaches to safeguarding structures against natural threats. Human threats are those created by individuals, such as malicious threats that consist of internal (someone has authorized access) or external threats (individuals or organisations operating outside the network) that seek to damage and disrupt a system.

2.2.3. Attacks

Attacks are actions made by exploiting susceptibilities using different methods and instruments to damage a system or interrupt ordinary activities. Actors of attack are individuals threatening the digital world[5]. They might be hackers, criminals, or even governments[6]. Common kinds of cyber-attack are:

(A) *Physical attacks*: this attack damages hardware parts.

(B) *Recognition attacks*: unauthorized system, service or vulnerability discovery and mapping. Examples are the evaluation of traffic and the sending of IP address data queries. (C) *Privacy attacks*: IoT privacy security has become increasingly difficult owing to the big volume of data that is readily accessible via remote access systems. The most prevalent user privacy attacks are:

- **Data mining**: allows attackers to find unanticipated data in some databases.
- **Cyber spying**: use cracking methods and malicious software to spy on or secretly acquire data from people, organisations or government.
- **Eavesdropping**: listening to a two-party discussion.
- **Tracking**: The unique identification number (UID) of devices can track the movements of a user.

(D) *Cybercrimes*: The Internet and smart items are used to manipulate consumers and information for material benefit, such as theft of intellectual property, identity theft, brand robbery and fraud [6, 7].

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3. Intruders

Intruders have distinct intentions and goals, including economic gain, influencing public opinion, and spying. There are two kinds of intruders in the literature: internal and external. Individuals with privileges or permitted system access with either a server account or physical network access are called Internal intruders.

External intruders are individuals who are not part of the domain of the network. All intruders can be structured in many respects, whether internal or external, and involve individual attackers in spying organizations operating for a nation. There are different kinds of intruders based on their numbers, intentions and goals.

3.1. Individuals

Individual hackers are experts working alone and only target low-security systems. They lack professional hacking teams, organisations or spy agencies ' resources or knowledge. The most popular locations where general users can be deceived by hackers are public and social media websites. To use a system, individual hackers use instruments beneficial for cyber-attack. They schedule attacks based on accessibility of facilities, accessibility of internet access, network environment, and safety of the system. Insiders are permitted people who use insider knowledge or privileges to work against a scheme.

3.2. Organized groups

Ongoing communications and IoT technology are becoming more acquainted to criminal organizations. These groups ' motivations are aimed at specific organisations for vengeance, trade secrets theft and financial spying. Their aim is also to sell private information, including economic records, towards other criminal administrations, terrorists and managements. In terms of financing, knowledge and resources, they are very capable. They are very capable of generating botnets and malware. Cyber terrorism is a cyber-attack targeting military installations, banks and special equipment like satellites and telecommunications systems linked to domestic data infrastructure based on religious and political interests.

3.3. Intelligence agency

Intelligence agencies from various nations continue their attempts to test other countries ' military systems for particular reasons, such as industrial spying, and political and military spying. To accomplish their targets, the organizations involve a big amount of specialists to provide technology and methodologies (hardware, software, and equipment). Such organizations are the greatest threat to networks and require close monitoring and tracking methods to protect against threats to information systems of primary significance to any nation and military institution.

3. CONCLUSIONS

IoT faces a number of threats that need to be acknowledged in order to take protective action. Security challenges and safety threats to IoT have been implemented in this document. The general objective was to define assets and document prospective IoT threats, assaults and vulnerabilities. A synopsis of the IoT safety issues was given, with a specific focus on devices safety difficulties. Security problems have been recognized, such as confidentiality, privacy and confidence of the organization. Threats from intelligence agencies and criminal organizations have been shown to be more hard to overcome than threats from individual hackers. It was found that a lot of work remains to be done by both suppliers and end-users in the region of IoT safety. As future work, the goal is to obtain a deeper understanding of IoT infrastructure threats and to identify the probability and implications of IoT threats.

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A STUDY ON WORK-LIFE BALANCE WITH REFERENCE TO EMPLOYEES WORKING IN INFORMATION TECHNOLOGY SECTOR COMPANIES IN MUMBAI AND PUNE

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INTRODUCTION

Every working person's life has got two dimensions, personal life and professional life. The personal life of a working person further comprises of three aspects family, friends and person himself. Professional life on the other hand comprises of job, career and role in the organisation. For any working professional to contribute with full efficiency at workplace and to enjoy her/his personal life, it is important to have a balanced professional and personal life. By the term balanced, it means that both the lives if not complementing should not be at least imposing problems to each other.

It is generally observed that the knowledge workers, the employees having high cognitive involvement like strategic decision making, creative thinking, innovating etc., face more imbalance between their personal and professional life. They, knowingly or unknowingly, carry stress of their workplace at home leading to an uninvolved personal life. The imbalance in the work-life has far reaching impact in an employees' professional life and can have a negative impact of her/his productivity and satisfaction level, which in turn have negative impact of the overall productivity and environment of the organisation.

The professionals working in information technology (IT) industry are one of the examples of knowledge workers. This research has been undertaken to examine the work-life-balance (WLB) scenario of the industry and also its importance for such professionals. This research also helps in examining the impact of personal and professional factors which has an impact on WLB. The research also studies the initiatives taken by some of the successful IT companies for creating harmony between personal and professional life leading to WLB.

KEYWORDS

- Work-Life-Balance (WLB)
- Professional Life
- Persona Life
- Employee Productivity
- Employee Satisfaction

LITERATURE REVIEW

Origin and Meaning of WLB

The term Work-Life-Balance, is relatively a recent term in human resource management. It was first used in 1986 but became a more popular in 1990s when it was used by Juliet Schor, a professor of sociology at Boston, in 1992 in her book *The Overworked American: The Unexpected Decline of Leisure.*

The definitions of concept of WLB has constantly evolved and different authors have enlightened the readers with different aspects of WLB. Therefore, most of the definitions provide a limited view of WLB. Greenhaus and Beutell, tried defining WLB on the basis of multiple-roles executed in non-work environment (family or personal) of which demands may be carried forward to work and may affect the performance and health of an individual adversely. This carry over or spill over affect may be two directional home-to-work or work-to-home. This definition directly guided the managers to take care that the employees have healthy personal life to have better professional attitude and performance.

Kirschmeyer, in 2000, talked about satisfying experiences which are possible if a person possesses personal resources like energy, commitment and time which should be well-distributed and optimally utilized across all role domain. According to Clark (2000) WLB can be achieved if a person has minimum role conflicts. Pillinger (2001), furthered Clark's point of view by adding that WLB can be achieved by flexible working arrangements for smoothly fulfilling professional and personal responsibilities. One of the more recent and comprehensive definitions is given by Ioan Lazar (2010), it can be understood as relationship between paid work and unpaid roles and responsibilities which is critical for a balance.

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Factors affecting WLB:
To come up with the factors that can influence WLB of an employee, the initial attempt was made by Zedek, Mosier (1990) came up with the five model theory. Though the theory could not contribute directly to a great extend but had laid the foundation for understanding the factors. The five models given by the theory were:

- **Segmentation Model:** Work and non-work domain do not influence each other. This model did not have empirical support.
- **Spillover Model:** It states that both the domain can influence each other either positively or negatively. However, magnitude of impact cannot be measured.
- **Compensation Model**: It states that shortcoming in one domain can be compensated by another.
- **Instrumental Model:** Success in one domain facilitates success in other.
- **Conflict Model:** Excess of responsibilities and accountability in one domain can cause conflict of choice.

Two more theories were introduced in 2007 by Morris and Madsen:
- **Resource Drain Theory**: Time and energy are limited resources. If there is excessive drainage of these resources at workplace, it will be available in reduced amount for personal life.
- **Enrichment Theory:** If in one domain a person gains rich experiences, it will have also enhance (enrich) the quality of other domain.

On reviewing the previous researches being conducted to identify the factors influencing WLB. Some of the factors were found which are suitable for employees working in IT industry. These factors are as follows:

i. Work-related
- Working environment
- Hours of working – Fixed or changing schedule
- Deadline pressures and working over time
- Compensation – salary, benefits etc.
- Work from home after office hours
- More than 5 days working, working on holidays
- Changes in organisation's set up – due to restructuring, mergers/ acquisitions
- Management support when you are required to be with your family
- Career growth opportunities.
- Disinterest in the job profile due to repetition, occupational burnout, lack of challenges

ii. Personal
- Spouse support or parents support
- Space sharing – number of members sharing same house-hold
- Traveling time
- Physical and mental health of the employee
- Gender based expectation of the family
- Age of children
- Availability and affordability of helpers.

Symptoms of WLB Imbalance
As reported by survey conducted by Monster.com in February 2019, nearly 67% of Indian professionals take their work home. General symptoms of work-life (WL) imbalance can be seen in the form of psychological dispositions like lack of sleep, depression, anxiety, irritability and hypertension. The physical dispositions were like back pain, headache, fatigue and obesity. These symptoms are, though, personal in nature but organisation too have to pay a price for the WL imbalance.

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To identify the WL imbalance a manager should look for the symptoms as

- Tendency of always working or thinking about work
- Difficult to say no to any work
- Irregular sleep, too less or no exercise
- Checking emails till late night
- Spending most of the family time on phone
- No indulgence in hobbies
- Poor relationship with friends and relatives
- Avoiding personal calls
- Mess at workplace and home

Impact of WLB on employees' productivity

When the implements strategies for better WLB which is scientifically identified, both employee and organisation get benefitted in multiple ways.

The employees experience the following positive changes

- There is improvement in health and well being if the employees pay more attention to themselves and their families.
- The employees are able to spend more quality personal time, leading to more satisfaction
- If the employee spends right amount of time for job, she/ he will enjoy it more
- Employees get more time for rejuvenating and self-development.
- Employees are more satisfied as they are not missing out important events of their personal and professional life.

The organisation reaps following benefits due to better WLB

- Employee experience lesser stress leading to higher morale and feeling positive about job they do.
- Employees with better morale are more engaged to the job, leading to better performance and increased productivity
- When the organisation frames strategy exclusively for better WLB, employee feel that they are more valued. This leads to more commitment to the organisation
- Absenteeism due to ill health or family issues will reduce
- If the employees feel more cared for the chances of attrition also reduces

Laws to Support WLB

1. The Factory's Act 1948: This act explicitly gives guidelines to the organisations for number of working hours in a week, number of hours per day, Annual/ earned leave in an year, Women employees are restricted to work between 7 pm to 6 am, weekly holiday, work interval of half an hour.
2. The National and Festival Holidays Act: apart from Sundays and Saturdays it provides a list of 22 national and festival holidays.
3. The Maternity Benefit Act 1961 has been recently amended by increasing paid maternity leave to 26 weeks, even the adoptive mothers can go for 12 weeks paid leaves, can take 2 nursing breaks in a day till the child reaches 15 months age
4. Creche facility for establishment having 50 or more female employees within a given distance with allowing 4 visits a day to the creche

Initiatives Taken by IT Companies to fight Work-Life Imbalance

According to a research conducted by Monster.com, as reported in Economic Times on Feb 27, 2019, the organisations that have well-stated policies on WLB, have focused on top three important provisions – flexible working hours, holidays and pursuing passion or hobby. One more fact that was highlighted was that majority of respondents believed that the WLB policies should help in "segmenting" professional and personal life, rather than blending it.

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According to Times of India, Infosys provides on-line network for the employees who are parents. This network provides counselling services, brings clarity on companies WLB policies, it also serves as a platform for putting up queries and discussion. The chief mentor of Infosys, Narayan Murthy feels that the employees who are parents would be able to focus better at the work by having improved WLB.

Another leading IT company, Tata Consultancy Services, provides flexi-working-hours, flexibility to change your job within the company, According to Business Today's November 2014 article, TCS has around one lakh female employees. The company has got all the policies in place for total work-life balance for the female employees for their parenting.

Wipro, one of the most employee-friendly company provides opportunity for career growth, higher education at reputed institutions. It has one of the best leave systems amongst Indian companies. It has indoor and outdoor sports courts, gymnasium, great food and cafeterias and relaxing areas.

In fact most of medium to large IT companies make sure that the employees have healthy WLB for better productivity and retention of employees.

RESEARCH PROBLEM

The knowledge workers of Information Technology of today are facing stress both at professional front and at personal front which may impact their health, performance and productivity. In this situation, the organisations' need to take initiatives to create WLB of the employees.

RESEARCH QUESTIONS

- What does the WLB really mean?
- Do employees of all ages, working in the IT sector, have similar impact of Work- Life imbalance?
- Is there any impact of gender on the WLB of the employees?
- What are the leading organisations of IT sector doing to maintain the WLB?
- How is our legal system helping the employees to keep their WLB?

STATEMENT OF OBJECTIVE

The research has been undertaken to achieve the following objectives:

- To develop an understanding for WLB with respect to professionals working in IT sector.
- To find the impact of age and years of working has impact on WLB.
- To study the impact of gender on WLB.
- To study the awareness about laws which supports WLB.
- To examine how the leading IT companies helping their employees to establish WLB.

RESEARCH METHODOLOGY

This is a descriptive research, describing the current situation of WLB amongst employees working in IT sector in Mumbai and Pune. The research is broadly qualitative in nature, however some quantitative tools are used to compare WLB based on age, gender, year of working etc.

Both primary and secondary data is used for the research. The secondary sources of data are websites mentioned in references. The primary data is collected using convenience sampling technique. The questionnaire comprises of qualitative questions. The sample size is 50.

The analysis of the data collected is done using simple comparison.

PRIMARY DATA AND ITS ANALYSIS

1. Out of the respondents 40% are female and 60% are male
2. 50% of the respondents are have less than 2 working years, 30% are working for more than 2 years, remaining 20% are having more than 5 years of experience (inclusive of 3 respondents above 15 years)
3. 10% of respondent leave after 8 hours, 10% have less than 8 hours working, rest everyone work for more than 8 hours every day.
4. Only 8% of employees have never stayed back beyond working hours, rest have to stay back for more hours most of the time

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5. 40% of respondents do not take or make any business calls after coming home.
6. 60% of the respondent working in IT sector have flexi-hours working policy.
7. 60% of respondent can avail work from home facility.
8. 90% of the organisation provide maternity benefits to the expecting or new mothers.
9. 62% respondents' companies provide paternity leaves.
10. 96% employees take break of more than 30 mins everyday.
11. Nearly 50% respondents are too tired to interact with family members after coming home.
12. More than 90% people vacation for at least once in an year with their family or friends
13. 34% of respondent have to spend their weekend completing the pending house hold work.
14. Only 60% of employees do fitness related activities at least 3 times in a week.
15. Only 10% respondents were females with kids, they generally use their weekends for completing pending house hold work.

Though most of the companies have more than 8 hours working, but still they have to work beyond these hours. All the respondents who were having more than 5 years' experience (non-freshers) stay back more than office hours most of the time, attend calls at least till 9 pm as a result all of them spend their weekend completing pending house hold work.

CONCLUSION

From the research we can conclude that the IT sector is one such industry which has the best employing companies in India. The employees working in these companies spend more than 8 hours everyday working at office leaving lesser time and energy for the family.

Most of the companies provide maternity benefits, comparatively less companies are providing paternity benefits as it is not a legal obligation.

The work life imbalance is more prominently seen amongst female employees with kids and employees with more than 5 years' experience. The employees with less than 2 years' experience get less work at home as compared to their seniors. Eventually, then have better WLB as compared to employees working at higher ranks.

The organisations should formulate better WLB strategies for female employees with kids and employees who are at higher positions.

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A UNIQUE DIGITAL ID FOR ALL YOUR SECURE ONLINE SESSIONS & TRANSACTIONS

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ABSTRACT
Authenticity with trust is the nucleus of today's e-commerce market place. Security being the key aspect of online business trend including confidentiality, integrity & availability of information to the end user. In the world of e-commerce, every business has their customer portal or app providing useful information & services to their end customer. Also, all of these portals are secured using unique credentials which imbibes authenticity & credibility to user's login. Albeit, each of these online systems required a strong credential to access user information & services, but its quite cumbrous to remember several login credentials all at one place. Moreover, there's a common practice of writing this sensitive personal information either in a file or notepad in an unsecured premise posing privacy threats & risk of unauthorised use if being exposed. This paper in particular envisages to have a common single mechanism for all secure accesses over the Internet thereby shifting security paradigm from multi-channel to a single channel authorisation. Not only this, the research work would also sketch a preliminary skeleton approach for embedding single channel mechanism on online sessions. Further development in this context could be devised on in later stages. This research work will briefly include knowledge of information security domain along with terminologies involving data privacy at par.

Keywords: Security, information security, authentication, integrity, confidentiality, secure access, data privacy, e-commerce, identity management, identity & access management.

1. INTRODUCTION
In this increasing world of ubiquitous computing & e-commerce; security is a prime aspect (& concern) for organisations running their business through Internet. Starting from denial of service threats to system hacks, each business has to deal with this threats on a regular basis. Data Privacy is another important concern which is been entrusted by user's personal & sensitive information. It is this privacy that adds trust in the user & business relationship thereby amplifying trade transactions. Nowadays, users have become more vigilant in concern with the way their information is been handled by e-commerce businesses. They not only believe in enjoying better services but also a sense of trust that their data is in good hands. In a move to keep up to this trust relationships, businesses are striving to employ best security measures & practices. Likewise, user authentication using credentials, two factor authentication & multi factor authentication methods to enhance user identification mechanism. Multi factor authentication includes use of OTP, secret code etc. been received on registered email &/or mobile number to trust identification of legitimate user. With the boom of e-commerce sector several businesses has flourished in the past decade; with a steep increase in number of online portals. Subsequently, it has been a quite troublesome for users to remember credentials for all these portals. Mostly prefer a trivial method of storing these passwords either in a diary or on a piece of paper. Exposing a huge threat to user's personal information & eventually breach of user's data privacy paradigm. Hence, it has become of prime important to have an alternative mechanism to user identification apart from only using user's credentials.

PURPOSE STATEMENT
To find an alternative but effective & enhanced secured mechanism of identity management for a user's profile. This paper proposes one such mechanism of user identification & authentication without using user's created credential to access ecommerce portal & perform online transactions.

OBJECTIVES OF RESEARCH
- To study existing mechanism of user's identity management.
- To study challenges with current identity management mechanism.
- To propose an alternative mechanism for authenticating user without user credentials.

2. Existing User Identity Management trend & its Challenges:
User identity is a key for any business & its services offering. User's data is an asset for businesses which can offer personalised products or services based upon user's taste. Using data analytics businesses have enabled providing customised user experience thereby enhancing user satisfaction. But apart from offering tailored services & personalised user experience; data privacy holds an important aspect in building trust amongst the businesses. Currently, businesses have minimum security measures for data privacy of user's data including few preliminary fields like email, mobile number etc. This parameter serves as second force of user authenticity

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& genuineness of user's data. Moreover, these parameters also rescue a user while in an event of account lockdown. This account lockdown mandate on user credential turns out to be more thoughtful & effective in maintaining sanctum within user's privacy limits. After several unsuccessful attempts to access any services or products on a business channel; the system will automatically lockdown user account to prevent any unauthorized access to user's sensitive data. However, this is not always the case of unauthorized access wherein unsuccessful attempts leads to a lockdown. Several instances have reported user forgetting the credentials or have lost the credentials but still wish to enjoy business services. In such scenarios methods like OTP or password reset are still viable which could help user access restored within no time. But this "password reset" mechanism is a vicious circle in which user is not reluctant to approach due to its time consuming procedures resulting in user's loss of interest in services & products. A typical user would refrain from resetting profile each time he wishes to access the services. Also, nowadays with advent of cloud & ubiquitous computing; user has to remember each credentials for several distinct business offerings. This whole notion creates a cumbersome & boring ambience for a typical user.

3. Unique Digital ID – The concept:

A unique digital ID would include components like a backend Identity Management DB (IMDB), a forwarding agent & a front end application to take user's input. This unique digital ID will be employed on the e-commerce website on login screen as an alternative to normal login credential option. When a user opts for using unique digital ID to authenticate on the portal, a request will be triggered towards IMDB to validate user's identity based upon fields of the DB. This request would be handled by a forwarding agent from portal to IMDB & back to portal carrying a response. If the validated fields are matched on the IMDB, user is granted the access or else would be denied access in case of failure.

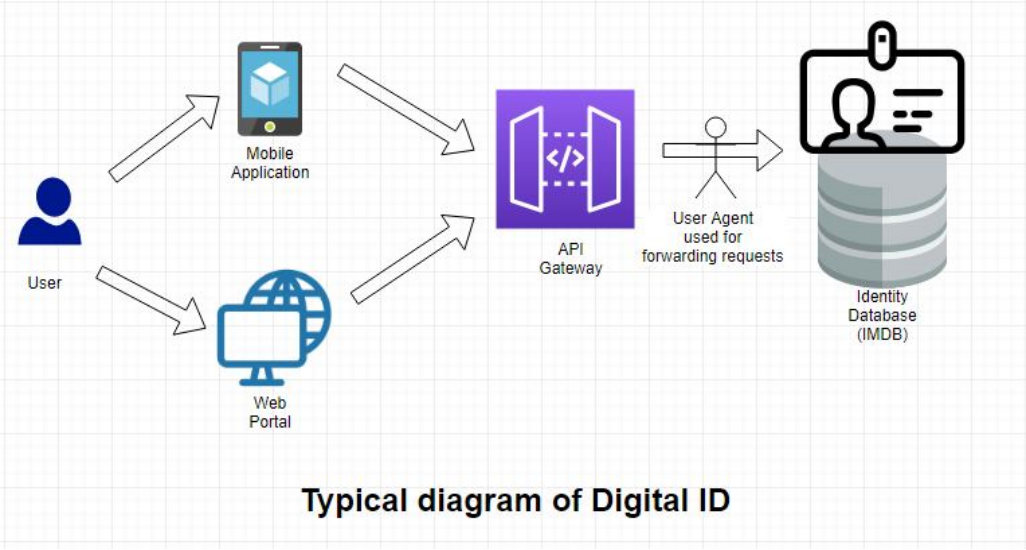

Fig-1

The core of this entire ecosystem resides in IMDB database who authenticates, validates & authorizes user's request. Through the API gateway & with help of user agent, credentials of user are validated against IMDB database. Based upon affirmations from IMDB & given user credentials, required mandatory fields are verified for authorization within IMDB database for a given user profile. Post successful authorization by IMDB, second authorization is requested by IMDB via email or mobile application (using finger print or pass code). Once user authorizes this second verification to IMDB, database grants access to intended portal or mobile application. User agent here serves as a vector transporting user requests (& credentials) to & from API gateway towards IMDB. User agent thereby secures IMDB from any unauthorized access or hack attempts. Since, IMDB nurtures user's personal & sensitive personal information including internal as well as customer's data. Moreover, at the API gateway stringent control measures are employed to check user's request authenticity & trust based upon preliminary user policies.

4. Summary & Broader Implications

The proof of concept (PoC) will provide a substitute but secured method of login into subscribed & offered services. This concept will also minimise risk of theft identity & fraudulent access to user's sensitive data. This mechanism could minimise use of user credentials & thereby minimising default credentials in use. The mechanism could be implicated widely across the country in the field of entertainment, government services, telecom, banking & finance, etc.

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5. CHALLENGES

User's sensitive data would possible be used by businesses for marketing & promotions. User's personal hand held device should be compatible with this mechanism to enable this concept in reality. Data privacy should be nurtured with utmost care by data processor as well as data collector.

6. FUTURE SCOPE

This solution could be implemented for various ecommerce & CRM portal in diversified domains of marketplace, telecom, power, banking & business services. Accolades to its two factor authentication mechanism which minimises chances for fraudulent attempts to hack into the system. Further, this could be implemented across all the domains where identity management is an intrinsic part of the IT infrastructure. Future developments could lead us to a nationwide implication of this identity management system as single tool to access all of user's data into any IT business service.

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QUANTUM COMPUTING EXPLORATION

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ABSTRACT
Today's computers understands binary numbers that are either on (1) or off (0). Quantum computers are not limited to two states; they can encrypt information as quantum bits, or qubits, which can exist in superposition. Classical and quantum parallelism are different, although it is sometimes claimed that quantum Turing machines are nothing but special examples of classical probabilistic machines. We introduce the concepts of deterministic state machine, classical probabilistic state machine and quantum state machine. On the basis, we discuss the question: To what extent can quantum state machines be simulated by classical probabilistic state machines? Each state machines is devoted to a single task determined by its program. Real computers, however, behave differently, being able to solve different kinds of problems. This capacity can be modelled, in the quantum case, by the mathematical notion of abstract quantum computing machine, whose different programs determine different quantum state machines. The computations of abstract quantum computing machines can be linguistically described by the formulas of a particular form of quantum logic, termed quantum computational logic.

Keywords: Qubits, superposition, coherence, NMR, Artificial Intelligence

➢ INTRODUCTION TO QUANTUM COMPUTERS

Gershenfeld says that if making transistors smaller and smaller is continued with the same rate as in the past years, then by the year of 2020, the width of a wire in a computer chip will be no more than a size of a single atom. These are sizes for which rules of classical physics no longer apply. If the transistors become much smaller, the strange effects of quantum mechanics will begin to hinder their performance.

In 1982, the Nobel prize-winning physicist Richard Feynman thought up the idea of a 'quantum computer', a computer that uses the effects of quantum mechanics to its advantage. For some time, the notion of a quantum computer was primarily of theoretical interest only, but recent developments have bought the idea to everybody's attention. According to Chuang a supercomputer needs about a month to find a phone number from the database consisting of world's phone books, where a quantum computer is able to solve this task in 27 minutes. Massachusetts Institute of Technology, Oxford University, IBM and Los Alamos National Laboratory are the most successful in development of quantum computer.

• OBJECTIVES

Our objectives throughout this research paper are to address the importance of Quantum Computers.

i. To handle large amount of processing in this ERA of Technology where technology has become a part of our day to day life.

ii. To overcome the limitations of real time systems and improve them using AI via the Quantum Computer.

➢ PROBLEM STATEMENT

Internet Age has developed a new society for every individual, transforming lives in ways different than ever which includes the way they interact, communicate, present themselves to others, and so on. This gave a new perspective to the researchers a system which can give results in the matter of picoseconds the system which can be used in all fields of technological aspects.

➢ RESEARCH METHODOLOGY

In this research we intend to state the major advantages of using a Quantum Computer. In this age of fast internet and vast amount of data management of the flow of data is affected due to our traditional systems which are limited by their hardware capabilities. With the use of Quantum Computers we can achieve better and faster results in our technological world. As we know the data in today's time is considered as oil and gold in the market.

➢ NEED OF QUANTUM COMPUTER

❖ The Potential and Power of Quantum Computing

In today's world of advance technology and gadgets we need a powerful computing device in order to help us with our advancements without or less drawbacks (flaws).

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Even a supercomputer isn't sufficient enough to provide efficiency and security to our existing systems. In order to provide efficiency and security we can use Quantum Computer and it can also provide us with the speed we need to achieve real time results.

➢ **Proposed Methodology**

The Proposed Methodology is to use the Quantum Computer is all the known and upcoming technologies. Which will indeed improve our flow of output and accuracy of results. The Quantum Computer will be helpful in performing the following tasks:

i. It can be used in data analysis of the stock market.

ii. It can be used in the upgradation of AI technology.

➢ **CONCEPT OF INFORMATION IN QUANTUM COMPUTERS**

In quantum computers also, the basic unit of information is a bit. The concept of quantum computing first arose when the use of an atom as a bit was suggested. If we choose an atom as a physical bit then quantum mechanics tells us that apart from the two distinct electronic states (the excited state and the ground state), the atom can be also prepared in what is known as a coherent superposition of the two states. This means that the atom can be both in state simultaneously. It is at this point that the concept of a quantum bit or a qubit arises. This concept is the backbone of the idea of quantum computing. For example, to represent the state of an n-qubit system on a classical computer would require the storage of 2n complex coefficients. Qubits are made up of controlled particles and the means of control (e.g. devices that trap particles and switch them from one state to another).

In order to do this we use certain Quantum Mechanical concepts like:

1) Superposition

❖ **Coherent Superposition**

In any quantum mechanical system, a particular state of the system is represented by a mathematical function called as the wave function of that state. A wave function is a complex exponential which includes all possible phases of existence of that particular state.

➢ **DEMONSTRATING QUANTUM COMPUTING**

Due to technical limitations, till present, a quantum computer has not yet been realized. But the concepts and ideas of quantum computing has been demonstrated using various methods. Here, is one of the most important technologies used to demonstrate quantum computing:

❖ **Nuclear Magnetic Resonance**

Using nuclear magnetic resonance (NMR) techniques, invented in the 1940's and widely used in chemistry and medicine today, these spins can be manipulated, initialized and measured. Most NMR applications treat spins as little "bar magnets", whereas in reality, the naturally well-isolated nuclei are non-classical objects. The spin manipulation is accomplished by application of magnetic pulses within a magnetic field produced by the NMR chamber.

The latest development in quantum computing takes a radical new approach. It drops the assumption that the quantum medium has to be tiny and isolated from its surroundings and instead uses a sea of molecules to store the information. When held in a magnetic field, each nucleus within a molecule spins in a certain direction, which can be used to describe its state; spinning upwards can signify up and spinning down. Nuclear Magnetic Resonance (NMR) techniques can be used to detect these spin states and bursts of specific radio waves can flip the nuclei from spinning up to spinning down and vice-versa.

In this manner small-scale quantum algorithms have been experimentally demonstrated with molecules such as Alanine, an amino acid. This includes the quantum search algorithm, and a predecessor to the quantum factoring algorithm. The major drawback of this method is scalability; the signal strength of answer decreases exponentially with the number of qubits.

➢ **CHALLENGES AND LIMITATIONS**

The field of quantum information processing has made numerous promising advancements since its conception, including the building of two- and three-qubit quantum computers capable of some simple arithmetic and data sorting. However, a few potentially large obstacles still remain that prevent us from "just building one", or more precisely, building a quantum computer that can rival today's modern digital computer. Among these difficulties, error correction, decoherence, and hardware architecture are probably the most formidable.

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➢ APPLICATIONS OF QUANTUM COMPUTERS

It is important to note that a quantum computer will not necessarily outperform a classical computer at all computational tasks.. By using these algorithms a quantum computer will be able to outperform classical computers by a significant margin. For example, Shor's algorithm allows extremely quick factoring of large numbers, a classical computer can be estimated at taking 10 million billion billion years to factor a 1000 digit number, where as a quantum computer would take around 20 minutes.

➢ FUTURE BENEFITS OF QUANTUM COMPUTERS

❖ Artificial Intelligence

It has been mentioned that quantum computers will be much faster and consequently will perform a large amount of operations in a very short period of time. On the other side, increasing the speed of operation will help computers to learn faster even using the one of the simplest methods - mistake bound model for learning.

❖ Other Benefits

High performance will allow us in development of complex compression algorithms, voice and image recognition, molecular simulations, true randomness and quantum communication. Randomness is important in simulations. Molecular simulations are important for developing simulation applications for chemistry and biology. With the help of quantum communication both receiver and sender are alerted when an eavesdropper tries to catch the signal. Quantum bits also allow more information to be communicated per bit. Quantum computers make communication more secure.

➢ CONCLUSIONS

The quantum computers power to perform calculations across a multitude of parallel universes gives it the ability to quickly perform tasks that classical computers will never be able to practically achieve.

Development of quantum computer needs a lot of money. Even the best scientists can’t answer a lot of questions about quantum physics. Quantum computer is based on theoretical physics and some experiments are already made. Building a practical quantum computer is just a matter of time. Quantum computers easily solve applications that can’t be done with help of today’s computers. This will be one of the biggest steps in science and will undoubtedly revolutionize the practical computing world.

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PASSWORD BREAKER CIRCUIT SYSTEM

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ABSTRACT
Nowadays, the current power system deals with huge power network as well as associated electrical equipment. During the electrical fault or short circuit, the power network will suffer from a high stress of fault current in them which may harm the equipment permanently. For conserving the power networks and equipment, the fault current should be very cleared from the system as fast as possible. To overcome this problem, the proposed system password based circuit breaker gives a solution to ensure lineman security. In this research paper , the control (ON/OFF) of the electrical lines lies with lineman. This project is set in such a way that preservation staff or lineman has to enter the password to ON/OFF the electrical line.Now, if there is any mistake in the electrical line, then the lineman will control the power supply to the line by pressing the password and happily repair the electrical line, and after coming to the substation lineman switch on the supply to the particular line by pressing the password. Separate passwords are allocated for every electrical line.

Keywords: IoT, Lineman, Electrical Lines, GSM, Password, Circuit

INTRODUCTION
Nowadays, the current power system deals with huge power network as well as associated electrical equipment. During the electrical fault or short circuit, the power network will suffer from a high stress of fault current in them which may harm the equipment permanently. For conserving the power networks and equipment, the fault current should be very cleared from the system as fast as possible. To overcome this problem, the proposed system password based circuit breaker gives a solution to ensure lineman security. In this project, the control (ON/OFF) of the electrical lines lies with lineman. This project is set in such a way that preservation staff or lineman has to enter the password to ON/OFF the electrical line.

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WHAT IS CIRCUIT BREAKER?
An electrical circuit breaker is a switching device which can be functioned manually as well as routinely for protection and control of electrical power system. As the modern power system deals with huge currents, the special concentration should be given during designing of a circuit breaker to secure interruption of the arc generated during the working of the circuit breaker. This was the normal definition of the circuit breaker.

Circuit Breaker

PASSWORD BASED CIRCUIT BREAKER
The hardware and software requirements of password-based circuit breaker include Power supply block, Microcontroller (at89s52/at89c51), Pushbutton, LCD, Matrix keypad, Relay, Relay driver LED, 1N4007, Capacitors, and Resistors. Keil compiler, Embedded C or Assembly language.

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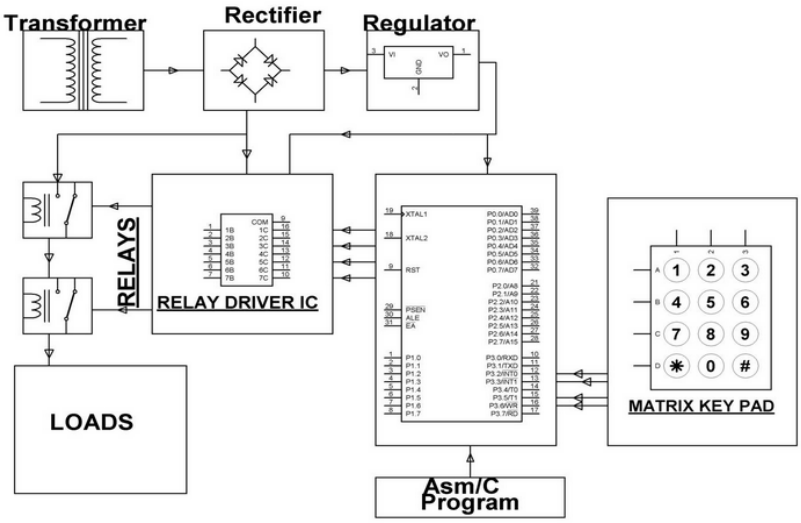
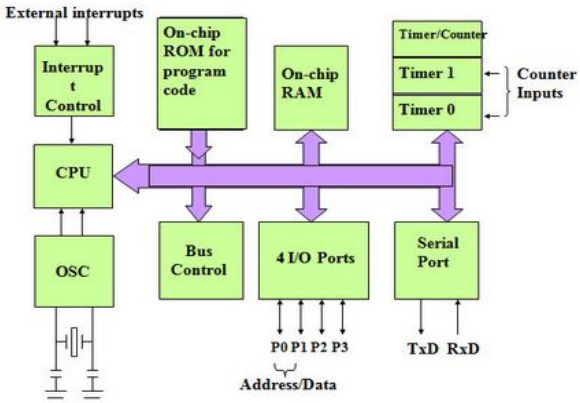


MICROCONTROLLER

The microcontroller is a smaller computer; it has on-chip RAM, ROM, I/O ports.



AT89S51 Microcontroller

FEATURES OF AT89S51/52

- Compatible with MCS®-51 Products
- 8K Bytes of In-System Programmable (ISP) Flash Memory
- Endurance: 10,000 Write/Erase Cycles
- 4.0V to 5.5V Operating Range
- Fully Static Operation: 0 Hz to 33 MHz
- 256 x 8-bit Internal RAM
- 32 Programmable I/O Lines
- Three 16-bit Timer/Counters
- Eight Interrupt Sources
- Full Duplex UART Serial Channel
- Interrupt Recovery from Power-down Mode
- Watchdog Timer
- Dual Data Pointer

RELAY

The relay is an electromagnetic switch, used to control the electrical devices. Copper core magnetic flux plays the main role here.

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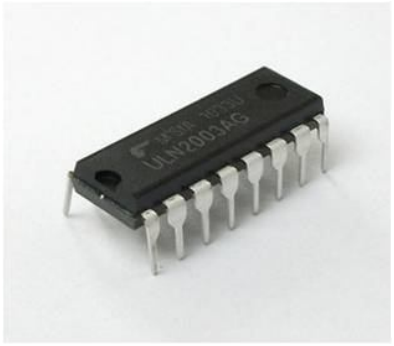
- The relay's switch connections are usually labeled COM, NC, and NO:
- COM = Common, always connect to this; it is the moving part of the switch.
- NC = Normally Closed, COM is connected to this when the relay coil is off.
- NO = Normally Open, COM is connected to this when the relay coil is on

KEYPAD

- A keypad is a set of buttons arranged in a block or "pad" which usually bear digits, symbols and usually a complete set of alphabetical letters. If it mostly contains numbers then it can also be called a numeric keypad.
- In order to detect which key is pressed from the matrix, the row lines are to be made low one by one and read the columns. Assume that if Row1 is made low, then read the columns.
- If any of the keys in row1 is pressed then correspondingly the column 1will give low that is if the second key is pressed in Row1, then column2 will give low.

RELAY DRIVER (ULN 2003)

- ULN2003 is a high voltage and high current Darlington transistor array
- It consists of seven NPN Darlington pairs that feature high-voltage outputs with common-cathode Clamp diode for switching inductive loads.
- The ULN2003 has a 2.7kW series base resistor for each Darlington pair for operation directly with TTL or 5V CMOS devices.
- Current, Output Max:500mA
- Voltage, Input Max:5V
- Voltage, Output Max:50V



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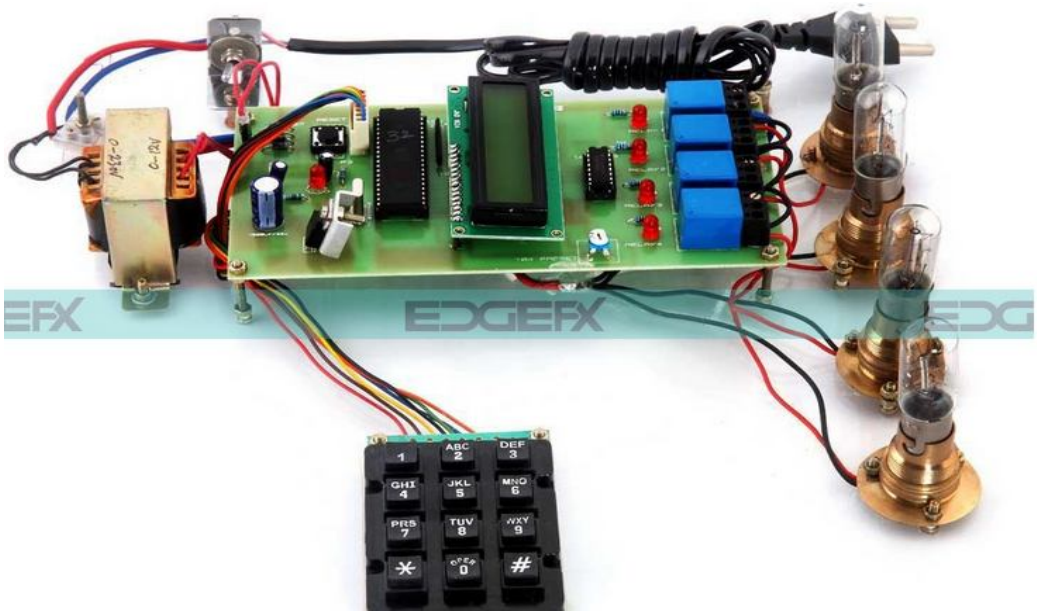
LIQUID CRYSTAL DISPLAY (LCD)

- Most common LCDs connected to the microcontrollers are 16×2 and 20×2 displays.
- This means 16 characters per line by 2 lines and 20 characters per line by 2 lines, respectively.
- The standard is referred to as HD44780U, which refers to the controller chip which receives data from an external source (and communicates directly with the LCD.

WORKING PRINCIPLE OF PASSWORD-BASED CIRCUIT BREAKER

The proposed system is designed to control a circuit breaker with the help of a password on a keypad, which is connected to the project.



Password Based Circuit Breaker Project Kit

The controlling of this project can be done by an 8051 family microcontroller. A matrix keypad is connected to the microcontroller to enter the password. The entered password is compared with the stored password in the ROM of the microcontroller. If the given password is right, then only the line can be switched ON/OFF. The circuit breaker Activation/deactivation is indicated by a lamp (ON/OFF).

Further this project can be enhanced by using an EEPROM for the user to modify the password for a more protected system. It can also be interfaced with a GSM modem for remotely controlling the electronic circuit breaker through SMS.

Advantages

The advantages of password-based circuit breaker include the following

- It avoids electrical accidents to lineman
- This project is very simple and easy
- It can be built with commonly available components

Applications

The applications of password-based circuit breaker include the following

- It is used to ensure the lineman safety in electrical substations
- This system is used in houses and buildings
- To conserve the energy, it is used in public areas like hotels and shopping malls.

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CONCLUSION

From the above information finally, we can conclude that this system provides a solution which can ensure that only the lineman can control the system and thus no possibility of someone else interfering the system. The lineman can simply work the loads from the major center rather than come to every circuit breaker source. Thus, it is an extremely useful, inexpensive and safe way of using circuit breakers.

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STUDY OF EDUCATIONAL DATA USING DATA MINING TECHNIQUES AND ALGORITHM

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ABSTRACT

This paper finds application of data mining to study educational data. Many data mining methods like clustering, classification, association can be applied on educational data.

Data mining is also called as "knowledge discovery of data". It uses machine learning, statistics, correlation and scientific discovery.

Different types of data like flat files, relational database, datawarehouse, transactional database, multimedia database, spatial database, time series database can be mined using different techniques of data mining.

Educational data mining refers to the methods that analyze the educational data and extract new finding from that data.

For this different algorithms like K-means,SVM , pearson's are available.

For applying data mining techniques , first data has to go from the process of data cleaning.

Data cleaning is the process where error free data is generated. For this paper collected samples passed through data cleaning process and then applied K-means algorithm on collected data and finds the results for different stream.

Financial condition and social economic condition of student matters in their learning process so this paper first study and analyze income of student's parents for different academic year for different streams.

This paper finds different clusters for different stream students. Clusters are based on annual income of their parents.

INTRODUCTION

Data mining works on large set of data. It is used to find useful information from huge amount of data.

Data mining is used to find correlation between different data item sets, it is used to find frequent pattern from data sets.

Now a day data mining is used by many organization to discover new, useful data from the raw data.

Organization can analyze many things through the different algorithms of data mining. Many methods are available in data mining that are:

1. Association
It is used to find relationship among different data sets.

2. Classification
This method groups or classifies the datasets in certain predefined classes.

3. Clustering
This method also classifies datasets in different clusters but cluster are not predefined.

4. Prediction
It defines the relation between independent and dependent variable.

5. Sequential patterns
This method analyze similar pattern of data sets.

6. Decision tree
This method is most popular method of data mining. It is based on conditions ,answers or responses to these conditions determines the decisions.

For different methods of data mining , different algorithms are given. for example K-means algorithm, SVM algorithm, pearson's algorithm etc.

K-means algorithm is clustering algorithm. It helps to find nearest centroid classifier. It creates K cluster and analyze clusters, it is well-known for cluster analysis.

K-means algorithm is popular and used for many applications like market segmentation, making clusters of document etc.

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Educational data mining uses different data mining techniques for educational data analysis. It helps to analyze learning activities and learning process. After analyzing educational data and its processes conclusion is given which helps to take decisions. Different algorithms for different type of fact and for different type of data can be applied. These results of algorithm can be used by various educational institutes and universities to take proper and corrective actions.

LITERATURE REVIEW

- K.SrinivasB,et al.2018, Automated Data Mining Techniques:A critical review, In this study, author briefly examine the potential use of classification based data mining techniques such as Rule based, Decision tree, Naïve Bayes and Artificial Neural Network to massive volume of healthcare data.
- T.Thilagaraj,et al.2018, A Review of Educational Data Mining in Higher Education System, ACSIS, Vol. 10 ISSN 2300-5963The students achievement rate were reduced continuously is the major problem inhigher education. To increase the success rate of students the early forecast technique will help the management to counsel the poor students at right time. To discover the new patterns from various data the data mining approach is widely used. Likewise here the data mining is used in educational field to extract hidden patterns.
- DebabrataDattaKashiNathDey ,2017**,**Application of Materialized View in Incremental Data Mining Operation Materialized view is a database object used to store the results of a query set. It is used to avoid the costly processing time that is required to execute complex queries involving aggregation and join operations. Materialized view may be associated with the operations of a data warehouse. Data mining is a technique to extract knowledge from a data warehouse and the incremental data mining is another process that periodically updates the knowledge that has been already identified by a data mining process.
- MeghaShahi,et al.2017, Heart Disease Prediction System Using Data Mining Techniques - A Review Data mining is the computer based process of analysing large sets of data and then extracting the meaningful patterns. Data mining tools predict future trends which allow business to make knowledge-driven decisions. Data mining tools can answer the business questions which take much time to resolve in real world. The huge amount of data generated for prediction of heart disease are too complex to be processed and analysed by traditional methods. Data mining provides the methodology to transform these mounds of data into useful information for decision.
- R.V. Patil1,et al.2017A Survey on Classification of Liver Diseases using Image Processing and Data Mining TechniquesIn the classification of liver related diseases each of these imaging modalities plays important role. Classifying a liver into normal liver and diseased liver (in diseased cirrhotic or fatty liver) depends completely on the texture of the liver. Texture is a combination of repeated patterns with regular or irregular frequency. Texture visualization is easier but very difficult to describe in words.
- Kai Shu,et al.2017, Fake News Detection on Social Media: A Data Mining PerspectiveSocial media for news consumption is a double-edged sword. On the one hand, its low cost, easy access, and rapid dissemination of information lead people to seek out and consume news from social media. In this survey, author present a comprehensive review of detecting fake news on social media, including fake news characterizations on psychology and social theories, existing algorithms from a data mining perspective, evaluation metrics and representative datasets.
- Gang Luo,2017,Toward a Progress Indicator for Machine Learning Model Building and Data Mining Algorithm Execution: A Position PaperFor user-friendliness, many software systems offer progress indicators for long-duration tasks. no existing machine learning software supplies a non-trivial progress indicator. Similarly, running a data mining algorithm often takes a long time, but no existing data mining software provides a nontrivial progress indicator. In this article, author consider the problem of offering progress indicators for machine learning modelbuilding and data mining algorithm execution. Author discuss the goals and challenges intrinsic to this problem.
- AbdulmohsenAlgarni, 2016, Data Mining in Education, International Journal of Advanced Computer Science and Applications ,Vol. 7, No. 6,Educational data mining (EDM) is a method for extracting useful information that could potentially affect an organization. The increase of technology use in educational systems has led to the storage of large amounts of student data, which makes it important to use EDM to improve teaching and learning processes. This paper surveys the relevant studies in the EDM field and includes the data and methodologies used in those studies.

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RESEARCH METHODOLOGY

Data for the research collected from the VIVA college of Arts , Commerce and Science for the stream of commerce and arts.

Different attributes for data are collected and completed data cleaning process by applying different data cleaning methods like removing data with errors or with null values etc.

After data cleaning process K-means algorithm is applied on selected data. K-means algorithm generates cluster and finds the centroid for the cluster.

ANALYSIS AND FINDINGS

To classify students based on Annual income k-means clustering algorithm is used.Algorithm applied on three different streams data i.e. Arts, Commerce, and Science.

Table given below shows data used for algorithm and graph shows clusters and their centroid value.

Algorithm generates four clusters (cluster 0, cluster 1, cluster 2, cluster 3) .

Following table 1 shows the details for different academic year i.e. from 2013-14 to 2018-19.

Number of samples collected for different year , minimum and maximum income of parents.

Academic Year	Total Samples	Min Income	Max Income
2013-14	302	3000	400000
2014-15	390	2000	800000
2015-16	392	3000	1200000
2016-17	443	5000	1500000
2017-18	429	8000	1100000
2018-19	407	10000	3200000

Table-1

Following table (table 2) shows cluster generated by algorithm and centroid value for the cluster.

It also shows number of item sets that lie under different cluster.

Cluster0 Centroid	Cluster0 Count	Cluster1 Centroid	Cluster1 Count	Cluster2 Centroid	Cluster2 Count	Cluster3 Centroid	Cluster3 Count
40634	149	94719	106	185759	36	345181	11
53542	313	169285	53	380435	16	593750	8
65655	327	216774	53	536118	10	1100000	2
65719	374	192612	49	461859	17	1100000	3
74699	350	255427	58	494860	20	1100000	1
101740	358	465635	44	1833333	3	3000000	2

Table-2

From table 1 and table 2 it found that centriod value for cluster 0 ranges from 345181 to 3000000 and falls under lower income category.

Centriod value for cluster 3 ranges from 40634 to 101740 and falls under high income category.

More students comes under cluster 0 (low income category for Arts) as compared to other cluster.

Less students come under cluster 3 (high income category for Arts) as compared to other cluster.

Like Arts students details , commerce students details are shown in table 3 and table 4.

Academic Year	Total Samples	Min Income	Max Income
2013-14	1629	1000	3500000
2014-15	2996	4500	5000000
2015-16	3167	4500	4000000
2016-17	3088	5000	2722653
2017-18	3163	5000	2000000

Table-3

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Cluster0 Centroid	Cluster0 Count	Cluster1 Centroid	Cluster1 Count	Cluster2 Centroid	Cluster2 Count	Cluster3 Centroid	Cluster3 Count
96448	1451	348260	159	932666	15	2437500	4
94119	2624	361271	341	979172	29	4500000	2
93514	2780	340976	355	1030161	31	4000000	1
86579	2439	245760	535	608698	106	2102831	8
87312	2511	239309	507	525892	126	1218947	19

Table-4

From table 3 and table 4 it found that centriod value for cluster 0 ranges from86579 to 96448and falls under lower income category.

Here , minimum centriod value is in academic year 2016-17 and maximum centriod value is in academic year 2013-14.

Centriod value for cluster 3 ranges from 1218947 to 4500000 and falls under high income category.

More students comes under cluster 0 (low income category for commerce) as compared to other cluster.

Less students come under cluster 3 (high income category for commerce) as compared to other cluster.

CONCLUSION

After comparing the values generated by algorithm it found that cluster range for arts and cluster range for commerce students are different.

From the algorithm cluster 0 falls under low income category and cluster 3 falls under high income category.

As per our data, students with low annual income are more admitted in the institute as compared to high annual income for all the academic year for both arts and commerce.

Low income range and high income range for arts and commerce are different and it found that average income of commerce students are more than arts students.

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STUDY OF PREPARATORY PROGRAMMING LANGUAGES IN CURRICULUM AND ITS EFFECTS ON STUDENTS

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ABSTRACT
The reason behind conducting this study was to conclude or advice the respective concerned committees who can modify the course content computer science courses based on needs of students. The survey methodology was used in this research study to identify the competencies, programming languages (PL), and assessments that academic and industry experts felt most important. Along with questions related to introductory PL's, few questions are also dedicated to target the course selection criteria, background of the students understand-ability and future aspirations of the students. The study also covers the detail aspects of language characteristics such as critical syntax, lines of code, debugging support which is the reason behind the popularity of the PL's among the students.

Keywords: Preparatory Programming Language, assessment, popularity, students

INTRODUCTION AND BACKGROUND
The interest for computing experts in the working environment has prompted expanded regard for SW engineering instruction, and early on SW engineering courses have been presented at various degrees of education. For many years and more and more in any respect levels of obligatory and submit-compulsory education – the choice of PL to introduce the technology of computer programming through key programming concepts, constructs, syntax and semantics has been frequently revisited. Even inside the context of what are appeared to be the most difficult introductory topics in science tiers, numerous key subject matters across programming regularly appear. It appears that many years of studies at the teaching of introductory programming has had restrained effect on lecture room practice; although relevant research exists across several disciplines together with education and cognitive technological know-how, disciplinary variations have often made this fabric inaccessible to many computing educators. The main idea blanketed on this examine is getting the exceptional feasible records from the primary concerned birthday party in training field "students". This observe is to achieve the insights associated with adopting PL's and direction from the scholar's point of view.

As teaching aims to prepare a personnel for destiny jobs, it is of little surprise that the number of students in introductory computer science have persevered to grow in faculties and universities. Those guides can cowl statistics systems, hardware and architecture, working structures, software program engineering, programming, databases, among other subjects. Additionally, instructors can pick out from several languages to offer college students a joy that is instructional, motivating, and meets present day industry practices. The purpose of this research turned into to provide recommendations for the skills, PL's, and tests for CS course.

LITERATURE REVIEW
There may be a big body of well-known literature on the roles and strategies teachers and students encounter in higher training. Introductory PL has been the subject of many research papers, that specialize in a wide range of technical and academic components. A researcher highlights that the problems encompass "which PL should be used, which method have to study, which subjects have to be covered". Debates over based as opposed to object-oriented driven curriculum nevertheless keep to divide computing educators. A studies confirmed that seventy nine% of universities covered object orientated standards, with fifty two%, slightly over half of, protecting gadgets first. The talk additionally rages as to the appropriate choice of programming language, with many favouring extensively used languages which include C++ and Java whilst others recommend 'conceptual' languages or alternate techniques consisting of the use of games or toolkits so that you can cognizance on logical wondering and implementation.

An exploration demonstrated that Java is obviously the most utilized PL, in the request for 52% over the colleges studied. Despite the fact that this might be the situation, numerous scientists contend against the utilization of Java. An article gives a basic assessment, featuring the natural troubles in utilizing Java as a first PL, which propose the utilization of the interactive media language ActionScript as an answer, while others to pick autonomous toolsets as a methods for acquainting understudies with programming ideas.

Despite what decisions are made for programming approach, language and project condition, in the study hall the understudies will at present face a difficult blend of theoretical programming ideas and sensible thinking forms. These unique standards and legitimate thinking must be connected to unravel an assortment of genuine

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issues in an assortment of settings. Subsequently repetition learning is close to outlandish in the programming regards. In spite of the fact that understudies can arm themselves with a variety of programming models and develops, each programming issue will have a one of a kind arrangement contained the programming building squares they have contemplated.

The hypothesis that this study seeks to look at is that student expertise abstract difficulties with components of the information that need abstract and thinking however it's exactly these elements of the curriculum that very little feedback is offered, thus student performance in these areas is poor.

INCLUSIONS IN QUESTIONNAIRE

To gather the relevant information the participants, survey questionnaire is divided into several sections. Each of these sections are targeted to gather specific information from the participant about the detail ness of their expressed opinions. This survey is conducted on the students who are part of computer science or information technology. For this study only students who are part of their last year degree courses only selected. The purpose of this is that, these students have completed their two years and currently pursuing their third year, which make them appropriate target audience to speak on the issues related to Introductory PL, course and curriculum and problems related to adoption of these technical issues. Total 150 students actively participated in this survey and expressed their views.

The first part of question are based on collection simple information about participant such as name, why they have opted for course, how they find the course difficulties, which was asked to get the first sight impressions of the students towards the course.

The second part digs dipper with questions such as practical and theoretical sense in current syllabus, are they satisfied or want changes in curriculum. These questions are to find the adoption level and popularity of current course contents.

The next series of questions are based on Introductory PL which students opted for their academics such as when they first encountered which gives insight about their programming experience. Which PL they use most which answers the popularity of introductory PL. Are students are interested to code outside the classes, which answers students blend towards PL. One question is about confidence they feel in writing programs, which gives insight about difficulty level in understanding the introductory PL. Can students solve the open ended problems using PL they use, which again gives answer about the relevance for opting an introductory PL in academics. Whether students are aware about web technologies which is currently most required. Other than Introductory PL which other PL's are favourite of the students. What students think about opting new PL in curriculum and what support they are getting from the tools associated with the particular PL which supports students to understand it easy way.

The next part of questions are based on gathering the information related big picture of course curriculum on the basis of that overall course outcome can be obtained. In technical course the programming is not the only aspects to consider. The theoretical knowledge also matters. Questions such as which area of curriculum students like most and they want to make carrier in gives the understanding of the part of choice of students. Which also can help academicians while drafting the curriculum. What is students view on OOPL and how they compare these language also put a light on adoption of PL by them. What they feel about number of lines of code, how they treat criticalness against the ease of code through the latest technological PL supporting editors. Students are also asked for their views on technical specifications such as memory management and latest industry requirements.

Next segment of questions are to test the knowledge of students related to new trends which are entering in the market and are not part of their current curriculum. How prepared they are to undertake, learn these new techniques with newer development models.

SURVEY FINDINGS

The observations and findings of this study shown very wide angle of aspects of Introductory PL and about the syllabus contents and course itself. Almost 87% of the participants chosen theses course with self-interest. Few of them joined because of parent's direction and few joined for job interest. These results shows that most of the students are aware about professional importance of these courses. 82% learners think that course is not so difficult to understand and 8% thinks that it's easy. Hardly 10% students thinks that course is critical to understand. 55% students are happy with the quality of the course while 34% are not sure about the quality. Almost 61% participants think that there is a close relationship between theoretical and practical aspects of the course. While significant students are not able to find the appropriate linking between those aspects. Even

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theses results of last question more than half of the participants feel that there is need to change in the contents of the course to face the new challenges in front of the students.

Majority of the students had their first PL experience in Degree College itself, however few of them gone through it in their junior college. As per the length issue concerned with PL, students think that in Java they have to use maximum line of code while C++ and Python requires comparatively less code. However there is another aspects is observed in regards with liking of coding. 55% students like to code outside the official environment and 45 are sticking with the assignments work purpose only. Almost 40% of students are very confident in their coding skills while 45% are somewhat confident. Very few of them are good at in. This observation puts light on the fact that whatever curriculum they are going through now is adequate to give them good knowledge about preparatory PL. This result is also become confirmed as further 82% participants acknowledged that they are confident to deal with open ended problems related of PL. Almost 90% and more students are also aware about introductory mark-up language HTML which is used to design web pages and also aware about web scripting work. Observation conclude that Python, Java and C++ are the most liked PL by students. Most of them prefer to use C#, Java and Python for their term end project. Most of the students think that due to new editors, tools and web help they can easily learn the new PL.

The 46% participants are comfortable with programming in computer science and 26% are more interested in designing. Most of them want to make their carrier as developer only. 75% of the students are thinking that modern PL's are strong with OOAD approach. Majority chunk of the students find that almost of PL are having similar characteristics in terms of coding, syntax etc. 85% of them sure about the learning to code is majorly a try and error basis work. They also expressed a thought that the useful PL's are the part of Major computing industries. They have almost equally distributed opinion about the code quantity as whether it brings useful output or not. Maximum of them are agrees that efficiency is the most effective part of any PL. The type compiled or interpreted is also important about PL. 42 % students think that memory must be managed manually and 36% are in side to automatic management, however rest think that it's no big deal using either of the methods. According to maximum participants the development in mobile and web is the future on computing industry, still there is small chunk thinks that there is still scope of standalone applications. AI and VR is the most new things towards students are attracted nowadays. Majority of them thinks that to implement and to understand easily Waterfall model is the best while actually for completing project development most of them preferring agile methodology.

CONCLUSIONS AND FURTHER RESEARCH

To conclusion of the study is mostly expressed in the findings itself. Still in a word, the investigation has given countless bits of knowledge into study propensities and difficulties looked by fledgling understudies. Unmistakably components of program configuration demonstrated to be among the most testing parts of early on programming educational plan. To be sure the components of the educational program of a profoundly theoretical nature demonstrated to be recognized as the most testing, both from a comprehension and usage point of view.

A change in acknowledged criticalness from understanding to implementation could also be seen in almost all parts of the curriculum. The only element not to experience this shift was syntax. This is an aspect of programming curriculum that provides a very high level of feedback to the students, possibly a reason why students feel a little more comfortable in working with programming syntax than their conceptual understanding of it. Students have commented on general topic areas only at this stage, therefore further breakdown of curriculum topics, particularly those relating to object oriented concept and design must be done to further investigate these problems. This data provides an insight into student problems with the introductory programming curriculum.

There is still need to increase the scope of research for above work by including most of the students across the different university to bring more clarity in result perspectives so that the results of the research can be included and actually implemented in undergraduate curriculum.

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TEACHING AID FOR VISUALLY IMPAIRED USING IOT

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ABSTRACT
This paper describes Braille displays used by Blind or Visually Impaired people. The system is designed to manipulate the ASCII 64 printable character set in such a way that it stimulate 6 dot combinations in Braille language. The prototype designed consist of a portable, battery powered and stand-alone Arduino that processes pre-programmed English and actuates Braille cells consisting of 6 solenoids and 6 LED(Light Emitting Diode) representing a Braille character with the incorporation of Google Assistant using which input is given to the system. It is simple and cost effective system for displays has been implemented using Arduino Controller.

INTRODUCTION
Research to spread or give out something, especially news, information, ideas, etc. of knowledge has increased literacy among the blind or visually impaired as there is improvement in technology empowering them to explore their challenges and abilities in today's fast paced world.

The blind or visually impaired people depend mainly on sounds and touch to communicate and navigate their environment along with Braille. Since development Braille is the most common tool used by visually impaired and blind people for accessing knowledge. Braille is a reading and writing system that was invented. This is globally accepted method to define and describe letters, numbers and symbols in the form of dots on embossed paper or other materials. The Braille characters are displayed within a predetermined space and pattern known as a Braille cell, shown in Figure 1. Braille cells consist of six dots arranged in a rectangular fashion aligned in two columns, each column consist of three dots each, it like a 3×2 matrix. Total 64 combinations of Braille characters possible using the 3x2 matrix of 6 dots. This 6-dot Braille pattern can be used to generate different characters in different languages. The script written for one language may have entirely different meaning in another language.

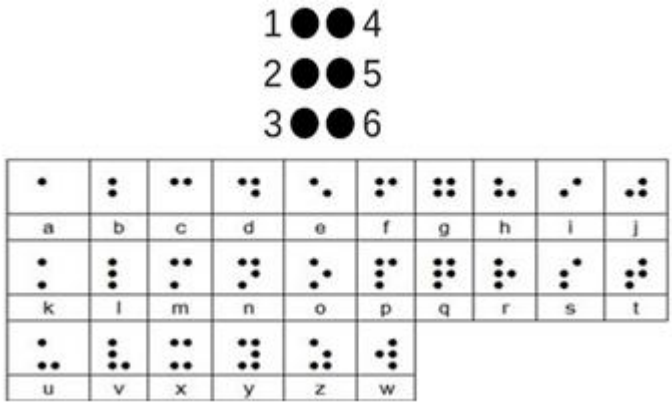

Figure-1: Braille Cell and Pattern

English language characters can be represented using a single Braille cell. But, different languages such as Devanagari and other Indian languages may require more than one Braille cell for complete interpretation of a character since they show the usage of characters that are constructed by combination of two or more characters with a special character known as halation Devanagari [5]

Many software tools have been developed to translate embossed Braille documents into digital counterparts and vice versa, in different languages such as Mandarin, Turkish, Bangla, Odia and Devanagari [6-11] some researchers have also reported hardware implementations of electronic-book (e-book) reader for visually challenged.

Many development has been done using PC, complex programming have developed such Braille system. Few have worked on same concept under embedded systems, which consist of Micro-controller Units (MCUs) offering lesser processing power but small size, with lesser power consumption and also portable. In [16] describe an English text to Braille converter based on an ATMEGA16 MCU which controls a vibration mechanism used to stimulate Braille. In report17 implementation of an e-book reading device based on the ATMEGA16 MCU interfaced with a Secure Digital (SD) card that reads text files written in English and

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features two solenoid based Braille cells running on AC Mains. In [18] present an e-book reader based on an AT89S52 MCU capable of input/output using a computer keyboard along with music recording/playback functionality.

Several devices have been reported in a Technology Resource List compiled by the National Federation of Blind (NFB United States) that is a large scope index of software systems and devices related to Braille, speech and other blindness technology updated time to time, which updated their general description, usage, features, manufacturer, and pricing information[19]. Tools are available in market with wide range of variety, quality but major disadvantage was cost and limited quantity, reason for these may be awareness and small market based. Also mechanical system have meager intelligence, information capacity and inhibit self-learning. Also student have to rely on teachers many times, which imposes a major hindrance in their education of the Braille system.

Continuing above few research projects show great promise but lack some basic features and functions an e-book reader should have such as:

• Portability

• Low complexity

• Multi-lingual architecture

• Reading speed control

Hence there is considerable scope for the development of a low-cost and portable solution while boosting ergonomics and functionality. It is also noted that Arduino offer good flexibility at low cost for development of Braille display, a device that produces Braille dot patterns by electronically/mechanically raising or lowering pins to display information and also can be controlled with voice.

Arduino/Node MCU Braille Display

This paper implements an Arduino/Node MCU Braille display controller that utilizes Arduino-an open source, cross platform prototyping tool based on easy-to-use hardware and software based on Atmega328/ESP8266. Following are the features of Arduino/Node MCU:

- **Ease of Programming:** It can be easily programmed with the IDE provided by manufacturer.
- **Peripherals:** It has 14 GPIO pin can be used to interface solenoids with driver circuit controlled by these GPIO's.
- **Cross-Platform:** Program developed for one Arduino/Node MCU can be easily ported on other Arduino with small modification and IDE used is same for many different Arduinos and its Clones.
- **Stand-alone System:** All Arduino/Node MCU boards have inbuilt power regulators and can be powered with multiple options like a USB cable or an external power supply i.e. adapter or even a battery, which makes the system portable.

DESIGN AND IMPLEMENTATION

For implementation following components are needed

1. Node MCU
2. 6-Solenoids
3. Driver for Solenoids
4. Arduino IDE
5. IFTTT
6. Google Assistant.

Node MCU

NodeMCU is an open source IoT platform. It includes firmware which runs on the ESP8266 Wi-Fi SoC(System on Chip) from Espressif Systems, and hardware which is based on the ESP-12 module.The term "NodeMCU" by default refers to the firmware rather than the development kits. The firmware uses the Lua scripting language. But it can be programmed using Arduino IDE also.It is based on the eLua project, and built on the Espressif Non-OS SDK for ESP8266.

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Solenoid

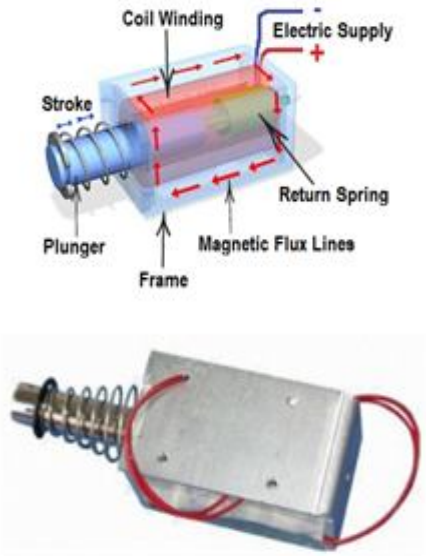

Figure-2: Solenoid

Solenoid is an electromagnetic or electromechanical device works on same principle as that of relay, which convert electrical energy into a magnetic signal or mechanical motion. Solenoids need drivers make up of MOSFET, Transistor .Constructional details of solenoid is shown in Figure.2.

Working of Solenoid

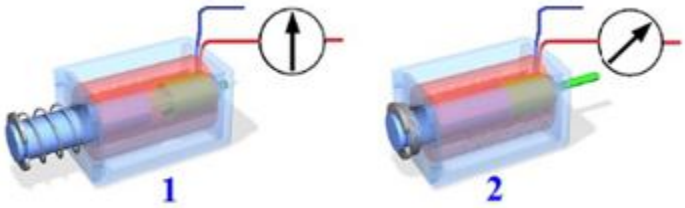

Figure-3: Working of Solenoid

As shown in Figure.3.when signal is applied, the magnetic coil gets magnetized and the plunger (as armature) assembly is pulled out and When signal is removed, the magnetic coil get demagnetized and the plunger (as armature) assembly is pulled in. Hence the movement of plunger can be sensed as Braille character.

Circuit Diagram

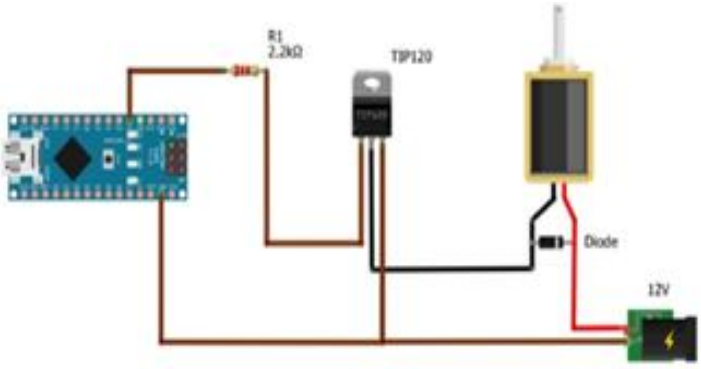

Figure-4: Interfacing of Solenoid with Node MCU

Google Assistant

The Google Assistant is an artificial intelligence-powered virtual assistant developed by Google that is primarily available on mobile and smart home devices.

Google assistant can have two way communication which makes it more suitable for IOT based applications with voice control. Users can interact with the Google Assistant through natural voice, and also through keyboard. It can recognize your words better than any other voice recognition devices and respond fast, perfectly and correctly to commands.

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IFTTT

If This Then That, also known as IFTTT, It is used to create Applets which can be used to handle conditions and is a free web-based service. An applet can also triggered by changes that occur within other web services such as Gmail, Facebook, Telegram, Instagram, or Pinterest. For example, an applet may send an e-mail message if the user tweets using a hashtag, or copy a photo on Facebook to a user's archive if someone tags a user in a photo. In addition to the web-based application, the service runs on iOS and Android. In February 2015, IFTTT renamed its original application to IF, and released a new suite of apps called Do, which lets users create shortcut applications and actions. As of 2015, IFTTT users created about 20 million recipes each day. All of the functionalities of the Do suite of apps have since been integrated into a redesigned IFTTT app.

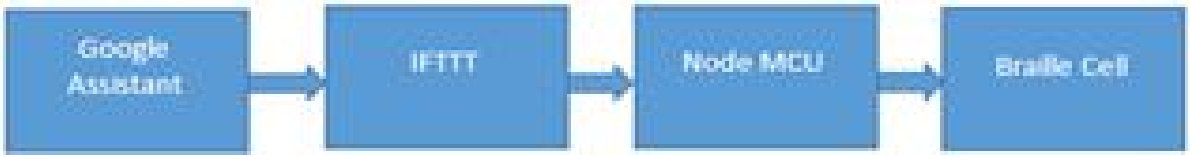

Figure-4: Communication between Google Assistant, IFTTT and Hardware

Web hook & JSON Content

A web hook in web development is a technique of augmenting, combining or altering the behavior of a web page, or web application, with custom callbacks i.e. response to type of request. These callbacks may be maintained, modified, and managed by third-party users and developers who may not necessarily be affiliated with the originating website or application. The term "web hook" was coined by Jeff Lindsay in 2007 from the computer programming term hook.

JavaScript Object Notation (JSON) is an open-standard file format that uses human-readable text to transmit data objects consisting of attribute–value pairs and array data types (or any other serializable value). It is a very common data format used for asynchronous browser–server communication, including as a replacement for XML in some AJAX-style systems.

Google Assistant to NodeMCU

In this system, we want to control different parts of a Node MCU like I/O pins, PWM, Serial port and so on by sending a string from Google Assistant to Node MCU Serial port.

1. We need to define some specific phrases for Google Assistant to find out what we mean.
2. Then we will make an applet in IFTTT website and make a connection between Google Assistant and our Contents.
3. After that we read data by ESP8266 module and send it to the Node MCU.

Implementation

Here the how the communication between Google Assistant, IFFFT, Webhook and hardware is discussed. We need to run Google assist on Android Phone.

1. Open ifttt.com and create an account.
2. After signing in, click on My Applets then click on New Applet.
3. Now you can add your service as THIS in your applet. Click on THIS and search for Google Assistant.
4. Here there are 4 choices to define your phrase for Google assist. Choose phrase with which is applicable.
5. In the next page you can add your phrase. For example you want to say "A". Just type it as your phrase. You can add more phrases like "B","C" and So on.
6. Now add a response so that the Google Assistant can let you know that your command was understood and the necessary action was taken, for example "A". When you are done click on Create Trigger.
7. In "THAT" part of your applet you have lots of services to choose form search for "Web hooks" and choose that.
8. Click "Make a web request." Add URL of your Server to receive data. Now click on "Create action."

Enhancements

Following enhancement can be done with this braille system

1. Since this system consist only of one cell, it can be designed for multiple cells

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2. Camera of cell phone can be used to do image processioning, which can read text in image and same can be given as input to our system using Google assistant

3. App can be designed as per the functionality needed for our system

CONCLUSION

A simple and cost effective Teaching aid for visually impaired were voice input is converted into Braille displays has been implemented using Node MCU,IFTTT and Google Assistant.

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A STUDY ON "EFFECT OF VIDEO GAMES ON YOUTH AND THEIR COGNITIVE FUNCTIONS" THROUGH SIMULATION: IMPACT ON HUMAN EMOTIONS

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ABSTRACT
In the recent years, video games have gained tremendous popularity among the youth for leisure and entertainment which demands physical and cognitive involvement while playing. Videos games combine physical and cognitive activities for performing cognitively demanding tasks. These activities can improve the cognitive performance but it also can have cognitive impairments among the youths for interacting with video games for longer period. In this paper, research is been done through Personal Interview and Survey along with the previously published research and evidences that suggests commercial video games can be used for the study and to enhance skills and development among the under-graduate students. The experiment population for this research is between the ages from18-25 without any cognitive issues. The data has been collected to study the maximum time spent by youth while playing games and its effects to their cognitive functions by simulation. This paper will also focus on the emotional behavior of the youth while playing games along with the heart rate, skin rate, intensity range, and threshold value. The EEG (Electroencephalography) scanning technique used in the previous published research is been used for the study. The paper will conclude with the challenges, advantages and effects on youth when they spent maximum time for playing video games.

Keywords: Neuron Simulation, Brain Health, Cognition, Emotional Behavior, EEG (Electroencephalography) Technique

1. INTRODUCTION

As per EEDAR, 211 million individuals, or 67% of people, play computer games. That implies a great many individuals could be making harm their minds, mental state, or capacity to rest. Playing games can affect memory, their emotions including sadness, happiness, fear and anger. Games can influence participant's minds and violent games can cause more pressure on participant's mental health. Synapses are being used for passing the messages into the nervous system which can be damaged while playing games because of multiple inputs passing through the individual. Games also influence the behavior of an individual and cause nervousness. The research has shown the simulation of human brain is possible where still the simulation of human emotions is still not into the considerations. Simulating human cognitive functions can be possible in the next 30 years but challenge with the human emotions. Because of the too much playing violent games can affect the human nervous systems. In the recent news, a 16 year old boy got a cardiac arrest while playing games where his own friend played against him which he was not able to accept. Youth are more interested to play violent games and they can play more than 8 hours which participants have also accepted during this research.

2. OBJECTIVE

1. To study the cognitive behavior of a youth between the ages of 18-25 while playing video games.
2. To study the heart rate, skin rate, intensity range and threshold value of a youth while playing video games.
3. To study the emotional transition while playing games.
4. To show the cognition simulation of neurons while having transition of emotions while playing games.

3. RESEARCH METHODOLOGY

- The data for the research taken through primary and secondary research. For primary data collection, the survey has been taken from the college students ranging their age from 18-25. Review Analysis has been done to understand the thought process and cognitive reactions when they play videos games for longer period of time.
- For secondary data collection, existing research papers, articles, and previous research work has been referred.
- Data collection also happened through personal talk with the individuals to understand the current scenario of the young generation which shows that an average student can play video games massively more than 4 hours without a break.

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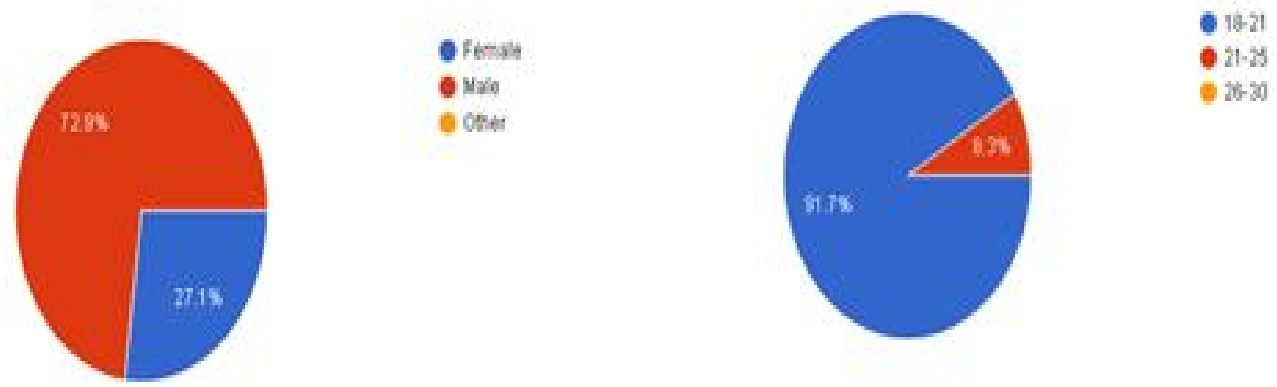
4. SAMPLING



The Sample size for the research was 167 students from the college who answered the defined questions as per their playing habits of video games. In the given graph, it shows the 91.7% participants are from the age 8-25, 8.3% are from the age 21-25. 72.9% participants in the survey are boys who are also the maximum in the number in playing video games comparatively with girls who are 27.1% only.

5. HYPOTHESIS

There are six primary hypotheses being tested during the present study. The following hypothesis is:

H1: No effects on participant's cognitive functions.

H2: Participants acts aggressively than who don't play.

H3: Participants who play violent games are more in anger while playing than whom don't.

6. ANALYSIS

7.1 Unpaired *t* test results

P value and statistical significance:
The two-tailed P value equals 0.0004
By conventional criteria, this difference is considered to be extremely statistically significant.
Confidence interval:
The mean of Group One minus Group Two equals -29.827
95% confidence interval of this difference: From -44.513 to -15.142
Intermediate values used in calculations:
t = 4.2367
df = 20
standard error of difference = 7.040

DATA REVIEW:

Group	Group One	Group Two
Mean	28.982	58.809
SD	14.827	18.038
SEM	4.471	5.439

7.2 Paired *t* test results

P value and statistical significance:
The two-tailed P value equals 0.0125
By conventional criteria, this difference is considered to be statistically significant.
Confidence interval:
The mean of Group One minus Group Two equals -29.827
95% confidence interval of this difference: From -51.691 to -7.963
Intermediate values used in calculations:
t = 3.0397
df = 10
standard error of difference = 9.813

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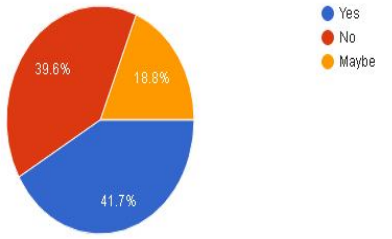
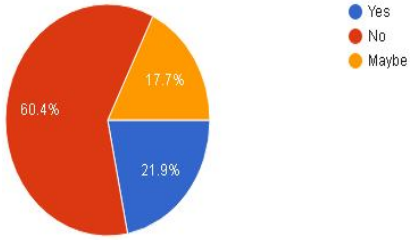
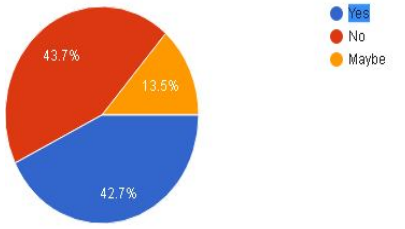
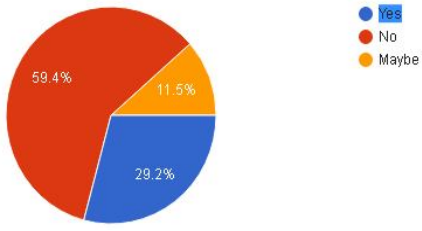
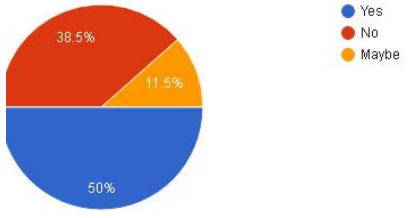
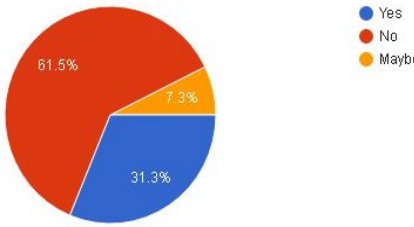
DATA REVIEW:

Group	Group One	Group Two
Mean	28.982	58.809
SD	14.827	18.038
SEM	4.471	5.439
N	11	11

7.3 Result Analysis

41.7% - Spends more time for playing video and 39.6% disagree for the same.	
21.9% spend more time or money on video games where 60.4% denies for the same.	
42.7 play video games for lesser duration. 43.7% disagree with the question.	
29.2% gets irritated when they asked to stop playing games where 59.4% denies.	
50% accepted that they play to overcome with their bad feelings where 38.5% disagrees.	
31.3% play games secretly without family's knowledge 61.5% disagrees.	

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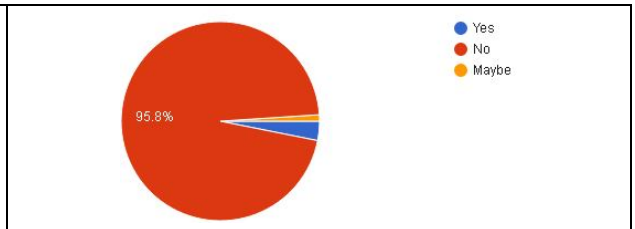
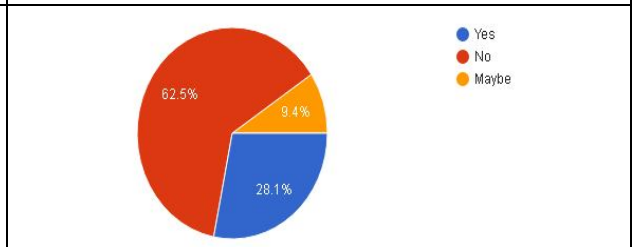
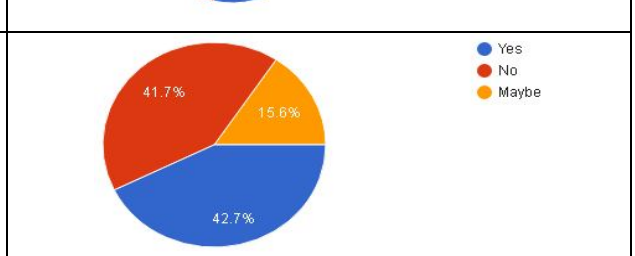
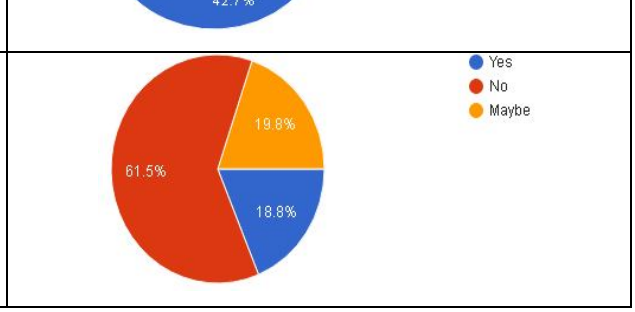
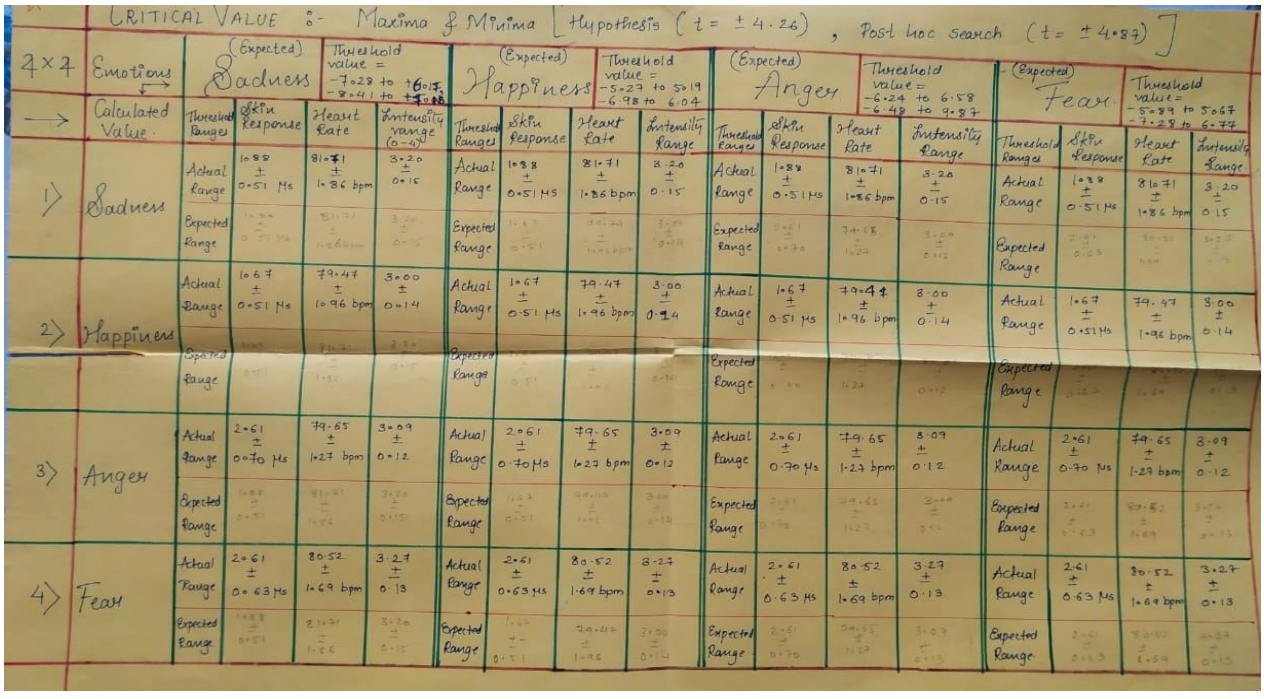
95.8% accepted that they have not stolen any game from store.	
28.1% accepted that they are doing house work for playing games.	
42.7% accepted that they play games over studies.	
18.8% accepted that they are not doing good in studies while playing games.	

7.4 Analysis on Threshold Range, Skin Response, Heart rate, Intensity Range of an participants between 18-25

Factors	Age above 18 years
Calm heart rate	60-100
Calm Played Games	90-130(40% increased)
Violent Video Games	120-160(45% increased)



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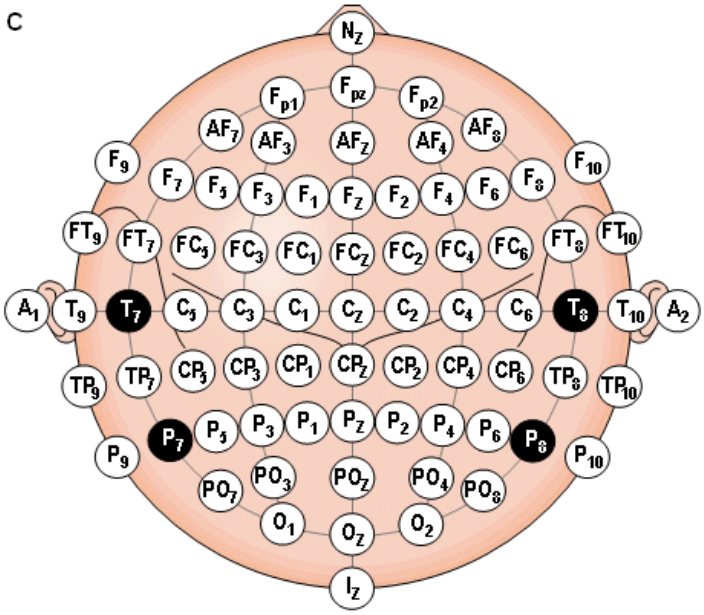
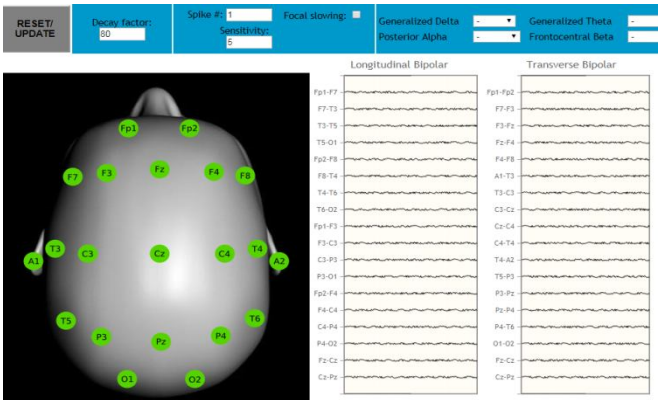
7.5 EEG LEAD SYSTEMS



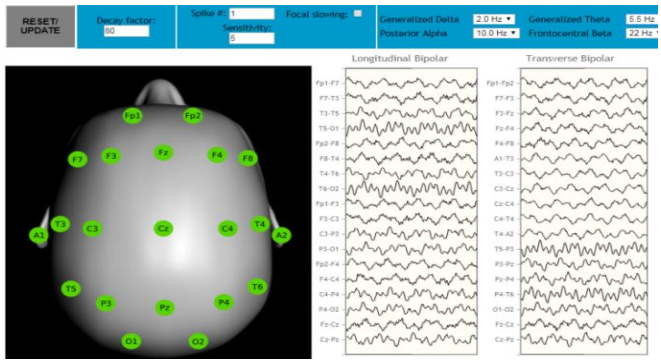
- EEG systems are used to record the electric field of the human brain and it was founded by German psychiatrist Hans Berger in 1924 in Jena. He called this machine with the name electroencephalogram (EEG)
- The alpha waves have the frequency of 8-13 Hz and can be measured from the occipital region in an awake person when the eyes are closed. The frequency of the beta waves is 13-30 Hz, these can be detected over the parietal and frontal lobes. The delta waves have the frequency of 0.5-4 Hz and can be detected in infants and sleeping adults. The theta waves have the frequency of 4-8 Hz and can be seen from children and sleeping adults.

For Dead Signals:



For Signals with the following values:

1. Delta: 2.0 Hz
2. Alpha: 10.0 Hz
3. Theta: 5.5 Hz
4. Beta: 22 Hz



7. CONCLUSION

The result shows that the participants are addicted towards active video games. They also agree that they get irritated while playing video games due to which the hyper activeness can cause them to have different emotions while playing. The research shows that the participant can have pulse rate more than 120 per minute which is future can affect their health and heart. The critical analysis shows that the increasing interest of the youth towards video games will lead to their health issues. The individuals are not able to handle the pressure of losing in games and through with severe changes in the emotions and the behavior.

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A STUDY ON STUDENT MOTIVATION AND TEACHER INVOLVEMENT IN E-LEARNING AT UNDERGRADUATE LEVEL

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ABSTRACT
E-learning or electronic learning uses internet and electronic devices like computer or mobile phone to disseminate information. It uses more medium of communication than what is available in a classroom, for example, audio-visual content, animation, simulation, virtual reality etc.

E-learning tools can help tackle many problems related to education like, means of communication, time and availability, receiver's convenience and interest.

With growth of internet reach, e-learning has grown. Most of the students use the internet to search for information instead of going to library. Google has become a generic word which means searching for information. This paper is an attempt to find out why students get attracted to e-learning and what keeps them hooked on and how teachers can use the findings of this study to fine-tune their e-learning resource sharing.

Index Terms: e-learning, education, online learning, web-based education.

INTRODUCTION
E-learning makes use of internet and electronic devices like computer or mobile phone to disseminate information. It uses more medium of communication than what is available in a classroom, for example, audio-visual content, animation, simulation, virtual reality etc.

According to K.H. Fee, e-learning refers to any learning that involves using internet or intranet.

K. Cheng explains e-learning as "anything delivered, enabled, or mediated by electronic technology for explicit purpose of learning"

M. Samir Abou El-Seoud, et all (2014), in their research emphasized the need to analyze the motivation behind student's use of e-learning resources and how it affected their learning.

As per Upender Dhar, teachers can ensure high levels of usage of e-learning resources by promoting its benefits. Nehme, Marina, in her research also reiterated the need for teachers to pay due consideration to the motivation of their students.

Benefits of e-learning resources include sharing of supplementary learning material. It helps advanced learners avail extra study material and helps slow learners use the resources and discussion forums to clear their doubts which they found daunting in the classroom.

E-learning tools help in expediting assessment and comparative evaluation besides leading informed discussion in real time. According to a study by Fletcher (1991), online learning retention is higher by 25% compared to traditional learning methods.

According to 'Person-centered Theory' by Carl Rogers' motivation is intrinsic in nature however, teachers using e-learning content need to use 'carrot or stick' method of motivation in order to enhance students participation in the whole process.

As per Gilly Salmon's 'Teaching and learning online model' two vital factors in creating online content that engage the learners are knowing your audience and their need.

Challenges for online learning include reduction in student-teacher interface coupled with undermining of the role of a teacher. Availability of extensive internet based learning resources can be confounding and distracting. Learners are not always equipped enough to filter the 'wheat from the chaff.' Presence of un-verified data and option to modify data by the user can do more harm than good.

Since the content is self-regulated, a student with systematic study plan and goal can benefit a lot while those who procrastinate may end up with too much work to be caught up in too little time. According to Lev Vygotsky's 'Theoretical Foundations' themes, 'one size fits all' is not applicable to e-learning and is in-fact more challenging for this platform as there is reduced interface between the teacher and learner, making it difficult to monitor the attention levels of the student.

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OBJECTIVES

The objective of this study is to identify factors that make e-learning attractive to students to find out what keeps them hooked on. The study also aims to find out measures that teachers can incorporate in their e-learning resources to enhance their students learning outcomes.

METHODOLOGY

Data Collection method: Online survey with two sets of structured questionnaire, one for the student and one for the teacher was used to collect responses

Respondents: Students in the age of 16 to 25 years were selected for the survey. A total of 102 responses were recorded.

Teachers currently teaching at various levels of education were selected. A total of 77 responses were recoded.

FINDINGS OF SURVEY ON STUDENTS

52.9% of response came from students in the age group of 19 to 25 and 47.1 % were in the age group of 16 to 18. Students indicated use of multiple e-learning resources. 90.2% of them had used YouTube for information, 19.6% had used Google classrooms, 7.8% had used curriculum based e-learning tools like Baiju's and Khan Academy each. Other resources used were MOOCS (2%), Sipe (4%), Robomate (2%), Edmodo (2%)Google (2%), Unacademy (2%). Resources like Edmodo, which required creation of an account were not appreciated by the students. 80 % of the students accessed it because it was recommended by teachers. It was found that paid apps were used by students (9.8%) because of their parents' persuasion. Online material shared by teachers as well as the paid apps were found to be very engaging and interesting as these were activity based and ensured student's involvement through tests and quizzes and discussions.

Use of e-learning resources was influenced by many factors. 68% had accessed resources via random search on the internet. 43.1% respondents used it as it was recommended by teachers. 47.1% of were influenced by friends and classmates. 21.6% by advertisements on television and 31.4% ads on social media. This proves that self-motivation is the primary reason for accessing e-learning resources.

52.9% respondents said they find paid e-learning resources better than free resources. 80% respondents said they spent 1-2 hours per day accessing online resources. 12.8% spent 3-5 hours and 6.4% spent more than 5 hours on e-learning. Respondents unanimously agreed that usage of e-learning increased before exams as it provides reference material

94.1% respondents said they do not have a fixed time schedule for accessing e-learning resources. They used them as per their convenience. Topmost reason for accessing e-learning resources was anytime access to information, next most important reason was attractive visuals followed by recommendations from friends. 20 % of the respondents found the plethora of available information led to confusion

For benefits received from e-learning, respondents ranked their experience on a scale of 1 to 5. 45.1 % student-respondents gave a score of 3, 43.1% gave a score of 4 and 9.8% students gave a full score of 5 on the scale for benefits received.

When asked if they would like to replace e-learning with teachers/instructors, 80 % of the student-respondents disagreed. They felt the online resources are an ad-on advantage. 20% of the respondents felt that e-learning would actually give them more time to do other things and study at their convenience. 56.9% said they would prefer e-learning over traditional classes. Students who missed out the traditional class for reasons of work or health were happy to be able to access the resources as per their convenience.

Respondents preferred the use of a combination of traditional information and online courses. They also advocated provision of specific answers instead of additional information and favored the use of graphics and animation in the e-content to attract attention.

FINDINGS FROM SURVEY ON TEACHERS

29.70% responses came from the age group of 25 to 30. 33.80% respondents were from age group pf 30 to 40, 28.4% from age group pf 41 to 50 and 8.1% from 50+ years of age. This hints at a decline in use of e-learning resources with age.

97.3% of respondents used e-learning resources to enhance their teaching. Regarding the time spent on collating e-learning resources for their teaching plan, 51.4% respondents said they spent a maximum of 1 to 2 hours, 32.4% teachers spent 2to 3 hours, 9.5% spent between 3 to 4 hours and 6.7% teachers spent more than 4 hours a day.

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With respect to teachers perception of student's eagerness to learn from e-learning resources, 18.9% teachers opined that not all students were interested, 48.6% teachers believed that students were interested in e-learning resources, 32.4% were not sure.

Main reason why respondents accessed online resources was that its content attracts students towards the subject. 60.8 % teachers feel it enhances the student's learning, 37.8% feel that e-learning provides more information to those who seek. Only 6.8% of teachers used e-learning resources, because it was mandatory for their teaching assignment. 1.4 % gave flexibility of use as their reason.

With respect to ensuring exposure to resources, 43.2% teachers ensured that by using the resources in their classroom. 36.5% gave quiz/test based on the material shared. 9.5% based their next lecture on the content provided. 9.5% of teachers left it to students to decide. 1.3% ensured usage by clubbing it with other activities

Action taken when students don't access the material included research assignment on topics post the class by 21% of teachers. 17% sent reminders and provided motivation for usage, 17% repeated the resources in class, 13% teachers linked it to assessments, 13% teachers take no action. 6% give class tests based on e-content shared, 4% don't allow students to attend class if they haven't gone through the material. 4% promote the benefits to the students who have accessed the work. 4% provide hard copies of the resources to the learners in case they don't have access to the technical means. 2% said they based their interaction in class on the resources shared.

In terms of rating oneself on their effectiveness in use of e-learning resources to teach, on a scale of 5, 18.9% teachers gave themselves a high score of 5, 39.2% gave themselves a score of 4, 37.8% gave a score of 3 and 4.1% gave themselves a score of 2. This indicates that most of the teacher-respondents were comfortable with the use and results of their e-learning resources.

For measure to evaluate the effectiveness of use of their e-learning resources, 33% teachers took tests or conducted quiz, 29% did class discussions on the given topic, 29% said they took feedback from the students, 5% evaluated their performance based on the assignments submitted by students, 2% on exam performance of students and 2 % on number of students who have turned in to access their resources.

For the most challenging factor in incorporating e-learning resources in their teaching, 37% of teachers quoted lack of technical resources, 25% of teachers found the process of creation of e-learning material to be a major challenge as it required a lot of time and effort.

19% teachers felt that lack of interest on part of students was the most difficult aspect of using e-learning resources. 4% of the respondents cited social media as the major distractor from online teaching tools.

7% teachers pointed the student's technical inaptitude to access these material. 4% of teachers felt e-learning cannot be used for all subjects, 1 % teachers said that availability of e-learning resources lowered the learner's interest in the classroom.

CONCLUSION

The study shows that mere presence of e-learning resources is not enough to keep the students attention on a particular topic. The resources should engage the students through audio-visual and interactive content. Reward or punishment has to be used to make students use e-learning beyond classroom teaching. Left unmonitored, there are chances of students ignoring the available content. The study also revealed that students use online resources to refresh what they have learned in the classroom. Student were not very receptive of too much information and favored query specific content.

It is recommended that teachers and students should updated digital learning capability and proper training should be provided. Educational institutions should facilitate technical provisions for teachers and students to promote the use of e-learning resources. Teachers should be given ample time, facilities and opportunity to research for material. The objective of e-learning resources needs to be specified in order to streamline a direction for the seeker and the creator of the content.

Further study can be done on assessing the impact of e-learning resources on the overall academic performance of the students.

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ANALYTICAL STUDY - HOW SOCIAL MEDIA INFLUENCES HUMAN BEHAVIOR?

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ABSTRACT
According to Aristotle, human beings are "social animals" and therefore naturally seek the companionship of others as a part of their wellbeing. In this digital universe, the only medium that makes an individual socially paired is the various social media platforms made available to them. These platforms have eased the communication process with on touch sharing of content and by allowing people to comment/like posts and follow each other. Thus, everyone is creating their own virtual society called "social sphere" every second to connect themselves around the globe. The downside of this virtual society is that it has paved its way towards increasing the communication gap between families, for instance telephonic conversations have now decreased exponentially as online interactions are amplified. Social media has pre-dominantly laid its impact on human behavior; it has now started affecting the way we humans communicate, work and build relationships (formal/informal). This paper primarily focuses to study the dynamic between social media and human behavior and to develop a suitable model using AI which predicts most influenced users with this virtual interactions and try to provide alternatives.

Keywords: Social animals, Social Sphere, amplified, human behavior, virtual interactions, AI

BACKGROUND
Compared to earlier, the connection of human life to the social podium has increased by leaps and bound. This recently created space is user driven; content here is created and discovered at million bits per second and is not owned by the creators of the platform. Being a user driven space, content here has the liberty to breathe and tap to its own feat, and influencing owns a huge impact on people using such platforms. Various platforms have created diverse **ecosystems** that are intricately weaved into human life making it an integral part of our everyday routine. Social media has paved its way so strong that imagining life without it is inevitable. Constantly being in such ecosystems affect-the human brain and its functionality in various ways out of which most are still being researched by the scholars as a result of Digital media causes **mood swings** and **emotional fluctuations** which have a long term severe effect on the behavior. Behavior is a combination of actions, perceptions and emotions. Emotional instability like depression and **FOMO** (fear of missing out) are some of the known effects of digital platforms. Being constantly around such ecosystems gives humans a **dopamine rush**, the same chemical in the brain that makes us feel happy, allowing users to stay back longer. Existing perpetually around these ecosystems release dopamine, the same chemical that makes us feel happy, into the brain, ultimately hooking the participants to their screens. Our focus in this research paper is on understanding the **long-term** effects of such platforms and the behavioral changes caused by their **perennial** use.

OBJECTIVES
Our objectives throughout this research paper are to address implications of social media such as:-

1. The Dopamine rush while using social media.
2. The after effect of using social media for a certain period of time.
3. The long term effects on human behavior and behavioral patterns.

PROBLEM STATEMENT
Internet Age has developed a new society for every individual, transforming lives in ways different than ever which includes the way they interact, communicate, present themselves to others, and so on. The possible reasons for such diversified changes in human behavior can be categorized into either positive or negative influence. The problem statement here is to address negative aspects which include loneliness, anxiety, depression, lack of self-worth, bad sleeping habits which is also termed as "Social Media Influences". Thus there is immediate call for finding solutions to such influences thereby minimize dependency over these social utilities. **According to Kandel, the central challenge of science in the 21st century is to understand the human mind in biological terms.** Thus we can say that emotional, behavior and social coherence evolves when we are into this virtual society. If we look into some statistics studied by researchers the impact of social media are as follows:-

- 15% have felt anxious when unable to access their social media accounts and this number is significantly higher among 18-29 year olds (37%).

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- Almost 2 in 10 (19%) are happy to check social media while eating with family or friends, with 30-39 year olds the biggest culprits (33%).
- 11% have worried their social media footprint might one day come back to bite them, with 30-39 year olds the most likely to feel this way (15%).

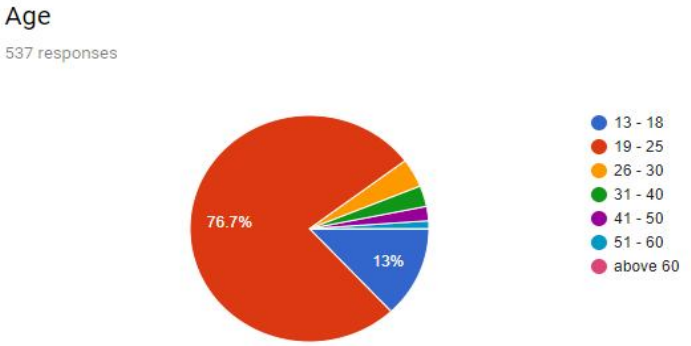
NEED FOR RESEARCH

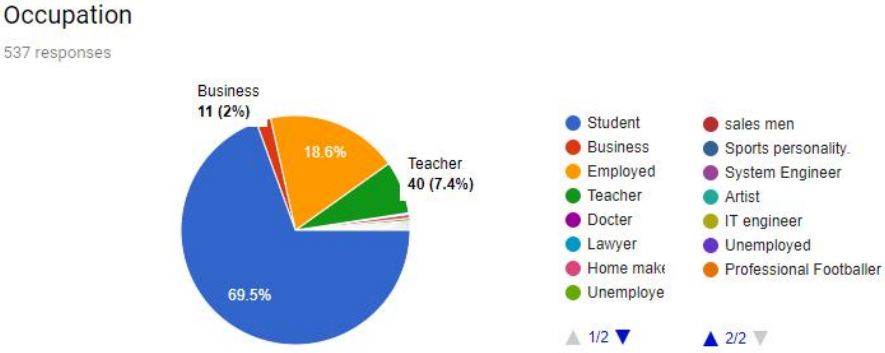
Digital data consumption has nearly doubled in just over a year with 4G in rise (5G ready to be launched) making internet readily and easily available to masses, understanding the effects of such high consumption is majorly required because its long term effects can change human behavioral patterns which may have an enduring footprints, later affecting lives, economy and well-being of human existence. Understand such patterns could help limit or find better alternatives to manage any unfavorable impact which can also aid in making the coexistence of both the digital sphere and human life coherent.

RESEARCH METHODOLOGY

We intend to carry out investigating social media platforms and analyze behavioral patterns of individuals. Based on the **primary research** conducted of 537 respondents we realized that social media is making its roots strong with the human lives, **98 %** people said that they use some kind of social platforms and the most popular being WhatsApp next being Instagram and Facebook, more than **25%** people said they spend average of more than 3 hours on such platforms on daily basis. **44.5%** believe social media has adverse effects on our lives, 31.7% upload content on their social platforms almost weekly. **49.9%** believe that social platforms are having an impact on our behavioral patterns (mental or physical). **22%** face issues of anxiety, **26.1%** feel stressed and **19.1%** face FOMO (fear of missing out). The dopamine rush while using social platforms affect the brain to make it feel happy even the research suggests the same because **52.5%** feel happy while using such platforms. **18.2%** say they have insomnia because of using social platforms with discomfort and loneliness being faced by **17.5%** respondents. **63.9%** use social media for passing their time. However for primary research following questions have guided our study.

1. Social media usage on a daily basis? Average time spend.
2. What is impact of social media on behavior change?
3. Social media, its infinite scrolling of content and its long term effect on the human life?
4. Social anxiety issues?
5. Fear of missing out and depression with constant use of digital platforms?





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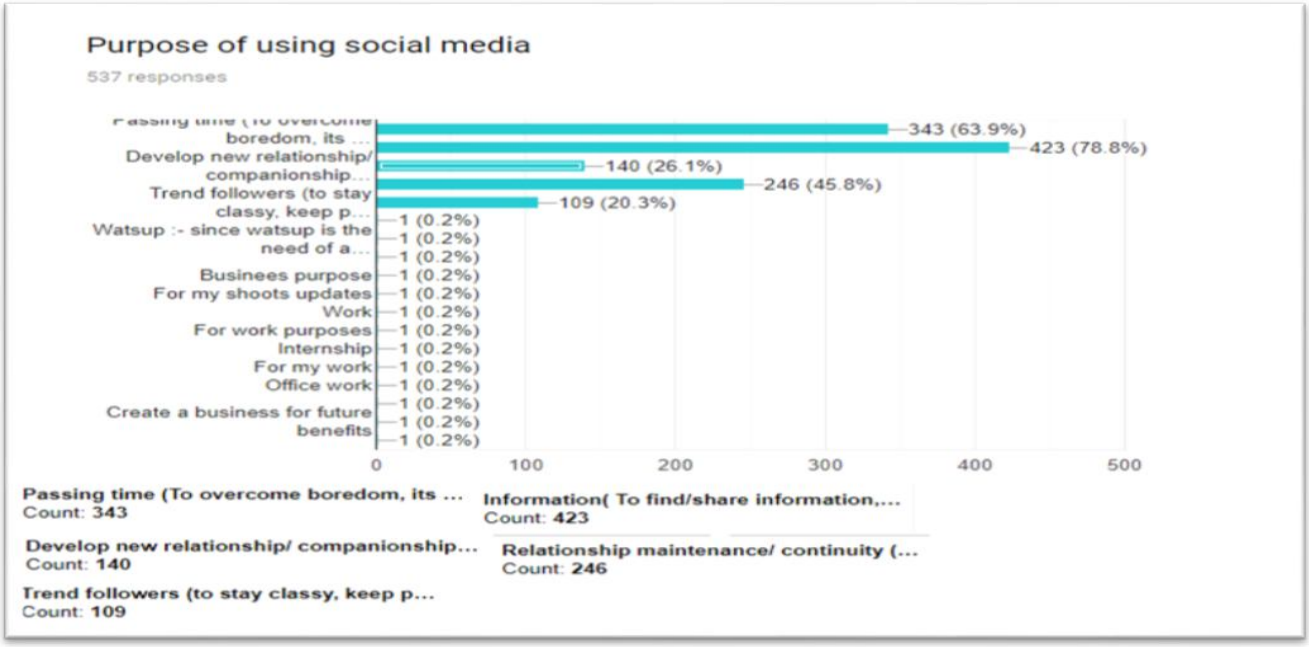

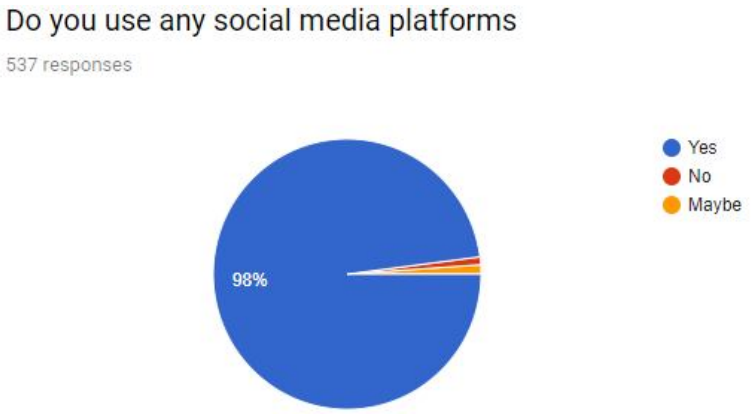

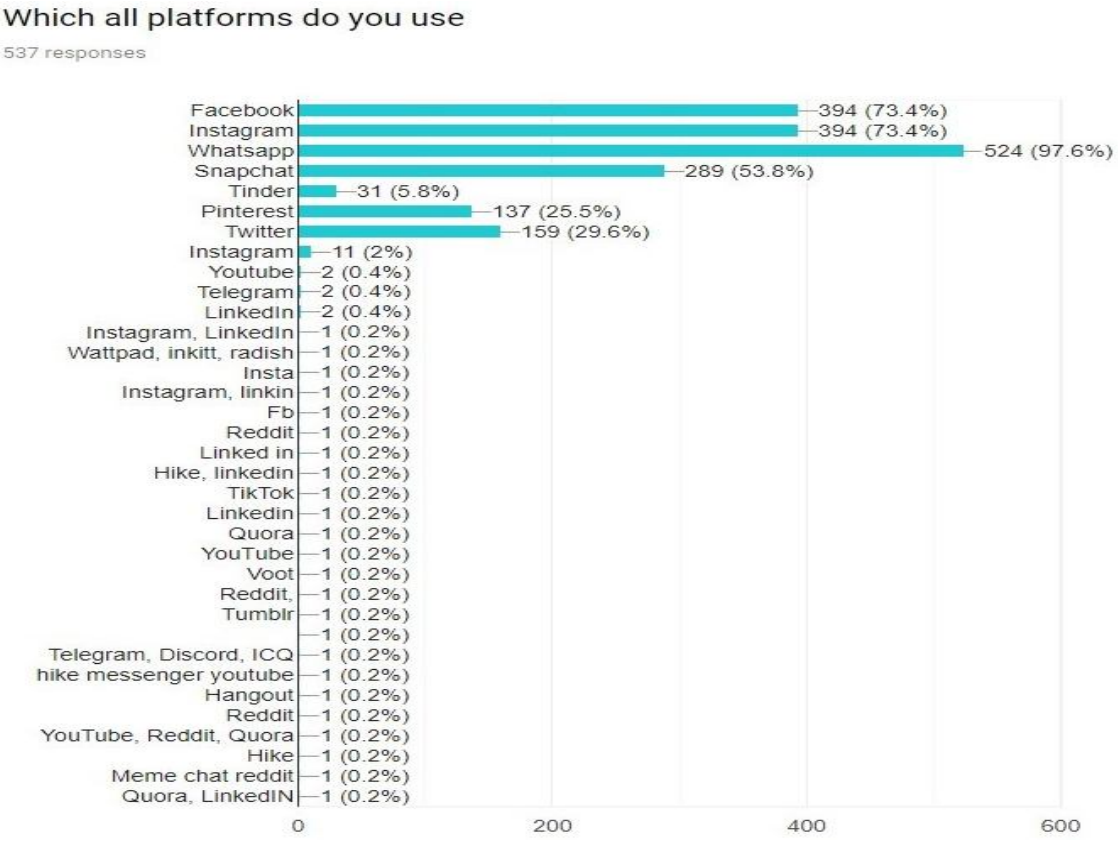

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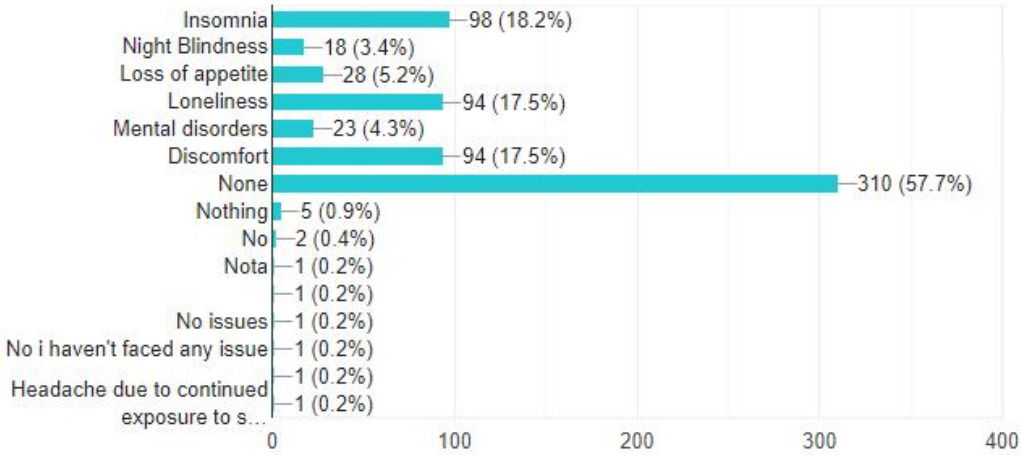
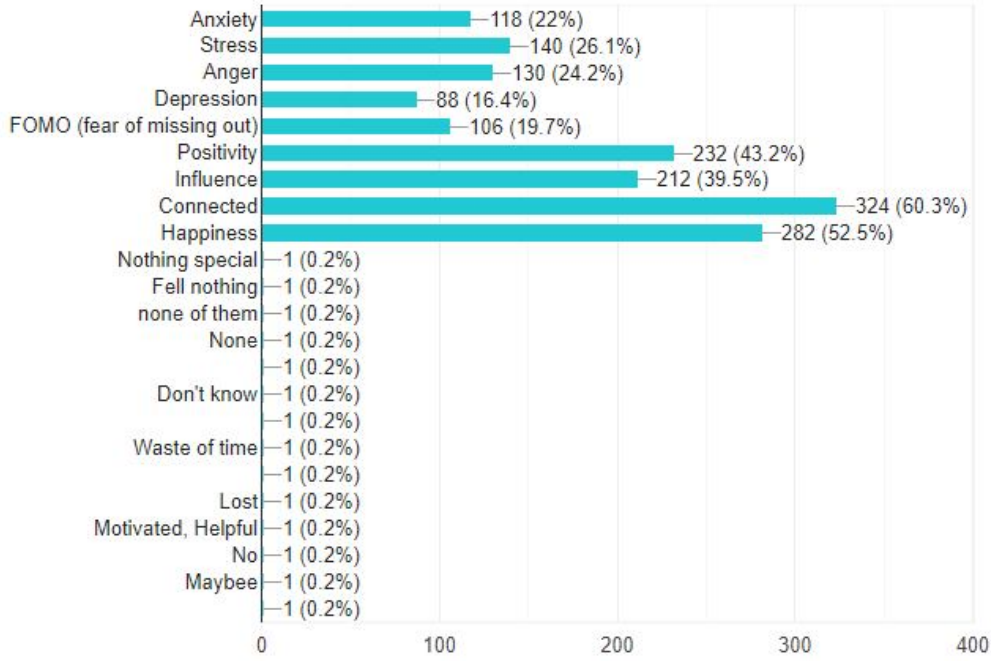
Do you faced any of the following issues because of using social media platforms

537 responses



Have you felt any of following emotions while using social platforms or due to long term use of social platforms

537 responses



What do you think about long term use of social platforms

537 responses

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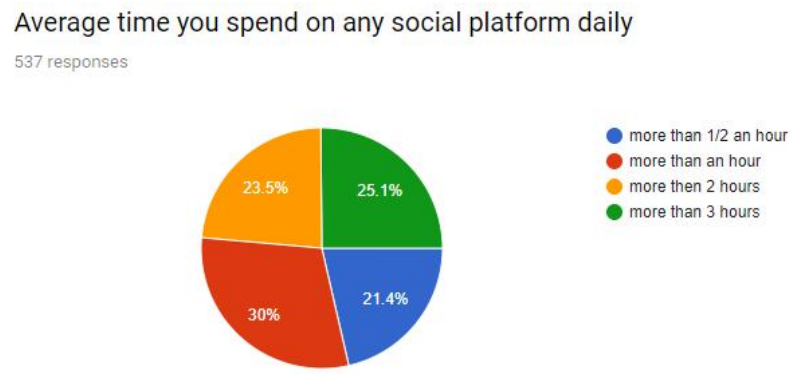
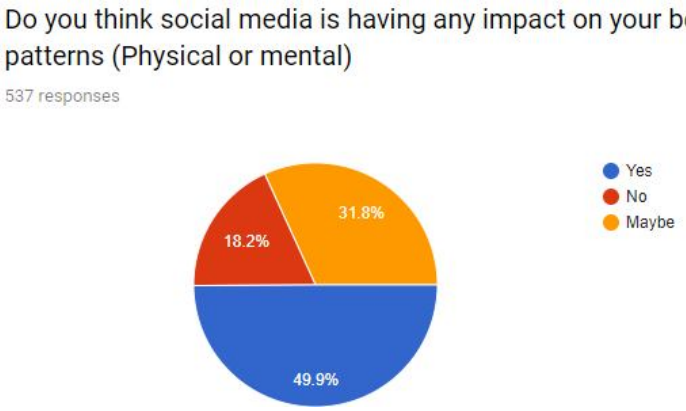
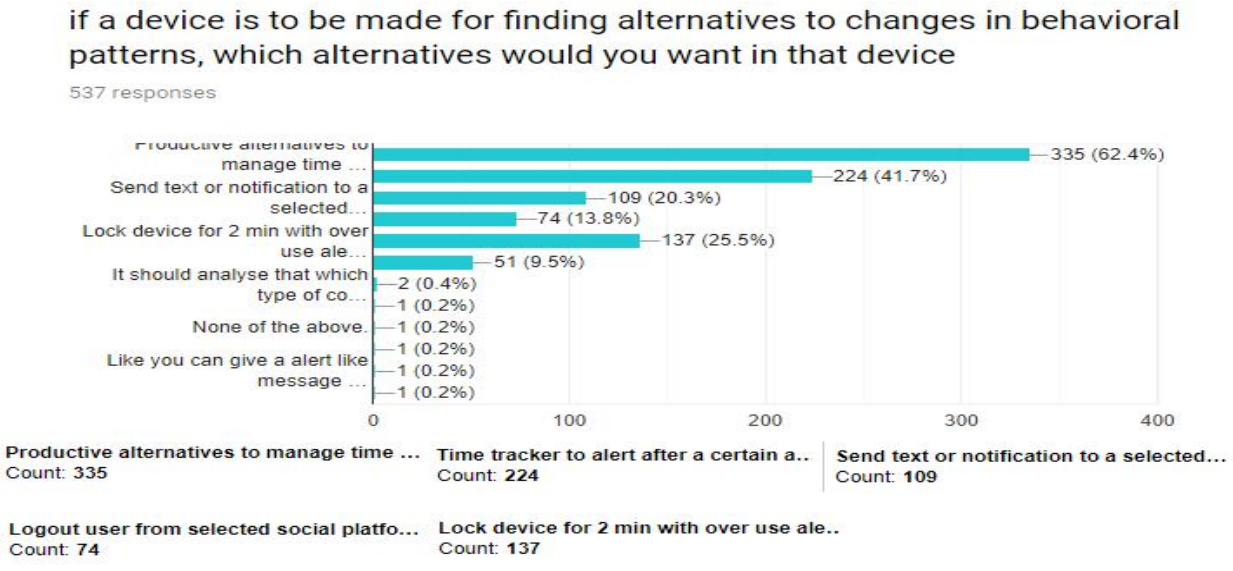




RECOMMENDED SOLUTION

Our solution to overcome the social media addiction and its adverse effects is to create a wearable device which uses AI to detect the social media interactions and the total active usage hours of social platforms of the user using this device, using AI understanding the interactions and its effects on behavior becomes easy and efficient also the more the user provides inputs in terms of interactions the more the device will understand users behavioral patterns. The device will also keep asking the user its current mood at least 3 times in a day which will also contribute in providing better solutions to each user. We asked the respondents about this wearable device in our primary research and **43.9%** said yes to using a wearable device which can help them track patterns and find alternatives to the issues the users are currently facing, this response provides us a base to build such a device capable to providing track of usage of social platforms and graphs showing progress in behavioral patterns based on the interaction with the device. When we asked user which type of solutions would be more preferable as alternatives to overcome the constant use of social platforms **62.4%** said productive alternatives like reading, meditation, hobbies, etc. **41.7%** said a time tracker which provides alerts after a certain limit of hours spend on social media would be a great option of the device and **25.5%** said that locking the device for 2 min with over use alert so user can rethink before using social platforms again can also be a useful alternative.



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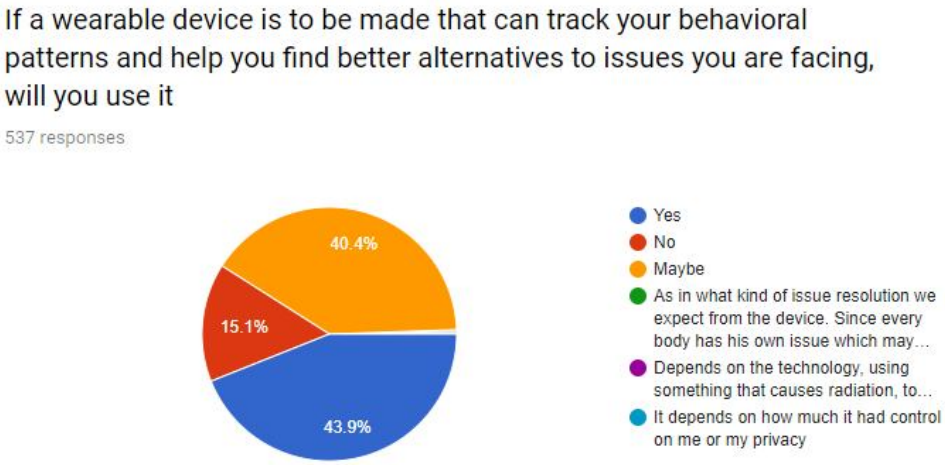
Proposed Methodology:

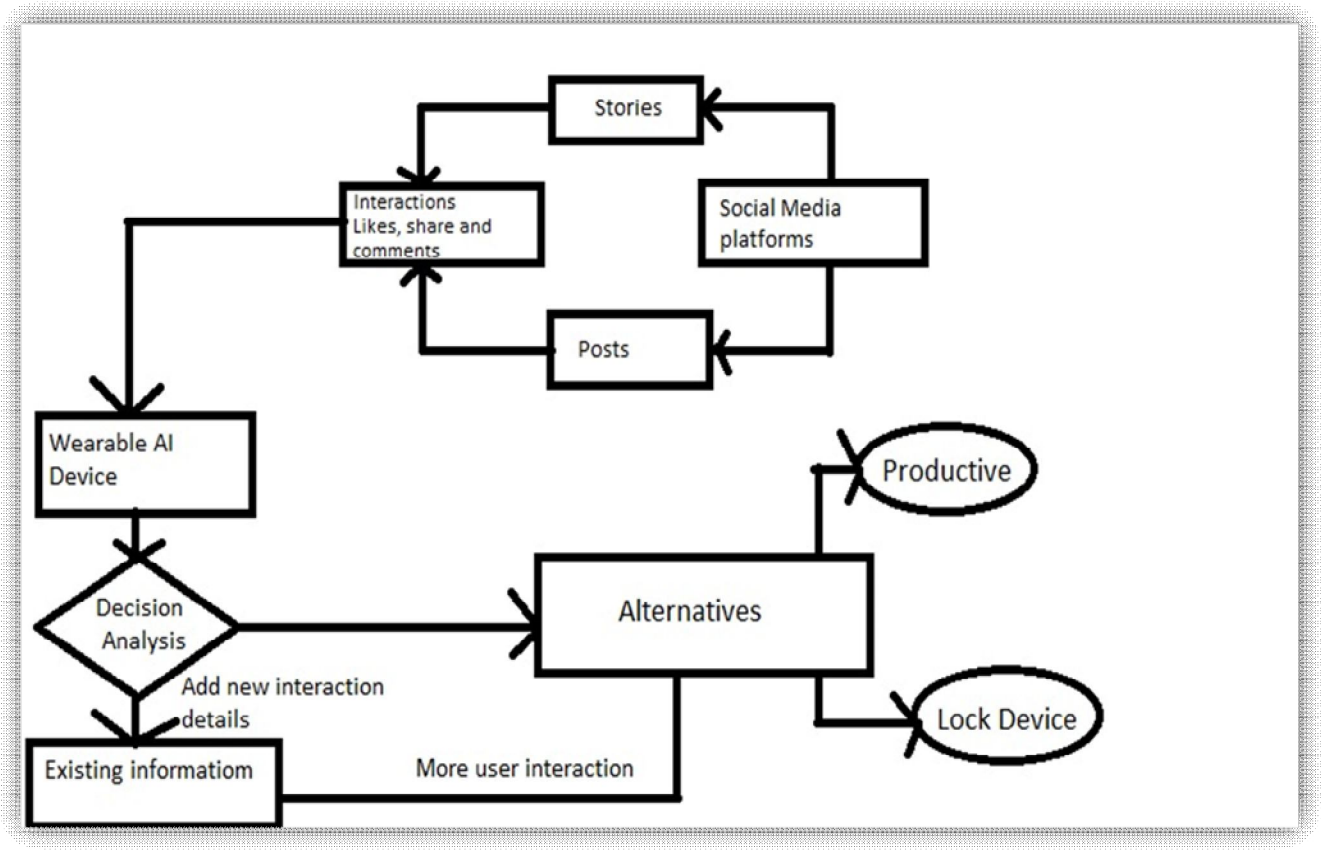


When conducted primary survey **43.9%** respondents said **yes** for wearable device to track their behavioral pattern**.** Thus proposed methodology is to integrate AI with these social media platforms that will analyze human behaviors and timely intimate its influences in long run and will also provide alternatives to minimize their addictions. We shall develop an AI model that will perform following task:-

Show statistics of the data consumption on various platforms

1. Displaying the time spent in consuming content on various digital sources.
2. Analyzing triggers affecting the long urge of using such platforms.
3. Analyzing the mood of user by the content being consumed.
4. Providing substitutes to divert constant urge of consumption of digital fragments.

Following is generic model to understand working of proposed model:



SCOPE

The scope of this research paper is between millennial youth and adults in their thirties.

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BENEFITS OF RESEARCH

The research helps in understand the obnoxious growth of social media and its equivalent deep-rooted effects on the behavioral pattern of the users consuming such huge chunks of data.

Other benefits include

- ✓ Statistics proving mood swings, anxiety, depression and other negative influences with sustained use of social media.
- ✓ Statistics providing dopamine rush, the feeling of being connected and other positive aspects of social interactions.
- ✓ Providing sufficient data and knowledge to find active solutions to divert negative influence to productive outcomes.
- ✓ Providing users with alternatives to dissocializing when tracked with peak social connectivity.

This research can change the way humans use social platforms and will also allow them to be actively present, mentally and emotionally while being in contact with various digital spheres.

CHALLENGES AND LIMITATIONS:

- Tracking the content consumed could become difficult sometimes due to continuous change in algorithms used by social platforms.
- Ignorance of the user to not accepting the alternatives provided.
- Emotions and behavioral patterns keep on changing so alternative solutions could become less relevant at one given moment and could also suddenly become super relevant the very next moment.
- Being socially inactive could discomfort the user.
- For providing more relevant solutions the AI would require multiple attempts in gathering information and this trial, learn and test pattern would be gradual.
- Since it personalizes the information for each user there would not be any "**one solution for all**".

CONCLUSION

According to our research we have come to a conclusion that social media having its benefits is still causing collateral damage to humans and their behavioral patterns, with constant use of such social chambers is causing various health issues and emotional issues that affect both the physical and mental state on human beings. The above mentioned solution of developing a wearable device with AI can help humans and is also accepted by our respondents and the alternatives provided by the device will be user specific which will be more effective and impactful. With the creation of such device it can change the way we use social platforms and these digital chambers can successfully thrive in co-existence with benefits to human beings.

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AWARENESS ABOUT CYBER CRIME & CYBER SECURITY IN OUR DIGITAL LIFE ESPECIALLY IN RURAL AREA & IN SENIOR CITIZEN

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ABSTRACT:-
Cyber Security is the way of guarding systems, networks, and programs from digital attacks. These cyberattacks are usually aimed at opening, replacing, or destroying delicate information; squeezing money from users; or intersecting business processes. Firewalls, antivirus software, and other technological solutions for protecting personal data and computer networks are essential but not enough to ensure safety. Our Prime Minister Mr. Narendra Modi wants to do digitalization in our country so we required to educate the people about digital life, at that time also we required to aware them about Cyber Crime and Cyber Security. Security dispute measure helps ensure the privacy, accessibility and honesty of information systems by avoiding for serious asset harms from Cyber-attacks. Cyber security has appeared as a recognized discipline for computer systems and infrastructure with a focus on guard of valuable information stored on those systems from challengers who want to obtain, spoil, damage, destroy or exclude access to it. This paper focus on awareness of Cyber Security and Cyber Crime among senior citizen and rural area people while adopting new technologies such as mobile computing, cloud computing, e-commerce, and social networking.

Keywords: Cyber Crime, Cyber Security.

1. INTRODUCTION

"New technology is not good or evil in and of itself. It's all about how people choose to use it." says David Wong. What do you mean by Cyber Security? So first we have to know what is Cyber and Cybercrime. Cyber is a preface used in a rising number of terms to define new things that are being made possible by the extent of computers. Anything shared to the internet also falls under the cyber. Cybercrime is defined as a crime in which a computer is the object of the crime (hacking, phishing, spamming) or is used as a device to pledge an infraction (child pornography, hate crimes). Cybersecurity is the way of guarding systems, networks, and programs from digital attacks. These cyberattacks are usually aimed at opening, replacing, or destroying delicate information; squeezing money from users; or intersecting business processes.

Internet is one of the fasted-rising areas of technical frame development. In today's world, every one employ information technology for sharing information and handling E-commerce. Today more than 90% of total business trades are done online, so this field required a high quality if security translucent and best transactions. The scope of Cyber Security covers not only to the security of IT systems within the company, but also to the wider digital networks upon which they trust including cyber space itself and judicious infrastructure. Cyber security plays an important role in the development of information technology, as well as internet facilities. Enriching cyber security and defending critical information infrastructure are vital to each nation's safety and economic security. Society has become dependent on cyber systems through the full range of human activities, including commerce, finance, health care, energy, entertainment, communications and national defense. Internet operators are agitated that they give away too much own information and want to be ignored when there is no appropriate grounds for retaining their own information. Examination of the metaphors we use in the cyber security field may help develop our thinking and argument in four ways. First we may gain a sharper accepting of the value and limitations of the concepts we have plotted from other domains into the cyber security field. Second, trying out less common or new metaphors may nourish the imagination of researchers and policy makers. Third, metaphors that work acutely well might be developed into a whole new models or sets of upcoming cyber security problems. Fourth, a metaphor serves an experiential purpose, passing stronger understanding of abstract thoughts from the arena of cyber security into domains with which common people must also aware.

Cyber security depends on the attention that people take and the conclusions they make when they set up, uphold and use computers/mobiles and the internet. Cyber-security protects physical protection both hardware and software of own information and technology assets from unauthorized access gained via technological means. Tim Berners-Lee was quoted as saying "There was a time when people felt the internet was another world, but now people realize it's a tool that we use in this world" So common people also use internet for E-marketing, E-Commerce, Social purpose etc. people can contact whole over the simply through the internet.

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2. CURRENT LOOMS REGARDING CYBER SECURITY

A Brainchild of Mr. Varun Kapoor (IPS), Director PRTS Indore, and Black Ribbon is an award winning creative launched in November 2013 with the objective to span alertness in the society about cyber security and safety. Black Ribbon's core objective is to protect citizens from becoming victims of cyber-crimes and violations. At the same time, it also work towards training citizens about Information Technology (IT Act 2008) and Cyber laws in order to inhibit them being criminals freely or unwillingly due to lack of familiarity.

Mr. Varun Kapoor organized the session on Cyber Security at GIT involved an Overview of Cybercrimes he has started his talk by flying the three questions:

1. Why should we aware of the cybercrimes?

2. What should we learn?

3. Who is the person addressing the issue?

Mr. Varun Kapoor has justified that every citizen is existing in two worlds concurrently. One is the "REAL" world and the other is the "VIRTUAL" world. While existing in the real world we take all security protections possible to endure safe and secure. In addition we know all the policies, conventions and laws in existence in the area in which we operate. Even though all these movements and provisions taken by the citizens, faults occur and as a result happenings of crime (intentional or unintentional) take place. On the dissimilar while existing or operating in the virtual world the common citizens (which is almost all) has a sensation that this is an "imaginary" world and their behavior is thus tempered. They feel as this world can't be seen, touched, felt, understood and recognized, so it does not happen in reality. As a result they take no self-security protections while operating in this world and they even do not understand the legal endowments (IT ACT) that govern the genuine use of the cyber space and cybernetic world. The citizens of all types in our country need to be alerted about the hazards involved in unfettered and unsafe use of the cyber space and also need to be made aware regarding the safe and secure ways of using technology, devices and internet. This will certify that the use of cyber space and the virtual world is for the assistance of all and not in a way which harms self and others. Narendra Modi says that "We will explore the mysteries of science and harness the power of technology and innovation. We will realize the opportunities of the digital world. Our youth will learn more from - and with - each other."

In Marathi movie "Take Care Good Night" they also want to say what precautions we have to take at the time of using internet. In this movie they wants to show that an innocent metropolitan family decides to fight back against a cybercriminal who threatens their reputation by stealing money and revealing sensitive images. This movie will be far more alert about sharing our personal details anywhere on Internet. This is a must sentinel movie if you want to know more about cybercrime. Probably the best movie made on cybercrime till date.

3. PREREQUISITE OF CYBER SECURITY

Information is the most significant asset with respect to an exclusive, cooperate sector, state and country with respect to an individual the affected areas are:

1) Defending unauthorized access, revelation, alteration of the resources of the system.

2) Safety during on-line trades regarding shopping, banking, railway reservations and share markets.

3) Security of accounts while using social-networking sites and software like (WhatsApp, Instagram, Facebook) against capturing.

4) One key to enhanced cyber security is a better accepting of the risk and of the routes used by the attacker to avoid cyber immunities.

5) Need of distinct unit managing security of the organization.

6) Different organizations or missions invite different types of challengers, with different goals, and thus need different levels of vigilance.

7) In identifying the nature of the cyber risk an organization or mission faces, the chemistry of an adversary's proficiencies, purposes and steering activities must be measured. With respect to state and country

7.1) Procuring the information covering various critical reviews and their articles.

7.2) Securing the data origin maintaining the details of all the privileges of the organizations at state level.

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4. SOME FUNDAMENTALS TO CREATE AWARENESS IN SENIOR CITIZENS

Today, in learning system, the teen-agers must be made alert of the possible attacks and types of intruders. They are also be aware of the terms like: Hardware/Desktop Security, Wi-Fi security, wired security, Password Protection/ (File/Folder) level security, Social networking attacks security and malicious software:

• Phishing, Frauds

• Scare ware, Malware, Virus, Worm,

• Trojans, Zombie and Botnet, Spyware, Adware,

Students are gaining information technology skills grades question on the mentor's skills to ensure that positive behaviors of on-line performance are being formed. Whereas, the teacher giving information about security droughts the knowledge and up-to date information narrated to Cyber awareness matters, particularly with respect to security. Teacher technology educating must be provided for skills enlargement and awareness. Similarly senior citizens are also may get awareness about safely using the Social media. So for that purpose we have to make seminars in Gram panchayat office and may be arrange the workshops on how to use Internet.

5. CONCLUSION

This paper has surveyed the importance of privacy for individuals as a fundamental human right. Destructions of human rights arise from the illegal collection and storage of personal data, the problems related with imprecise personal data, or the misuse, or unauthorized expose of such data. In this paper we also include the current methodologies towards cyber security. With the increasing instances of cyber-attacks, every Indian must aware about how to use internet. Indian citizens must identify the best techniques in order to protect the information and system, as well as the network in which they work. The IT industry has been playing catch-up with hackers and cybercriminals for eras. Thus there is a need of cyber –security seminars or workshops in the near colleges and Gram panchayat offices which will in-build the cyber-security understanding in the current youth as well as in Senior citizens.

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CHATBOT USING NLP

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ABSTRACT

In today's world where technology is getting advance and new innovations are coming rapidly to make the human life simple & easy. We are also adopting them very well and getting used to it. It can be a smart phone, smart TV, Google home, Alexa, Beacon's, Fit Band, mobile apps etc.

We as a human being are expecting the solution of our problem quickly either it can be our personal life problem or the technical issues or any other issue which we are going to.

We may call the support center or the call center for the issues w.r.t the Our Bank Account, Product Order, Previous Order status, technical issue we are facing with respect to the system or the application etc. This process is time consuming, user have to wait for the support staff to get free or some time user may not get the proper response as expected. Since we are too much involved in technology we are also expecting the same should be apply to resolve our real world problem. Technology can't resolved all of our real world problem we are dealing with but to some extent it can.

Are of Research which I am covering in this paper is how we can deploy the NLP (Natural Language Processing) and ML based Bot solution to deal with the real world problem user are getting faced on the different domain.

*Since the problems faced by the users of the specific domain are almost common and resolution are also same. Instead of investing too much money on maintaining the support staff who are working on giving same answer to the multiple users for the same issue why we should deploy the Bot which have been trained with the knowledge of the specific domain problems and resolution for the same. User will be interacted with the virtual assistance (BOT) which will be available 24*7 for their queries and BOT will reply them as per knowledge feed on it. In case user is not satisfy with the answer given by the BOT or answer didn't worked for the user, they may still connect with the live agent if required. This will overall reduce the dependency on the support staff and improve the user satisfaction.*

Keywords: - Chatbot, Virtual Human Assistance, Self-Support System, Natural Language Processing, Artificial Intelligence, Machine Learning, NLP.

OBJECTIVE

- Objective behind this research paper is to let the global community of the developer, IT professional, Business head, CTO etc. will know the influence of the Artificial Intelligence and Machine Learning enabled BOT in user's daily life.
- With this research paper we are going to explain the technicalities and capabilities w.r.t the implementation of the Bot in any of the industry. Domain knowledge capabilities are essential to the success of the implemented BOT which the organization needs to understand before getting into it.
- At the end of this paper you will get an understanding how the ingredients of Machine Learning & Domain Level expert plays an important role to setup a **Virtual Support System** which not only helps in resolution of customer queries but also understand the emotion of the customer by analyzing the customer input.
- Customer emotion helps the management to identify the reason for the same by interacting with them which helps in retaining the unhappy customer.

INTRODUCTION

1. Chatbot is pertained system or conversational interface which provides an innovative way for the user's to interact with the computer system for the resolution of their queries.
2. System can be the mobile application, Web application, Chat window embedded in the company existing portal or websites or any other system which provides the interface for the user to interact with the Chatbot.
3. Chatbot provides the best possible answer for the user queries by applying the techniques of Machine Learning and Artificial Intelligence. It also captured the emotions of the user which helps the management to work on customer problem personally.

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4. A BOT is said to be the robust and accurate if it has the capability to understand the user request for which it has not trained yet, instead of giving the any random answer. And maintain the list of those unanswered question for the BOT designer which will be trained later under if orgnisation found it relevant.

BENEFITS OF CHATBOT

1. Since BOT is the machine itself, it is always available 24*7.
2. Handling customer.
3. Helps in Money Savings.
4. Repetitive work can be automated.
5. Reduce the manpower and cost involve in it.
6. Customer always satisfy if BOT always gives useful & perfect result for the customer query.

HOW CHATBOT WORKS & ITS DEVELOPMENT MODEL

Before gets into the working of the Chatbot let us first understand the type of the Chabot model. Selecting the model is very important since it defined the success and failure of the BOT.

Rule based and Self Learn are the 2 main flavor of the Chatbot. Both of them are different from each other and the selection of the model is completely depend upon the problem we are going to resolved with the BOT and level of the complexity of the queries we supposed user will asked the BOT.

- **Rules Based: -** As the name implies it works on the rule defined by the BOT designer. BOT answer to the user queries based upon the rules it haven been trained for. It work well with the simple query however may failed with the complex query.
- **Self-Learning Model: -** This model uses the ML and AI based techniques to train and deploy the BOT. There are several framework available for building the Self Learn model. Some of the widely used framework are Tensor Flow, Stanford NLP etc.

While selecting the model we should ask the following question to out self.

1. Are our requirement meets with the model we have selected?
2. Are we capable enough to go with model we have shortlisted? Since some people found Rules based model simple as compared to the Self Learn model.
3. Do we have the expertise & resources to achieve our goal with the selected model?
4. Time and budget are the most important constraints while selecting the model.

Chatbot working

Irrespective of the model (Rule based or Self Learn) the Chatbot should be capable enough to understand and extract the required details from the user input to process the request fulfillment.

1. **Intent: -** As the name implies it describe the intent of the user w.r.t the query asked to the BOT. In other term we can say it tell the BOT what user is looking for.
2. **Entities Involved: -** Describe the additional information w.r.t the query use has asked. We all knows entity can be anything exist in the real world the same theory we can apply here also. It can be the name of the person, country, city, date time, an organization name, email id etc.

Example

"I am looking for to book a flight from Mumbai to Delhi from 20 August to 26 August"

- Intent – User is looking for to book a flight
- Entities
  - From – Mumbai
  - To - Delhi
  - From Date - 20 August
  - To Date – 26 August

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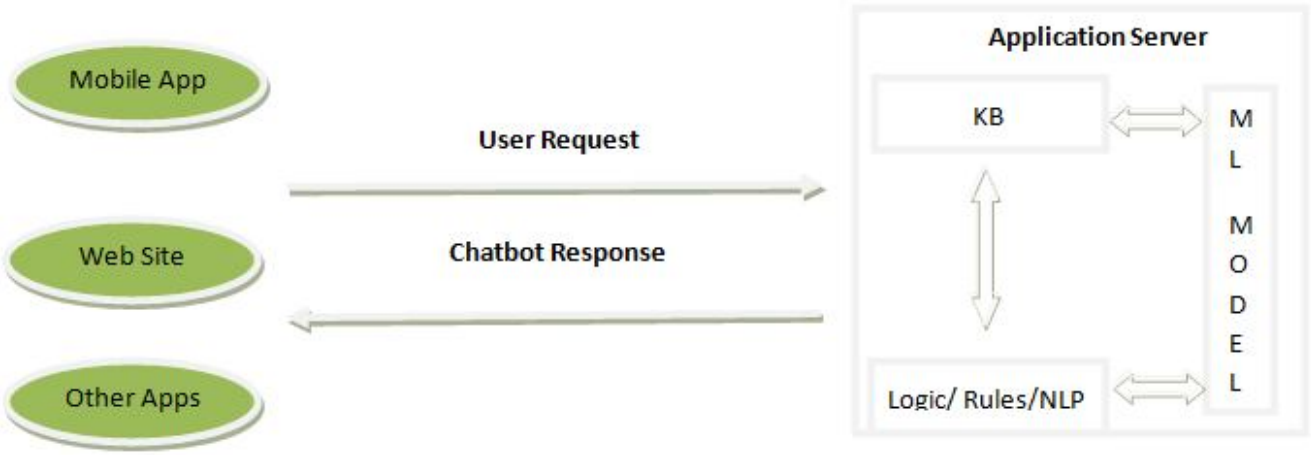
3. **Context Management:** - BOT should be smart enough to manage the context while interacting with the user. It describe the sets of the questions BOT should asked before the fulfillment of the user request. Context is closely depend upon the entities user has mentioned in the user request.
4. **Request fulfillment:** - It is also called as "BOT Response" since it is the final stage where BOT engine process the user request and return the response. Fulfillment of the user request is completely depend upon the nature of the query user has asked, type of the BOT, transaction which the BOT supposed to do etc.

Example: - If the BOT is of type support system where user can asked the queries specific to the technical issues like mouse problem, keyboard is not working, network issue etc. BOT should asked the questions which help to understand the user issue in details and provide the steps for the resolution of the user issue.

Similarly for the travel support BOT where user can asked the question specific to the destination within the budget range, honeymoon packages, best destination for the Europe etc. The BOT should be capable enough to respond with the destination details as per the query user has asked.

Chatbot Deployment Architecture



NLP (NATURAL LANGUAGE PROCESSING)

1. Subfield of the Artificial Intelligence developed to understand the human language as it is spoken. It allow the computer program to understand the human language since there are the multiple way human can speak for the same thing. NLP makes it possible for the BOT to understand the requested intent from the user text input and respond accordingly.
2. In addition to the understanding of the user's intent & input, NLP can also be able to perform the cleaning of the data before sending it to the BOT engine. Details of the data cleaning for the BOT engine will be discussed in the section "How NLP Works".
3. With the understanding and effectiveness of the NLP it is very much true that "NLP is the heart" of the Chatbot solution. Success of the Chatbot solution is highly depend upon how properly NLP have been applied on it.
4. Before get into the designing of the BOT we have to first understand the NLP and how we can apply its different techniques on out user input.
5. Since there are multiple NLP packages are available and different teams & organization's across the globe are working on it, however the most robust, effective, useful and reliable one are the NLP developed by the Stand Ford group which is called as **"Stanford NLP"**.
6. In the later section of this paper we are going to explain you how the NLP with Stanford will works and what are the requirement for the same to use in the any of the System/ Application where we need to integrate the Stanford base NLP.

HOW NLP WORKS

NLP task can be completed mainly with the two techniques so called "Syntactic" and "Semantic" Analysis. Both of them together forms a strong engine where we can performed the NLP operation seamlessly. Also, we can use any of them or both which completely depend upon the requirement and the level of the NLP we are looking for.

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1. Syntactic Techniques

In simple term it is also called "Syntax" technique where the focus is on the basic language rules to form the grammatical sense sentence for the given words in the sentence.

We can further classify the Syntactic Technique into the below categories:

- Lemmatization
- Word Segmentation
- Part of Speech Retrieval
- Sentence Parsing
- Stemming
- Spell Checking
- Sentiment Analysis

2. Semantics Techniques

As the name suggest it involves to identify the meaning of the sentence which user wanted to convey with the input text. It is most difficult and important aspect of the NLP since to process the user request it must be important for the system to understand the deep details of the message user wanted to convey.

Also, user convey the same message by the multiple way's which may have the same meaning and system should be capable to understand the user intent and respond accordingly.

A NLP engine set to be well developed if it has the robust semantics analysis capabilities w.r.t the Named Entity Recognition (NER).

- Named entity recognition (NER):-

As the name implies it is refer to the extraction of the entities involved in the given input by the user. Entities can be anything which we heard or used in our daily life. It can be the name of the country, city, a person name, date, time etc.

Stanford NER is the well developed and globally accepted engine which has the strong data model with the huge record which makes him favorite for the developer.

3. Stopping Words Removal

- One of the steps for the data cleaning is the removing of the words which are irrelevant and does not have any meaning w.r.t the nature where it has been applied.
- Such words should be remove before sending it for the further processing since it might impact when BOT is evaluating the user context while applying the ML & Artificial Intelligence algorithm.
- Example:-

"I am looking to Book a flight";

In the above example the word 'I', 'am', 'looking', 'to', 'a' does not make any sense to identify the context of the user input. They should be remove before evaluating the context of the user request.

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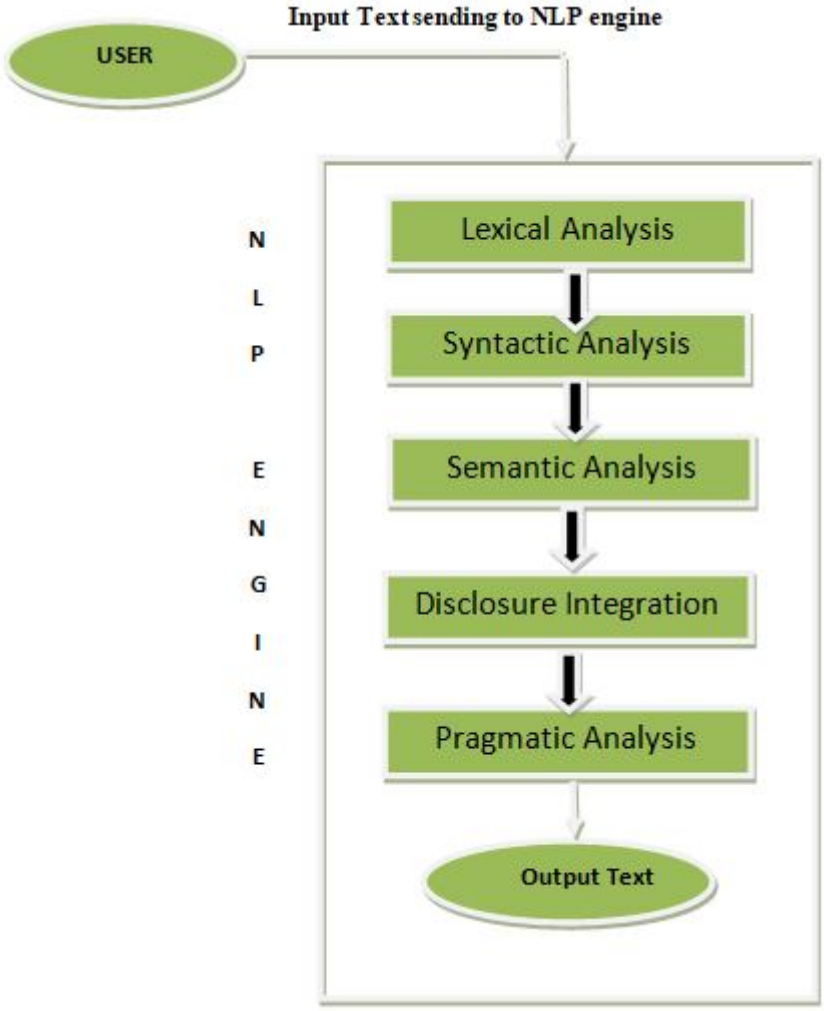
NLP PROCESSING STEPS



Generate cleaned and meaningful result with additional information about input text

NLP USING BASIC EXAMPLE

As discussed earlier Stanford NLP provides a robust engine for NER (Named Entity Recognition) here we discussed how it will helps to solve the real world problem we have already discussed in the earlier section.

If suppose we are building a BOT for the flight ticket booking portal as a BOT designer after finding the intent of the user we should identify the entities user has mentioned in the input query.

Example1:-

InputString=”I Want to book a flight from Mumbai to Delhi on 20 August 2019**”.**

In the above example NLP NER make it possible for us to identify the entities in line with the user intent and our next action depend upon how successfully we are extracting the entities.

In the above example user has mentioned the two location names “Mumbai” and “Delhi”. Also, date for the booking as “20 August 2019”.

Example2:-

InputString=”I Want to book a flight from Mumbai**”.**

The above example also represent the same user intent however the required input are incomplete since user has only mentioned from location as “Mumbai”. To book a flight we would require the destination location and the date. The next action by the BOT should be to ask the destination location and the date of travel.

Example3:-

InputString=”National Conference on Emerging Innovation in Information Technology will be held on September 2019 in India, Mumbai .Interested candidates can send their abstract before by 15 July2019 and

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submission of the full paper by 16 August 2019. Submission should be emailed to "itconf19@smshettycollege.edu.in**"**

SR	TYPE	Description
1	City	Mumbai
2	Country	India
3	Date	September 2019, 15 July 2019, 16 August 2019
4	Email ID	itconf19@smshettycollege.edu.in

The extraction of the City, Country, Date and Email ID in the above context is possible with the NLP engine since it already has the large set of in build database and complex internal algorithm which make our life simple with the help of the few lines of code.

RISK FACTOR OF CHATBOT

- Vision and mission of the organization w.r.t the Chatbot must be cleared otherwise Chatbot solution might failed. Since organization is going to replace the traditional support system which was earlier managed by the Human Being with the Virtual Assistance.
- You can't complete rely on the BOT itself we still need a manpower who would handle the query which BOT doesn't able to answer.
- BOT should capable enough to handle almost all the queries w.r.t the industry where it has launched. Missing the most frequent user issues might disappoint the customer and might not came back to BOT again.
- What if Domain Level Experts involve while designing the BOT are not cleared about the overall goal and management vision. Lack of clarity among them will impact the overall BOT performance.
- BOT would require the Continues training for the queries which have been unanswered by it and relevant as per the industry where it has deployed. Also, it should notify those user who have asked those queries.
- Ignoring those queries while continues BOT training which have been asked by multiple user's and BOT unable to respond will loss the interest of those customer to the BOT and they might not come back to BOT again.

CONCLUSION

- As per the above mentioned theories and information provided w.r.t the Chatbot & NLP we conclude that it is the need of an hour for all the industries to implement it by identifying the best domain & technical expert.
- Also, be ready for the challenges post the adaptation of this Virtual Assistance since it required lots of attention, continues monitoring & improvement to make your BOT accepted by maximum number of user base.
- A Chatbot can be your future Support or Help Desk Team if implemented correctly. It not only saved your cost in long term but also your customer will be happy since they can ask there queries at any time to the virtual system which serve them 24*7.

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CRYPTOCURRENCY: THE EVOLUTION OF DIGITAL MONEY

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ABSTRACT
Nowadays everything all over the world is getting digitalized. The most emerging area which is trending now is e-commerce where all the transactions are being done online through debit cards, credit cards, net banking, SMS based and internet-based mobile banking which lead to an increase in risk of our data being hacked. Crypto currency is a currency which works on mathematical algorithm, a digital currency in which encryption techniques are used to regulate the generation of units of currency and verify the transfer of funds, operating independently of a central bank. Decentralized crypto currencies such as bit coin now provide an outlet for personal wealth that is beyond restriction and confiscation. Crypto currency is a very safe medium of exchange of money digitally as it goes under 2^{256} computational algorithm in order to get right answer and the probability of guessing the correct input is 1/115 quattuorvigintillion which is next to impossible. This paper will be covering issues with the current banking system, how crypto currency can solve this issue, what is blockchain technology, features of blockchain and blockchain mining.

Keywords: Electronic transaction, digital currency, crypto currency, public ledger, bitcoin, blockchain, blockchain mining.

INTRODUCTION
As the Technology & Communication medium is getting evolved day by day and the number of online users is growing exponentially, it has created opportunities for investments and business ideas, viz. mostly for trading, financial transactions and new types of currency. Cryptocurrency is not a currency which one can hold in hands and put it in a piggy bank. It is a currency which cannot be physically touched or seen. It is a digitalized form of currency existing only electronically. It has been a decade since Satoshi Nakamoto invented a new cryptocurrency Bitcoin in 2009. Bitcoin, a form of Cryptocurrency is not attached to any State or Government. It doesn't have a central issuing authority or a regulatory body. There is no organisation deciding when to make more Bitcoins, figuring out how many to produce or investigating frauds. This electronic mode of payment is based on mathematical proofs. It can be used for worldwide transaction purpose with a very low transaction fee and is highly secured by BlockChain. When it was launched, no one believed in cryptocurrency and thought it could be a spam. But it gained popularity every passing year and has become one of the top priorities for investors to invest and make money out of it. This paper will be focussing on why cryptocurrency is the future money, how safe it is and what are the edges over physically currency?

OBJECTIVE
- To understand the need of the cryptocurrency
- To understand the blockchain

ISSUES IN THE CURRENT BANKING SYSTEM
In order to do any transaction on any banking channel today, it cost high transaction fees. For example, if a user wants to transfer some money from his/her account to someone else account through a banking channel, the bank might charge a fee for $200 transaction up to $5. Thus, receiver ends up receiving $195 which in percentage terms is a very high percentage of a transaction fee. also as of today there is lot of scenario people end up doing double spending. For example, user has $ 1000 in her account but she ends up spending $1200, $600 to each to two users. Double spending is a unique problem where digital money is spent twice. In this case user able to make two purchases amount which is less than the purchase value so in this scenario that lady able to buy a commodity worth more than $1000 though she had only $ 1000 in her account. Also banking system is prone to hacking. Hackers attack financial institutions and gain unauthorized access to data. They can do transaction on your behalf which you are not aware of or they can transfer money to some illegible accounts. In 2007, the number of frauds in India through ATM cards and net banking totalled to 1,785 (each amounting to Rs. 1 lakh or more). So we can see that the current banking is prone to hacks which can cost huge amount of money. That's why we need to have a very efficient digital payment structure which is set or all parts of the world.

HOW BITCOIN SOLVED THESE PROBLEMS
Bitcoin is a decentralized system which allows one to value transfer transaction at a low transaction fee as low as $1 compared to $5 which bank was charging so at the end receiver receives true value of the amount send by

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the sender. Bitcoin follows a decentralized system where no third party like governments, banks or any other financial intermediaries is involved during the transaction between a sender and receiver. Thereby, reducing the cost of transaction drastically and that is the primary objective of crypto currencies or technology like blockchain which advocates the removal of intermediaries.

Now Bitcoin is the crypto currency which runs on blockchain. How Bitcoin solved problem of double spending. Double spending is avoided through the basic structure of a Blockchain which involves verification of transactions, suppose one trying to spend the same Bitcoin in a second transaction. After the first transaction has been confirmed, the second transaction will not get verified and thus, becomes invalid and this will happen because after the first transaction has been confirmed, balance will be verified in the second transaction and address identity will be validated and I one is trying to second more than what the balance is, the miners, the validators of the blockchain network will discard that particular transaction and will not add it to the main blockchain network. Thus, double spending becomes as good as impossible. In a blockchain, each Block is linked to its previous Block. The transactions become invalid for a specific Bitcoin which has already been spent.

Public Ledger, records all bitcoin transactions where it is accessible to everyone who is associated with the system. It is 100% transparent system whatever transaction are happening it is visible on public ledger. Once a user joins the blockchain network, he gets copy of the blockchain (all transaction) since its initiation. The first block in the blockchain is called the gennous block. Though the public ledger is accessible to everyone, only the user's address and the transaction details are visible to the users of the bitcoin network. By looking at the address one can not figure out whom that address belongs to and hence the identity is secured of the address owner. This keeps blockchain safe rom data tempering. Each block on the blockchain is aware of who is its previous block and this way entire blockchain is created. Even if the hackers tries to hacks one block, it would have to change the entire subsequent chain ahead of this block which will require huge amount of computation power for the hacker in order to make the changes across all the blocks which is next to impossible.

BLOCKCHAIN TECHNOLOGY

Blockchain is decentralized system of secure and trusted distributed database. It is a distributed ledger which records and shares all the transaction details across all the nodes in the network so that data is not modified. Each and every transaction which happens on blockchain network is distributed across all the nodes. Each and every participants has the same copy of ledger and it is immutable ledger. Once the record or transaction is registered, it cannot be modified. Blockchain was introduced to timestamp digital documents and prevent tampering of records. In simple terms, a chain of blocks that contains information is called blockchain. When a transaction occurs, its related information is recorded into a block and that block is get verified ny the miner.

COMPONENTS OF BLOCK

Previous Hash: it is an attribute which is connecting block to its previous block so the previous hash attribute consist of the hash value of its previous block.

Data (Aggregation of transaction): it consists of details of sender's address, receiver's address and transaction amount.

Nonce: Bitcoin uses proof of work (POW) in order to execute the algorithm, nonce is a random value used to vary the output of the hash value. POW is the process of transaction verification done in blockchain.

Hash: it is like digital fingerprint, it is the finger print of current block where it takes an input value (previous hash, data & nonce) and produces an output value of fixed length. Bitcoin network use SHA-256 hashing algorithm to generate 256 bit length hash

FEATURES OF BLOCKCHAIN

Public distributed ledger: A blockchain is a decentralized public distributed ledger that is used to record transactions across many computers. A distributed ledger is a database that is shared among the users of the blockchain network. The transactions are accessed and verified by users associated to the bitcoin network. Thereby, making it less prone to cyber-attack.

Encryption: blockchain eliminates unauthorized access by using cryptographic algorithm (SHA256) to ensure the blocks are kept secure. Each user in the blockchain has their own key public and private key. Private Key is known to only the sender also it is used to confirm if the origin of the transaction is legitimate. Public key used to uniquely identify the user but it is shared by the sender with every transaction it floats on the blockchain network.

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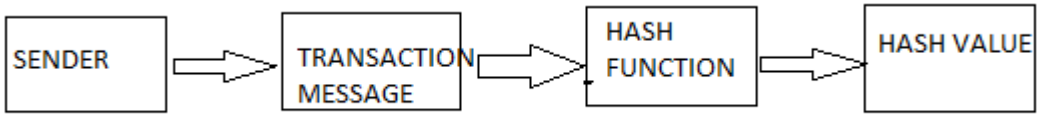
TRANSACTION VERIFICATION PROCESS



Sender sends a message, it passes through the hash function and then hash value is created and then pass through signature algorithm with a private key digitally signed doc is created.

Now, transaction message + digitally signed doc + public key are transmitted to receiver. At receiver end, the transaction message is passed through a hash function to get a hash value and by passing the digital signature and public key through a verification function we get a hash output which is compared with the hash value obtained for transaction message.

CONCLUSION

Looking at data security and transaction fee of the current banking system, evolution of digital money and blockchain techniques needs of the future.

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GREEN COMPUTING AS A HEALTHY WAY OF CREATING CLEAN TECHNOLOGY- A CASE STUDY OF RUDRA ENVIRONMENTAL SOLUTIONS, PUNE

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ABSTRACT
When we talk of innovations it is always the western world we look upon. But we came across a very innovative business model where the company sets a benchmark in creating a healthier, cleaner and pollution free environment i.e. RUDRA ENVIRONMENTAL SOLUTIONS,PUNE. The company differs to believe in traditional ideology and also sends a strong message that maintaining our environment is not only the onus of Government but also we as a society can implement creative and innovative ideas with the benefit of technology in harnessing a pollution free world. Their business model is a success story which has helped in saving the environment from plastic menace and also pioneered in providing fuel, which is a derivative of their manufacturing process, at comparatively cheaper rates. With almost Zero percentage of wastage, the minimal residue generated out of it can also be reused in making Roads. The above study will help us comprehend the business model which can be replicated in managing E -waste, which is a major problem in all industries. As majority of modern age industries/companies are striving to find a more ecofriendly products for e.g. PC's which are less hazardous and generate less toxins. The innovative way of Rudra Environmental Solutions of recycling plastics can be used in making Greener PC's by using recyclable polycarbonate resin. In this research paper, we discuss about various sources of hazardous and toxic e-waste, their effects and recommend steps for their effective management. With the case study of Rudra Environmental Solutions as a role model we would like to highlight the issues that are roadblocks in effective sustainable environmental management and reduce the percentage of E-waste generation in our country.

Keywords: Green computing, E-waste, Electronics, Electric etc.

OBJECTIVE
1. To study and analyze how plastic waste generated from E waste can be recycled and converted into usable plastics.
2. To critically analyze the working of Rudra Environmental Solutions and benchmarking their best practices in reducing, recycling and reusing Plastic waste.
3. To derive and design Green and clean strategies for implementing Green Computing w.r.t Rudra Environmental Solutions technology.

RESEARCH METHODOLOGY
Major research analysis was based on primary data which we collected through online questionnaire method where our sample size was 50 out of which we got 21 respondents. The sample audiences were from different employees of industries such as Engineers, Directors, proprietors, managers, technical experts etc. In order to get a holistic view of things we did exhaustive literature review and referred to various published articles and research papers for secondary data.

INTRODUCTION
As the definition of Green Computing goes, it is concerned with the manufacturing, using and disposing of computers with no impact on environment. Green computing aims to reduce the carbon footprint generated by the Information Systems Business while allowing them to save money. Use of computer plays a big role in environment pollution. Green computing is now a day's becoming a hot topic for research and many scientists are focusing their attention on inventing different Green Strategies related to this discipline. The problems addresses issues such as effective power utilization, maximizing efficiency, correct disposal of electronic gadgets, reliable and cost effectiveness e-waste disposal system, noise energy consumption as well as effective disposal of plastic etc. One of the most used components by ICT groups are personal computers and hence considered for our analysis under green computing.

Computer components have changed over the years, but a PC today is typically 40% steel, 30% to 40% plastic, 10% aluminum and 10% other metals. Computer components also include copper, gold, silver, cadmium and platinum. A monitor adds glass and lead to the components. Glass and plastic are more complicated. Leaded glass, used in monitors, cannot be easily recycled, so it is often crushed and used as an industrial abrasive or to make asphalt. Nonleaded glass can be crushed and turned into usable glass.

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Plastics from older computers often have paint and metallic coatings that can contaminate the waste stream. But even when computer plastic can be separated into pure streams, there are not many markets for it.

Electronic waste is the fastest growing segment in the waste generated across the globe. Sources of e-waste includes IT equipment such as computers, laptops, networking devices, cables, power adapters; household appliances like televisions, telephones, mobile phones, calculators, fridge, air conditioners, washing machines, microwaves, gaming consoles; electrical and electronic devices such as tubelights, bulbs, LED lights, remote controls, electronic toys, treadmill; medical devices such as monitoring and control equipment, ultrasound testing machines, x-ray, stabilizers etc.

Recycling e-waste is accomplished both legally and illegally. Legal e-waste recycling usually involves disassembling the electronics, separating and categorizing the contents by material and cleaning them. Legal recycling, in which items are then shredded mechanically for further sorting with advanced separation technologies. Companies must adhere to health and safety rules and use pollution-control technologies that reduce the health and environmental hazards of handling e-waste. All this makes, Legal recycling expensive. As a result, many companies and countries illegally export their e-waste to developing countries where recycling is cheap.

In Some countries illegal recycling is practiced, such countries are China, India, Nigeria, Ghana and the Philippines.In illegal recycling, people recover valuable materials by burning components to melt away non-valuable materials, using mercury and acids to recover gold, and dismantling devices by hand to reclaim other materials of value. In other hand, they are collecting wires which will be burned later. Due to lack of awareness they are handling dangerous materials in unprotected manner. Research has found that inhaling toxic chemicals and direct contact with hazardous e-waste materials result in increases in spontaneous abortions, stillbirths, premature births, reduced birth weights, mutations, congenital malformations, abnormal thyroid function, increased lead levels in blood, decreased lung function, and neurobehavioral disturbances. Furthermore, e-waste toxins contaminate the air, soil and groundwater.

Some important facts you need to know about the environmental effects of e-waste

- Computers and most electronics contain toxic materials such as lead, zinc, nickel, flame retardants, barium, and chromium. Specifically with lead, if it is released into the air can cause damage to human blood, kidneys, as well as central and peripheral nervous systems.
- When e-waste is burned, toxic chemicals are released into the air and damaging the atmosphere. The damage to the atmosphere is one of the biggest negative impacts on the environment from e-waste.
- When electronic waste is thrown away in landfills their toxic materials trickle into groundwater; land and sea animals both is affecting. This can also affect the health of the people in the developing nations where maximum of the electronic waste in neglected.
- Only 10% of mobile phones are recycled in the United States and most Americans get new mobile phones every 12 to 18 months. This is generating more and more electronic waste and with the lack of accountable recycling, the environmental problems of e-waste are regularly increasing.
- In Guiyu, China, many of the residents exhibit substantial digestives, neurological, respiratory and bone problems. This is the leading e-waste disposal site in China and quite possible the world, Guiyu receives shipments of toxic e-waste from all over the world.

In most cases, we are talking about e-waste, even we are not considered plastic waste in e-waste. Mostly in all electronics or electric items manufacturers are using about 30-40% plastic. Plastic problem is increasing day-by-day. So, in this paper we are emphasizing on the plastic and to solve plastic problem, we are taking case study of Rudra Environmental Solutions.

CONVERSION TECHNOLOGY OF RUDRA ENVIRONMENTAL SOLUTIONS

The machine effectively reverses the plastic production process; where the Thermo Catalytic Depolymerization (TCD) process cracks the long chains of polymer to produce useable fuel. The waste plastic; is cleaned and shredded into small pieces before Thermo Catalytic Depolymerization (TCD) process, to remove contaminants like paper, oil, grease, food particles etc. This is important as it increases the efficiency of the machine and subsequently quality of the fuel.

The Thermo Catalytic Depolymerization (TCD) process performed within a heated sealed reactor. The reactor is loaded with the shredded plastic and is heated and the catalyst helps in cracking the long chains of polymers in the absence of oxygen to produce hydrocarbon vapors. The plastic depolymerized at 380 – 430□C, and the

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gases are condensed. The condensed vapor produces the fuel and synthetic gases, out of which the syngas used as an energy source for the further heating of the reactor. This synthetic gas, which is a byproduct is passed through scrubber and cleaned prior to being used a heating source; helping improve the efficiency of the process. The fuel passes through the filtration system before it's collected.

ADVANTAGES OF PROCESS AND PRODUCT

1) Domestic heat requirement (Hot running water, etc.)

2) The plant can be run on the gas generated from the Process

3) Environmental friendly

4) Attracts Carbon Credits

5) Small size (up to 500kg) plants can be easy handle & manage

6) Employment generate for locals and waste pickers

7) Getting free plastic waste

8) Industrial / Commercial fuel problem will be solved; they can generate fuel for their own consumption.

9) No harmful gas, no water pollution by this process.

10) Eco-friendly Process, no harmful gases produced.

11) No Pollution from waste treatment

12) The poly fuel generated from this method and can be used in generator sets to produce electricity.

13) Poly fuel can also be used to light up street lights.

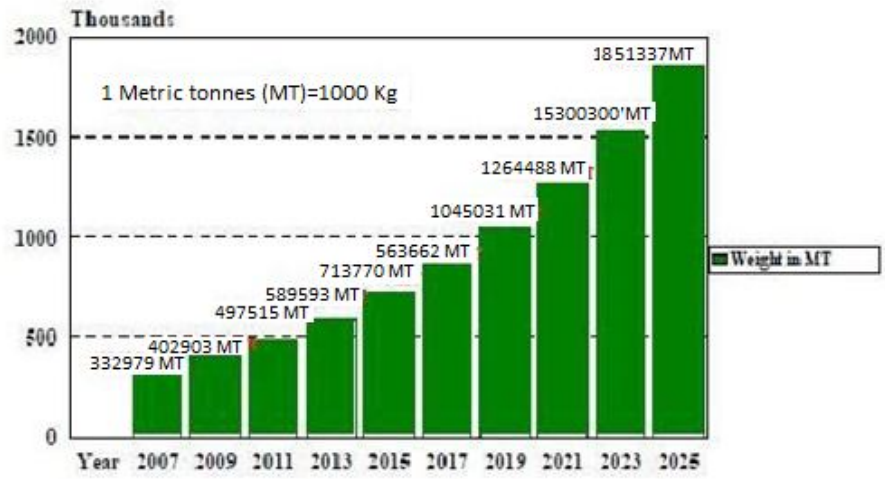

Fig.1: Growth of Ewaste in India

Source: http://www.bricexpansion.com/indian-ewaste-manage-profitable-save-world/

FINDINGS

As we can see from the facts and workings of Rudra Environmental Solutions the plastic waste generated is converted very successfully and easily into recyclable plastics as well as he by product produced is used as a Fuel for household work which is also quite cheaper in comparison with other sources. In order to understand the real scenario in the industry we designed a questionnaire wherein we tried to understand the challenges or shortcomings while implementing Green Computing also whether in first place people are aware of Green Computing, Techniques of Green computing, benchmarking of best practices in industry regarding Green Computing etc. When we studied the case of Rudra Environmental Solutions, we found out that Rudra has been at the forefront of the waste plastic to oil conversion process and is pioneer in finding solutions for the end of life waste plastic, especially thin plastic, which traditionally has no or low value. As per the world bank report, India is estimated to generate 1.8 billion tons of waste by 2025, but India faces serious problems in collection, separation and processing services. Demand for organized waste management enterprise has been growing in India owing to Government initiatives such as Swaccha Bharat Abhiyan and a regulatory push on the solid waste management front. From our Primary Research we could find that many of the companies were aware

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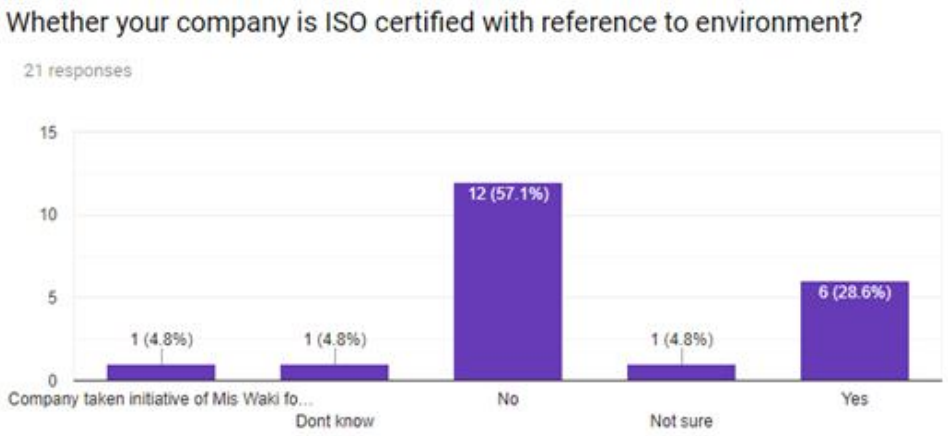
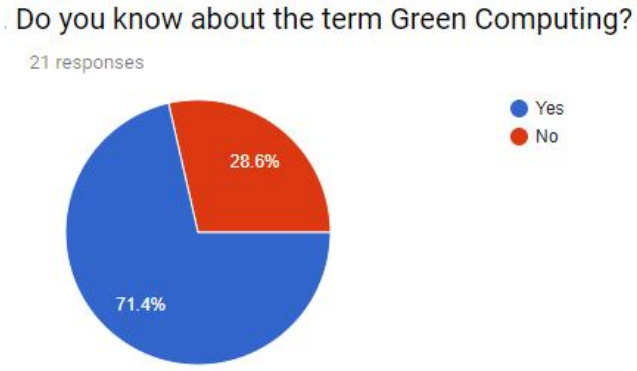
about Green Computing but hardly few are ISO Certified w.r.t Environmental Standards. Many of them feel that Green Computing is a feasible and ecofriendly option but very few are working on actual conversion of plastic waste or thinking of recycling waste material. Many companies are providing Training but are not hiring Green IT Consultants. than 50% of the companies are conducting Green Audits. This indicates, there is a large scope in this arena especially in rural areas where there is dearth of unemployment; this can be a source of income generation as well as employment. As 75% rural population is educated, we can definitely get skilled and trained people.

Fig-1



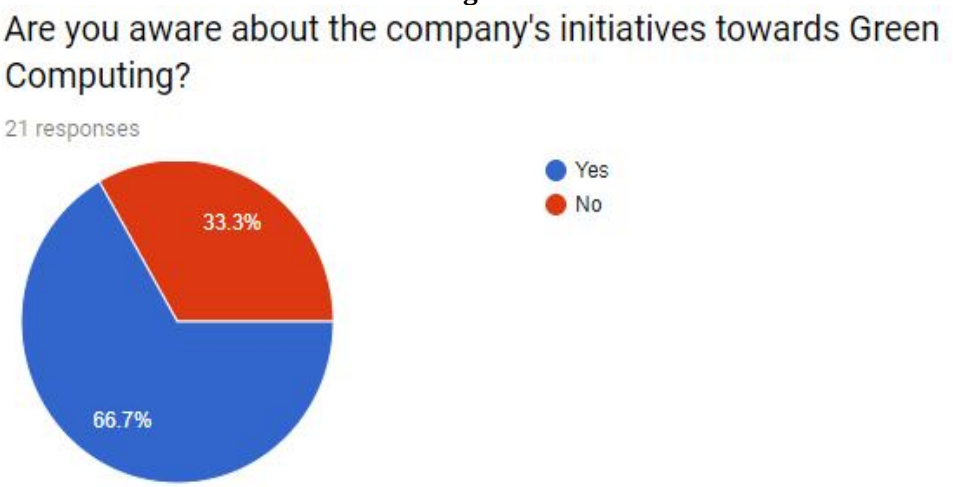
The Fig.1 shows that 25.1% companies are running without ISO certificate and only 28.6% companies have ISO certificates. Awareness of employees is too less even they don't know or not sure that their company have ISO certificate or not.

Fig-2



According to Fig.2 our result 71.4% people knows about green computing.

Fig-3



As Fig.3 shows that 66.7% people are aware about the company's initiative towards green computing other are unaware people.

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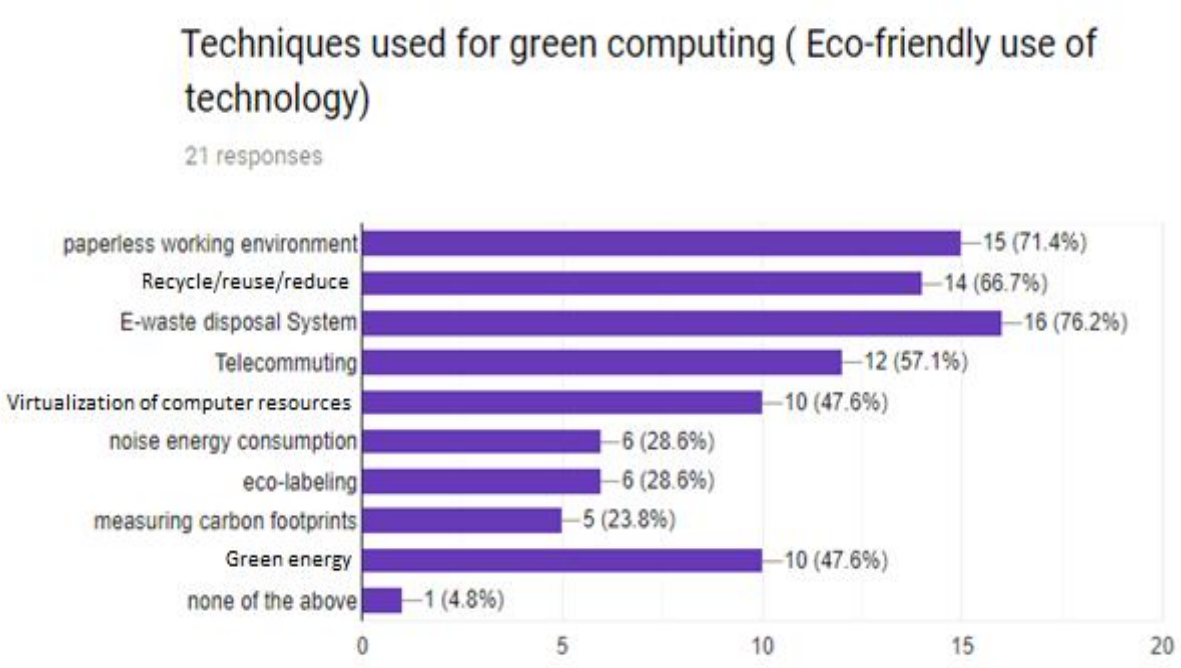
Fig-4



As shown in the Fig.4 different techniques are using in various industries and 71.4% industries are paperless and 66.7% are aware about recycle/reuse and reduce. 76.2% have their own e-waste disposal system but they have not mentioned that is it formal or informal. Telecommuting and green energy also implemented 47.6%. Only 23.8% companies are measuring carbon footprints.

Fig-5

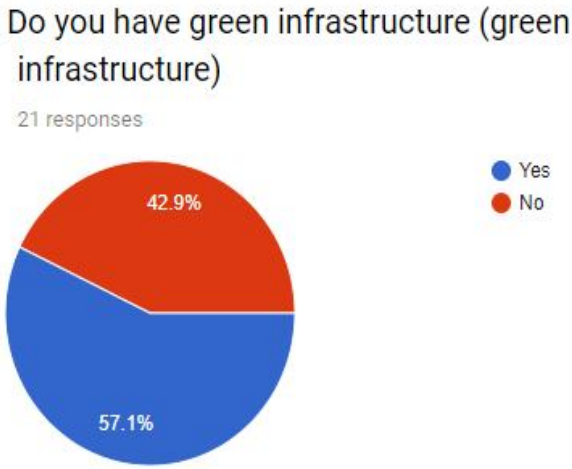


Fig-6

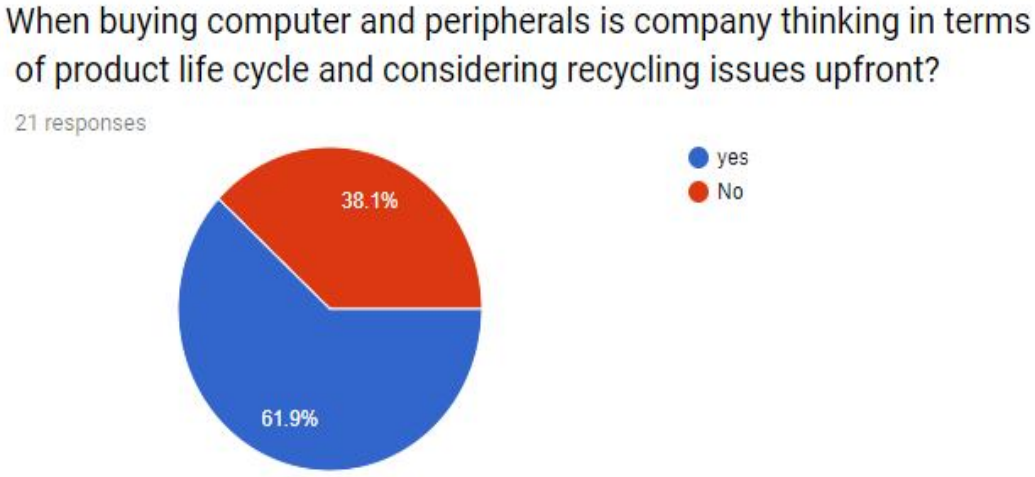


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Fig-7

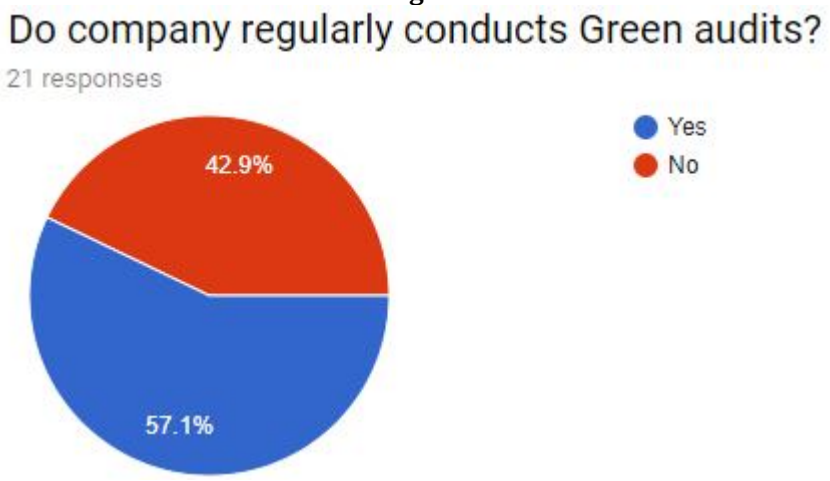

Fig-8

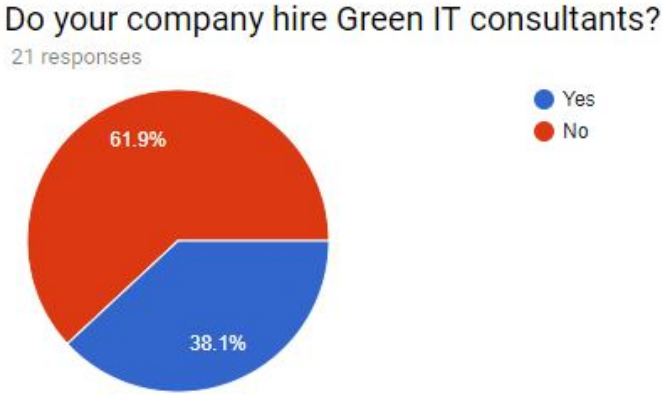

Fig-9

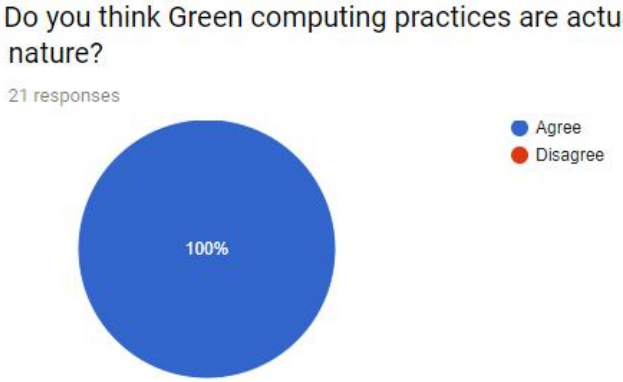

Fig-10

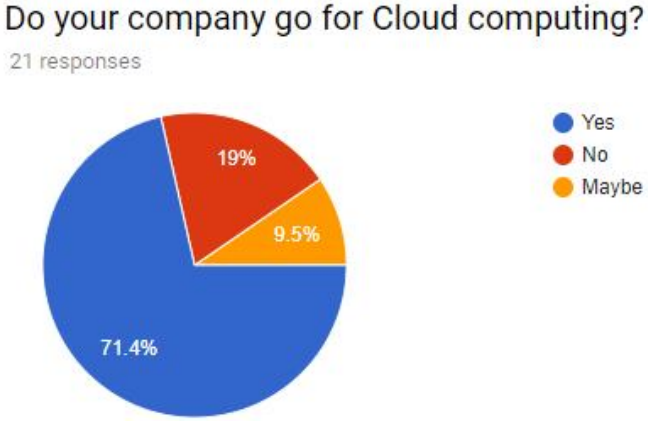

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Fig-11

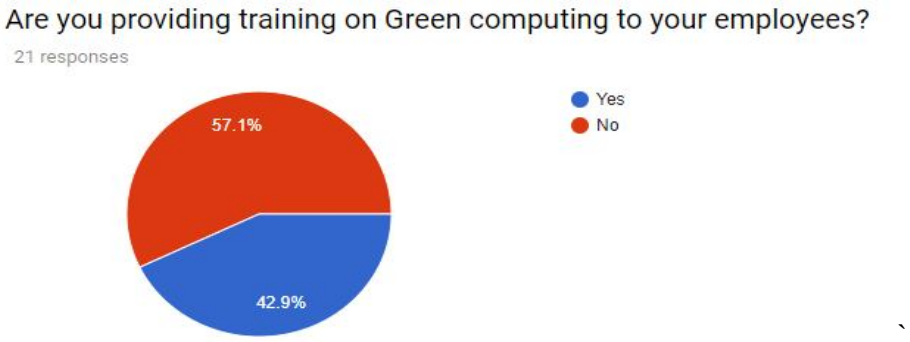
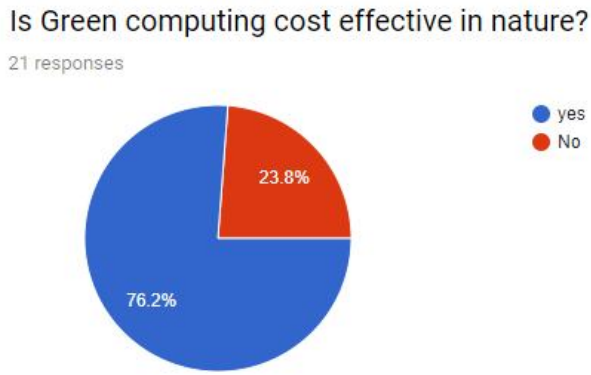


Fig-12



SUGGESTIONS

Dell said it has developed the technology industry's first packaging trays made with 25 percent recycled ocean plastic content. Since 2008, Dell has also included post-consumer recycled plastics in its desktops, and as of January, reached its 2020 goal of using 50 million pounds of recycled materials in its products. Dell was the first IT Company which is going to produce computers and monitors that contain e-waste plastics and recycled carbon fiber. Examples like this are many, the problem is to change our perception, mentality and traditional approach towards this plastic menace. There are various ways and means of countering this problem but we need to think of solutions which are applicable in long run and feasible in nature.

Following are the suggestions we would like to put forward for implementing Green Computing after a thorough analysis of best practices and workings of RUDRA ENVIRONMENAL SOLUTIONS.

1) Collaboration should be established between the governments of developed and developing countries; they can help humanity to get free from e-waste and Plastic waste.
2) To integrate the Legal and illegal recycling systems.
3) Give financial incentives to illegal recyclers to divert e-waste to legal recycling centers.
4) Make waste recycling a compulsory activity for every manufacturing unit.
5) Under CSR initiative, help can be provided to various Small Scale Industries for starting new ventures in formal recycling of plastics.
6) Improve ways to significantly or completely reduce the presence of toxic materials in electronic devices.
7) Extend the life of your electronic Gadgets.
8) Buy Environmental friendly Gadgets which have eco label
9) Provide Used Electronics to educational institutes/Social programs.
10) Recycling plants should be made compulsory in all villages and cities by Government and subsidies should be provided to all.
11) Government should also provide interest free loans for all entrepreneurs who are contributing in this field.
12) Government should have to appoint officers to find e-waste management system of industries on the regularly basis and also they have to check how they are managing their waste formal or informal.

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CONCLUSION

As per our research Around 3 million tons e-waste generated in the year 2018. According to Metal Recycling Association of India, approximately 5% is recycled by Legal recyclers, while 10% goes to landfills and remaining 85% is handled by the illegal or unorganized sector. Now-a-days everyone knows the green computing practices are feasible in nature but due to costly legal recycler mechanism people are not moving in the legal/formal recycling field, if government will give some more relaxation or making strict rules for the illegal recyclers and the growing industries; it is possible to develop more formal/legal recyclers. As we already discussed that plastic is also part of e-waste, so we should have to focus on the plastic waste which is generated by computers or electronic devices. If all the manufacturers start doing their business in an Eco Friendly way, they are abiding to the Environmental rules and regulations. Recycled plastics may be used in the production and manufacturing of various electronic items, toys, home appliances etc. Rudra Environmental Solutions has created benchmark in this field and government should start to tie up with such companies to create a proper waste disposal system. Lastly, we would like to say that in order to implement Green computing, companies must first try to recycle their own waste that is generated through their E-waste by implementing green and clean strategies and suggestions mentioned above.

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IOT COMPONENTS FOR IMPLEMENTING SMART CITY

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ABSTRACT
A city can be smartened by making the elements in it smart. This can be realized with the help of a new technology IoT (Internet of Things) which is the base for connecting things that we see around us. Everything in Internet of Things has a unique identifier and the potential to communicate over internet. IoT based systems give citizens access to a wealth of real time information about their environment which will help them take perfect decisions for their present actions and will also aid future development. This work aims to study various components used in IoT and domains like transportation, energy, housing, water and waste management that can be improvised using IoT to make a city smart and also proposes an architecture for developing IoT enabled systems.

Keywords: Internet of Things, Smart City.

I. INTRODUCTION
A Smart City provides an intelligent way to manage components such as transportation water, waste, homes, energy and the environment to transform any city to a sustainable smart city.

IoT is a system of physical things embedded with sensors, software's and connectivity which allows objects to be sensed and/or controlled remotely across the network and will help integration of the physical world into a computer-based system. It's composed of physical objects, sensors and actuators that are connected using different protocols and enable the physical objects to communicate amongst themselves. It has the ability to predict with accuracy certain conditions before they occur hence can help in taking smart decisions. Its diverse application includes smart homes, buildings, travel, transportation, health, agriculture etc.

Fig 1.1 describes the basic components of IoT systems.

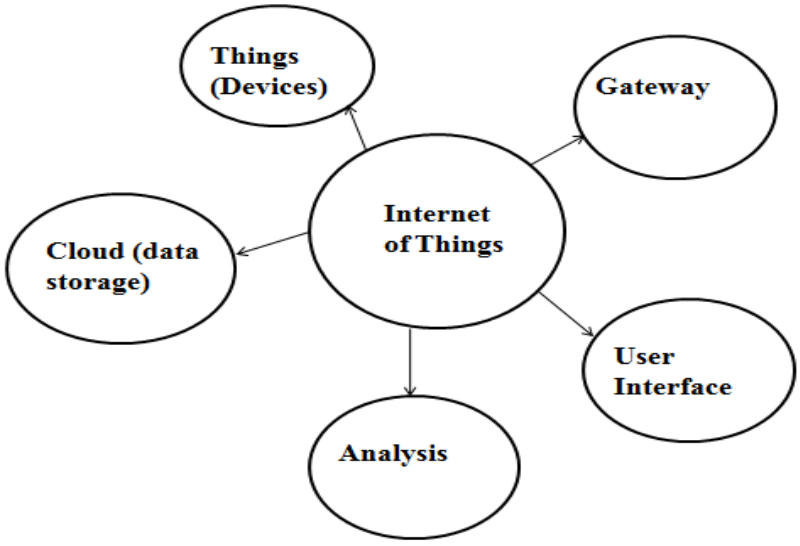

Figure 1.1: Components of IoT

Various components include

- Things: Things are sensors or devices that are responsible for collecting information from the environment and transmit it to the next layer for further processing.
- Gateway: Gateway manages bidirectional movement of data between different networks and protocols.
- Cloud: Cloud technology offers tools to collect, process and store and manage the huge data collected from different sources in real time.
- Analysis: It's the process of converting the data collected from different devices and sensors to convert it to useful information for managing real time data.
- User Interface: These are the parts that are visible and accessible to users using smart devices, websites or gadgets.

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II. LITERATURE REVIEW

In this section a brief review of most implementation work of smart city.

A. Smart City Domain

Aditya Gaura et al. [1] has proposed a Multi-Level Smart City architecture based on semantic web technologies and Dempster Shafer uncertainty theory.

B. Smart Transportation Domain

Limin LIU [2] has implemented bicycle sharing system where transportation of a city will be the greener and more convenient. GPS is used to track the location of the bicycle.

Farooq Ahmed [3] has implemented a city system architecture which is the combination of local systems with the environmental inputs of the daily tasks in order to provide solicited solution for the mobility of operations and monitor the performance for the optimization of the processes.

C. Smart Energy Domain

Birendrakumar et al. [4] implements Smart Energy meter using IOT and GSM module which can transform the regular energy meters to smart meters.

Sarvanan et al. [5] proposes a smart energy meter which uses IoT and sensors to read the bill and uploads it on a website.

D. Smart Housing Domain

Ravi Kishore Kodali et al. [6] focuses on building a smart home based on wireless home security system which sends alerts to the owner by using Internet in case of any trespass.

Soliman et al. [7] has created a system architecture for a smart home which uses sensors and actuators connected to a micro- controller.

E. Smart Water Management Domain

Nikesh Gondchawar et al. [8] has implemented a smart irrigation system with smart control and intelligent decision making based on accurate real time field data.

Karan Kansara et al. [9] implements an automated irrigation system which uses a mobile connected to GSM. The sensor detects the level of moisture and if it senses it dry, it sends signal to mobile which activates the buzzer.

F. Smart Waste Management Domain

Dr Naveen et al. [10] has implemented an automated waste segregator at household level using Arduino.

Vinothkumar et al. [11] has implemented a garbage management system which uses a bin that notifies the concerned person the status of the bin when it reaches the threshold value with the help of a mobile message or web page.

III. IOT ARCHITECTURE AND PROTOCOLS FOR SMART CITY

A. IoT Architecture

The current internet architecture and protocols suffice to meet the requirements of Internet of Things as they cannot support billions of devices.

There is a need to develop a framework or a model for this emerging technology to facilitate the interoperability among various devices [15].

M. Wu et al. [14] describes a basic architectural reference model for IOT consisting of three layers - Application layer, Transmission layer and Perception layer.

Cook et al. [12] has proposed an architecture for smart homes consisting of three layers – Physical layer, Communication layer and Middleware layer. r.

Jie et al. [13] proposed and architecture that is divided into five layers namely, resource layer, interface layer, agent layer, kernel layer and application layer.

Aditya Gaura et al. [8] has proposed a multilevel smart city architecture to process the data which consists of four layers namely data collection, data processing, data integration and analysis and device control.

Smart City can be realized by incorporating the information received from different domains like house, waste, water, traffic and energy using a layered architecture as in Figure 3.1.

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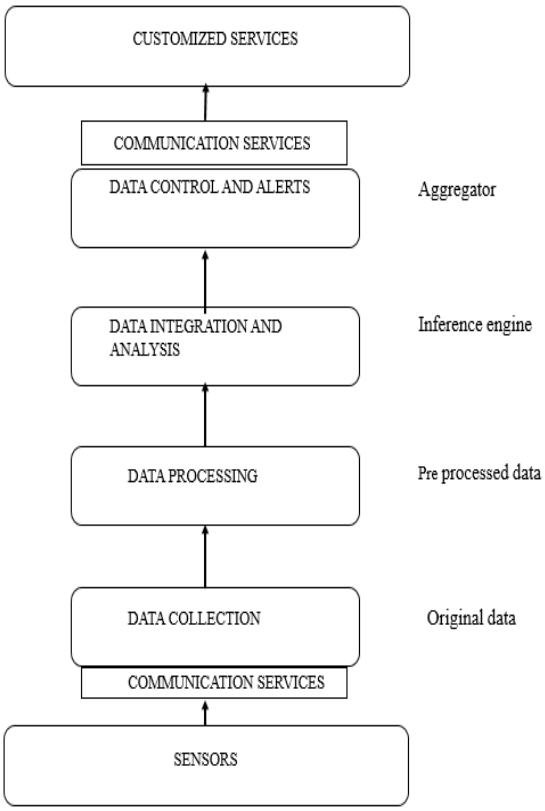

Fig-3.1: Architecture for city smart implementation using IoT

Step 1-Data Collection phase: Data is collected from **sensor** which is defined as a device whose purpose is to detect events or changes in its environment and send the information to other electronics, frequently a computer processor [16].

Step 2-Data processing phase: Heterogeneous data are collected from different sources in step 1. This data is converted using semantic web technology to a common format like RDF (Resource Description Framework) [17] before analysis.

Step 3-Data integration and analysis phase: Various semantic web techniques like OWL is used for integration and analysis of the collected data [18].

Step 4-Device controlling and alert phase: Alerts can be given using actuator [20] which requires a control signal and source of energy and is a component of a machine that is responsible for moving and controlling a mechanism or system.

D. IoT Protocols

Traditional TCP/IP protocols cannot be fully utilized for IoT devices as they have constraints in power consumption, CPU processing and memory utilization. Some of the protocols used in IoT is in Table 3.1.

Table-3.1: Comparison of TCP/IP and IoT protocols

Layer	Internet Protocol (TCP/IP)	IoT Protocols
Application layer	Http/ FTP/ SMTP/POP3 etc.	CoAP/ MQTT/ REST API
Transport Layer	TCP/UDP	UDP
Network Layer	IPv4, IPv6	IPv6
Link Layer/ Physical Layer	IEEE 802.3, IEEE 802.11	IEEE 802.11, IEEE 802.15.4 and many more

Application layer: An API defines the messages that are sent from the client to the server and vice versa.

Transport layer: TCP/IP is not used in the transport layer of IoT. It uses UDP (User Datagram Protocol) instead of TCP.

Network layer: 6LoWPAN is Low Power Wireless Personal Area Network which allows a low power reliable wireless communication between devices that are addressed using IPv6.

Link layer: IEEE 802.11 specifies of LAN protocols that specifies MAC (Media Access Control) and Physical layer protocols for implementing WLAN (Wireless Local Area Network) Wi-Fi communications.

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E. OS for IoT Systems

Some of the Operating systems for IoT embedded systems are explained in the below Table 3.2.

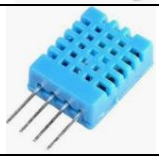
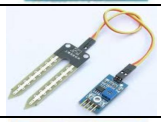
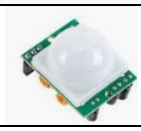
Table 3.2: Different OS for IoT embedded devices

Brand	Models	CPU	RAM	Connectivity
Arduino	20+ and many clones	ATmega, 8-64MHz, Intel, Curie, Linino	16KB-64KB	Pluggable extension boards (WiFi, GPRS, BLE, Zigbee, etc.)
Raspberry Pi	A, A+, B, B+, 2, 3, zero	ARMv6 or v7, 700MHz-1.2GHz	1GB	Ethernet, extension through USB, BLE(Pi3)
Intel	Edison	Intel Atom 500 MHz	1GB	WiFi, BLE
BeagleBoard	BeagleBone Black, X15	AM35x	512MB-2GB	Ethernet, extension through USB and shields
Broadcom	WICED	ARM 120 MHz	From 256KB	WiFi, BLE, Zigbee, Thread
Marvell	80MC200, SoC	ARM 200 MHz	From 256KB	WiFi, BLE, Zigbee,

F. Sensors for IoT Systems

Table 3.3 describes some of the sensors that can be utilized for implementing smart city.

Table-3.3: Different sensors used in IoT systems

Sensor	Image	Description	Application
Temperature Sensors		It allows the IoT device to record the temperature of the object.	Thermostats
Finger print Sensors		It can sense and detect fingerprints.	Home security
Pressure Sensors		It detects the pressure of a liquid, gas	Weather monitoring
Humidity Sensors		It is used to find the humidity of environment	Moisture detection.
Accelerometers, gyroscopic sensors		It can be used to detect vibrations or tilt of any object.	Antitheft devices and levelling.
Soil Moisture sensor		It can be used to detect the moisture level in the soil.	Irrigation
Ultrasonic sensor		It is used to measure the distance based on ultrasonic signal.	Garbage monitoring
Motion Detection sensor		It can be used to detect the motion.	Home and traffic monitoring.

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IV. CONCLUSION

City Smart concept that has evolved with the use of IoT can be combined with other technologies of computer networks, ICT, cloud computing and big data. IoT applications of smart transportation, smart water management, smart housing and smart energy can transform a city into a Smart City leading to a safe, resilient and sustainable city. This work aims to address some of the domains for realizing smart city, studies various IoT components and proposes an architecture for implementation of smart city using IoT.

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KNOWLEDGE SHARING THROUGH SOCIAL MEDIA: ETHICAL ISSUES AND CHALLENGES

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ABSTRACT
Social networks have been instrumental in introducing new prospects for one and all to share knowledge with others. They have been playing a major role in connecting individuals, communities, organizations and nations together, by been very active and fast in spreading information or knowledge everywhere. The media provides compatible tools to pass on the knowledge or information. Both, Social Media and Knowledge sharing have the common goal of spreading knowledge and/or information, thus helping one and all in the process of learning, decision making, fostering innovation, empowering competitive edge and economic accomplishments through the acquisition and application of knowledge. Both operate in a world of ever-increasing loads of data and information. This research paper aims at discussing what role the social media plays as a way of Knowledge Sharing. It would also give an insight on what are various challenges and issues being faced in this process of ethical knowledge sharing through social media and how the process can be made more ethical.

Keywords: Knowledge Sharing, Knowledge Management, Social Network, Social Media, Ethics.

1. INTRODUCTION
There was a time when organizations spoke all about Database Management Systems, which dealt with not only storing data, but also structuring it and optimizing the querying process. But for years the data was just getting accumulated without it being used for any productive purpose. Realizing this limitation of not utilizing the data, there stirred the requirement of analyzing this accumulated data and using it for making the business process more profitable and grabs the market through business intelligence. This in turn created a clear picture about what was the true difference between Data, Information, Knowledge and Wisdom and how data could be converted to information and further converted to Knowledge which could help one to gain more profits. Once the data turned into knowledge there came a question about how this knowledge could be managed and shared. This gave birth to a simple but also a complex process of Knowledge Management and Knowledge Sharing. With this also came the question about what kind of ethics need to be followed in the process of knowledge sharing and what would be the different ways in which this knowledge would be shared. And time since Social Networking has taken its place in the world of data; it has also become one of the ways of sharing knowledge.

The whole idea behind Knowledge Management is, to intentionally and systematically process and practice, acquisition, sharing and utilizing knowledge for productive purpose from wherever it resides, for learning and performance enhancement in organizations. It is therefore a matter of using a category of practices which are difficult to observe and manipulate and sometimes are even unknown to those who possess them [1]. And evidences also show that when such practices are used at higher frequency lead to better innovations and corporate performance.

Along with Knowledge Management, the process of knowledge sharing is equally vital for any kind or organization, because with knowledge sharing come implementation of new ideas in the process of learning for the workers. And with the development in information technology, this process of knowledge sharing has become easier through social networking and social media, immaterial of distance, time and place. But along with this, the ethical issues and challenges have also become the point of concern.

2. WHAT IS KNOWLEDGE SHARING?
Before understanding what exactly is knowledge and it is important to understand what Knowledge is and how it is actually derived from the data, what is its nature. As quoted by Turban [3], knowledge is very distinct from data and information. Data are facts, measurements and statistics; information is organized or processed data that is timely and accurate. And Knowledge is information that is contextual, relevant and actionable. Though all the three may be considered as assets of an organization, knowledge provides higher level of meaning about data and information.

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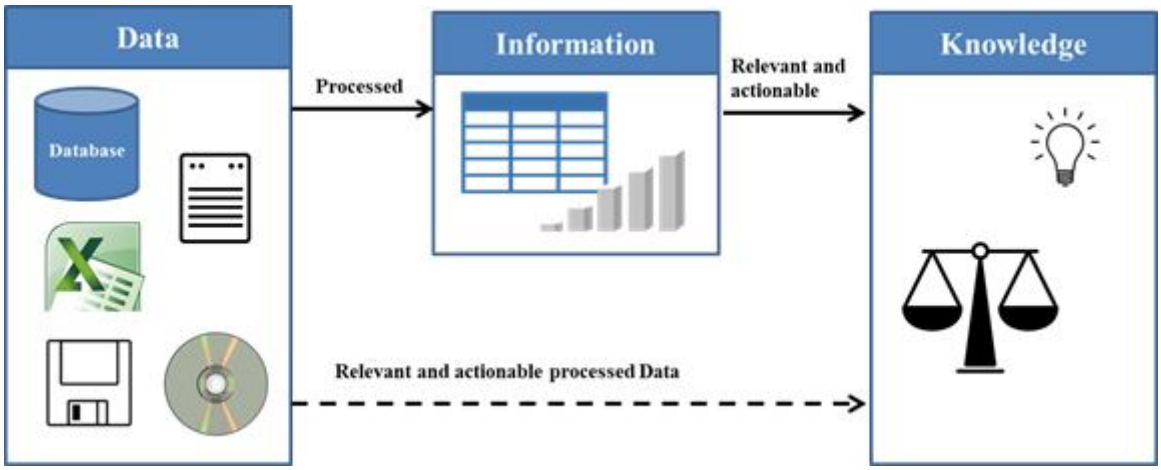

Figure-1: Relationship between Data, Information and Knowledge

Knowledge can be classified and characterized in several different ways, like it could be individual, social, casual, conditional, relational, and pragmatic and even as embodied, encoded and procedural [4]. Irma Becerra-Fernandez [4] explains *Declarative knowledge* focuses on beliefs about relationships among variables, i.e. "Know what". Whereas *Procedural knowledge*, in contrast, focuses on beliefs relating sequences of steps or actions to desired (or undesired) outcomes, i.e. "Know how". *Explicit knowledge* typically refers to knowledge that has been expressed into words and numbers, whereas, *tacit knowledge* includes insights, intuitions, and hunches.

The basic idea behind knowledge management is all about communicating or passing on the knowledge among people, it becomes very important for the organizations to promote the culture of knowledge sharing amongst the employees. And usually, the requirement of knowledge sharing arises is when either at individual level or at the level of any business, there arises the question of performing better. And if the application of the knowledge has a very wide scope then it becomes beneficial for the organization to nurture the interchange either naturally i.e. through face-to-face communication or electronically. And with the evolution of internet and World Wide Web and more specifically the invention of Social Networking, this process of communicating knowledge as become more faster.

So in simple terms if we had to define Knowledge Sharing then it can be put up as, process where a knowledge owner/provider/source would pass on the knowledge, which could be in the form of skills, experience, and/or understanding, to the knowledge acquirer/consumer/destination, without having to leave the ownership of the knowledge. Ipe (2003) thought that the knowledge sharing between individuals was the process that private individual's knowledge turn to be understood absorbed and used by others [5]. Based on the above definition, the following characteristics of knowledge sharing can be derived:

- It is a major individual behavior.
- It is a voluntary, proactive, behavioral awareness.
- It is controlled by environmental systems or procedures, such as legal, ethical standards and code of conduct, habits.
- The result of knowledge sharing knowledge is to be jointly occupied by two or more parties.

But the same process of knowledge sharing is also affected at various levels by various factors. Such as, at Organizational Level there can be Technical, Creative Culture, Competition, Fairness of procedure are the factors that affect. At Team Level factors like Shared Mental, Team Member's Diversity which affect Knowledge Sharing. And at Individual Level there can be factors like Personality, Intrinsic Motivation, and Social Capital that affect the knowledge sharing. Although the power of sharing knowledge in face-to-face mode may be considered very high, but it will always be limited to reaching to larger distances and this where the online mode helps us to overcome this limitation.

3. ROLE OF SOCIAL MEDIA IN KNOWLEDGE SHARING:

Though face-to-face communication cannot be replaced by Online Communication, but it can turn up to be a boon for those who have lot of insights and are not able to share it directly to a group of people. Within it Social Media works out to be one of the effective tools for knowledge sharing. Social media has become very popular for collaborative authoring, conferencing and meeting, resulting in enhanced performance, visibility and

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recognition. Research tools have found that a positive relationship has developed between knowledge sharing and social networks and social media. It has also helped in inventing innovative ideas for making the performance better.

Social media basically follows the principle of 5 Cs like, Communicate, Collaborate, Connect, Complete and Combine. It provides various tools that not only help in sharing knowledge but also in filtering, storing and publishing. It can help one discover new areas and help to brainstorm on how to explore the connection between the knowledge base and newly discovered area. It also plays an important role in finding out the patterns of the behavior of the audience who can be future potential customers of the business organization.

4. METHOD:

4.1 The Purpose of the Study

The objective of the research is to find whether social media can be a good option for knowledge sharing and to find what could be the possible issues and challenges one would face if the organizations opts for any social media as a tool to share knowledge amongst its employees and workers in terms of ethics to followed over social media in the process of knowledge sharing.

4.2 The Participants

The sample consisted of 60 students of B Sc. - I.T. and Computer Science students of Third Year, some of whom have already been working and some who will soon be placed in organizations; and which included 73.3% males and 26.7% females. The mean age is 21 years old and also tends to use social Media to great extent.

4.3 The Instruments

A questionnaire containing questions to reflect various points like Knowledge Sharing, Social Media and Social Networks and Ethics in Social Media that they practice or would prefer to practice in their actions was built to conduct the survey.

5. ANALYSIS

5.1: Knowledge Sharing

- About knowledge sharing it was found that about 88.3% respondents were aware about Knowledge Management and Knowledge Sharing, but about 45% organizations still did not have any kind of Knowledge Management System installed.
- 17% to 68.3% respondents felt that Knowledge Sharing could help in continuous transformation of individual learning. And also good number of 33% to 61.7% agreed that it could enhance the overall productivity and performance. And about 70% of them also chose to be the part of knowledge sharing system for creating and maintaining knowledge.
- Around 25% to 53% respondents also agreed that Industry-Institution interaction is vital and can prove to be good for knowledge development and sharing. And about 50% of them also agreed that these kind of knowledge sharing systems could help in sharing problems and taking some corrective action towards it.
- And while doing so about 38.3 % to 55% respondents also thought that some kind of feedback system is also must for knowledge sharing systems.

5.2: Social Media and Social Networks

- More than 56% respondents feel that social media not just a choice but is today's need of the hour.
- And with the availability of such social media being made available not only on desktop or laptops but majorly over smartphones, about 43.3% say that it was a very advantageous for Sharing Knowledge and about 33.3% said that they could work more quickly, 50% said that it was a good source of keeping oneself up-to-date with news. And about 20% also agreed that one could also follow latest industry trends.
- But it was also found that about 42.4% respondents felt that it also reduced the focus on work and more than 57% said that even face-to-face communication reduced due to this. And about 14% to 18% also felt that there was lack of privacy and maintenance of confidentiality was also difficult.
- When it comes to trusting the content that is being shared through social media, only 16.7% said that they would always trust whereas a big number of 60% disagreed on the point of trusting the content. And the possible reason to this is that only 13.3% verify themselves whether the content being shared is really authentic and 60% of the respondents only sometimes verified the content.

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5.3: Ethics in Social Media

- About 23% said that they never evaluated the content that they were sharing over social media and only 8% actually evaluated the content. Because more than 31% never develop the content that they were sharing.
- More than 30% also agreed that the organizations never provided any kind of training to the employees for the ethics that are supposed to be followed while sharing knowledge over social media.

5.4: Ethics in Knowledge Management

- When it comes to following ethics while sharing any kind of knowledge over social media, it was found that almost 30% of the respondents did not always show respect for the copyrighted material that is being shared and due to which about 38% would also not maintain proper confidentiality. And even more than 43% of them sometimes got the content verified by the actual field experts before sharing it.
- A count of around 46.7% also believed that some kind of signing of code of conduct is sometimes necessary in order to implement ethics in knowledge sharing over social media. And 37% also said that this should sometimes be made mandatory.
- And the biggest hurdle to implement ethics in knowledge sharing over social media was changing people's attitude towards knowledge sharing which is about 48.3% and this could possibly be due to 36% of them saying there is lack of the understanding about ethical knowledge sharing, and more than 25% saying it was difficult to determine whether what kind of knowledge should really be shared over social media.

6. LIMITATIONS

The findings are favorable but limited due to the small number of respondents participating in the survey and also that all the respondents have not had a proper experience of working in a knowledge management environment. The responses though have helped to trace various issues and challenges that are faced while implementing ethics while sharing knowledge over social media.

7. ISSUES AND CHALLENGES

Hence based on the findings it can be determined that ethics are extremely important in knowledge transfers and knowledge sharing since the original knowledge workers who create the knowledge may have to lose the ownership over the knowledge. In this process, the possible issues and challenges that may arise are as follows:

- Sharing tacit knowledge over social media would be difficult as over sharing explicit or conceptual knowledge.
- Maintenance of privacy of organizational knowledge which the organization may not want to share at all levels.
- The organization must check out that the knowledge being shared is accurate, trustworthy and authenticate and of good quality.
- Since knowledge is also intellectual property it becomes must for the organizations to first avail the consent of the knowledge worker before it is being shared over social media.
- Educating every employee about the ethics that need to be followed while sharing the knowledge over social media and ensuring that every individual is practically implementing those ethics.

8. CONCLUSION:

With this study one can conclude that knowledge sharing in organizations is a complex process. It is dynamic in nature and is dependent on social relationships between individuals for its creation, sharing, and use. In current times it is shared more informally than through formal channels, and much of the process is dependent on the culture of the work environment also. And right since the knowledge sharing process has been introduced to social media, ethics in implementation of the same have become more and more challenging. But by setting certain policies like making certain code of conduct signed by the knowledge sharer and providing him right understanding of the ethics that need to be followed, these challenges can definitely be faced and resolved.

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NEW EMERGING ERA OF TECHNOLOGY - GREEN TECHNOLOGY

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ABSTRACT
Green Technology (greentech) or clean innovation (cleantech) is the utilization of at least one of science, green, ecological and electronic gadgets to screen, model and save the common habitat and assets, and to check the negative effects of human contribution. The term is additionally used to portray maintainable vitality age innovations, for example, photovoltaic, wind turbines, bioreactors, and so forth. The expression "innovation" alludes to the utilization of information for commonsense purposes. The field of "Green Technology" envelops a persistently developing gathering of strategies and materials, from systems for creating vitality to non-dangerous cleaning items. The present desire is that this field will acquire development and changes day by day life of comparable size to the "data innovation" blast in the course of the most recent two decades.

Organizations in the developing green economy are as various as the individuals who begin them. This guide centers around just a bunch of the innumerable open doors in the commercial center New business people are not burning through whenever creating a future that looks significantly more brilliant - one where private ventures give items, administrations, preparing projects, and living compensation occupations that protect the earth and lift individuals out of destitution [1].

General Terms: Green technology objectives and basic motivating criteria to go Green.

Keywords: Green Technology, greentech, cleantech

1. INTRODUCTION
Innovation is characterized as a lot of procedures for making, changing, utilizing, and knowing about devices, machines, strategies, artworks, frameworks and techniques for arranging them so as to taking care of an issue, improving a previous answer for an issue, accomplishing an objective or play out a particular capacity. Innovations extensively influence people and other creature species' capacity to control and adjust to their normal environments. Technology is characterized as a lot of procedures for making, changing, utilizing, and knowing about instruments, machines, strategies, artworks, frameworks and techniques for sorting out them so as to tackling an issue, improving a previous answer for an issue, accomplishing an objective. Advancements extensively influence individuals and other creature species' capacity to control and adjust to their indigenous habitats.

Innovation has influenced society and its surroundings from multiple points of view has grown further developed economies (counting the present worldwide economy) and has bolstered the ascent of a relaxation class individuals even with apathy and dormancy.[2] Science has contributed numerous advancements to the general public which incorporate Aircraft innovation, Automobile innovation, Bio-innovation, Computer innovation, Telecommunication innovation, Internet innovation, Renewable vitality innovation, Atomic and Nuclear innovation, Nanotechnology, Space innovation and so on have changed the way of life of the individuals and gave ease [3]. So as to continue this comfortness of individuals in the general public, they need to shift about maintainability of the encompassing condition.

Green Technology is the part of logical learning that manages the creation, application and utilization of specialized methods and their interrelation with human life and nature, drawing upon such subjects as designing, connected science, and mechanical expressions.

Numerous innovative procedures create undesirable side-effects, which offer ascent to contamination to the inconvenience of Earth's condition. Executions of new innovation impact the way of life and estimations of a general public and regularly brings up new moral issues. To improve any present frameworks in the general public, it is typical practice that such frameworks must be contrasted and a speculative, anticipated arrangement of that sort called "Perfect framework". The word 'Perfect framework' alludes to the framework which has perfect attributes for example immaculate inside and out.

2. GREEN TECHNOLOGIES
Green Technology (GT) is natural recuperating innovation that lessens ecological harms made by the items and advancements for people groups' accommodations. It is accepted that GT vows to increase ranch productivity while lessening ecological corruption and saving regular assets Green innovations are maintainable advances which won't make impression when utilized for different procedures/applications. Green advances bolster the

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utilization of characteristic natural assets and evade creation of green gasses. They likewise expend less asset and don't support to build the entropy of the universe. Green advances don't bolster any sort of ecological corruption. They bolster robotization of each procedure and henceforth dodge human intercession. Since they don't bolster natural corruption and add to making the impression, they are manageable, improve the way of life of the individuals and contribute for human solace capacity [4]. The real innovations utilized in present day like Aircraft innovation, Auto versatile innovation, Biotechnology, Computer innovation, Telecommunication innovation, Internet innovation, Renewable vitality innovation, Atomic and Nuclear innovation, Nanotechnology, Space innovation and so on can be made green utilizing the rule of green innovation. Such green innovations may add to taking care of issues of the general public both fundamental and propelled sort of human advancement. The objectives of green technologies in some of the basic and advanced fields of society are listed in following table: [8]

Sr No	Area	Objectives of Green Technology
1	Agriculture	To avoid environmental degradation in agricultural processes.
2	Food Processing	To eliminate poisonous contents in food and to avoid green gas emission and environmental degradation in all food packaging processes.
3	Potable water	To large scale filter used water and sea water through green processes without environmental degradation.
4	Sustainable Energy	To develop technologies for harvesting potential natural energy sources to generate required energy to human civilization without degrading environment.
5	Consumer products	To produce variety of new generation consumer products without side effects and without degrading environment in any production, packaging and in actual use by consumers.
6	Automobiles	To produce energy efficient, zero emission automobiles using renewable energy processes.
7	Construction	To build environmental friendly, energy efficient, smart buildings.
8	Industrial Automation	To develop industrial processes which are environmental friendly, no green gas emission, recyclable waste products using green energy.
9	Computer and Information Communication	To develop and utilize environmental friendly, recyclable electronic and computer components which uses renewable energy and efficient performance
10	Education	Use of green technology in all education services.
11	Health	Use of green technology and green processes in all health and medical services.
12	Aircraft & Space Travel	Use of green energy and green materials and environmental friendly processes in air and space travel.

Practicing environmental safety isn't an alternative yet a need for mankind consistent presence. Nobody ever keeps running from his/her shadow. Be that as it may, with cautious lighting determination we can kill it in a controlled - information condition. Making strides toward environmental friendliness is about learning based use of God's inclination material present for our manageability and conservation utilizing naturally well disposed innovation and procedures. The earth reacts to human numbness; setting off wild frequently prompt unimportant procedures that in the end changes the course of our reality. Need has set on us the job to elevate green instruction to guarantee the survivability of the country economy and ourselves specifically [5].

1. BASIC MOTIVATING CRITERIA TO GO GREEN

- Solid empathy to see humankind and condition commonly continuing one another. Man intercession is required to help the strength of the green condition. We can get them on the off chance that we are green.
- Solid learning base; multidisciplinary way to deal with research strategy.

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- Solid political will to hold up under the torment of transforming from the assumptive thought that the earth can support itself. It is intriguing to take note of that world heads have not conceded to commonly worthy convention to moderate the impacts of ozone depleting substances outflow [6].
- Things are changing and old unregulated thoughts are unequipped for supporting rising human populace; they should oblige science- based conclusions. Human innovation applications impacts throughout the years have change nature biological harmony. There is presently the need to make new green cognizant development administrations and innovation to guarantee the future we want.
- Spirally vitality cost with the overwhelming natural outcomes of hydrocarbon fuel use [7].

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CONCLUSION
Green innovation is approach to address the issues of society without harming or exhausting regular assets. With the assistance of green innovation we can lessen natural harm causing by item and advancements.

Green innovation is significant that everyone should utilized it. Green innovation is covers an assortment of apparatuses, causing it inside reach to be progressively green in consistently.

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NEW INNOVATIVE PORTABLE TECHNOLOGIES: EFFECT ON DEVELOPERS AND USERS LIFE

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ABSTRACT
The current world amazed with new innovative technologies averagely within every three months. There is always demand for improvement in existing techs as well as speedy demand of new. The technology within hands of humanities is now having a shape of gadgets. This portable innovation needs a special type of development tactics which is merely can stand with their existence not more than few years. Also as these new technical innovations provide ease of use which keeps them in regular demand also come with many problems associated with them which may become the root cause of many potential problems which will have impact on various aspects of developer and user life. The user of these technologies on the other hand attracted greatly towards these technologies but their life is also affected in various ways. The current research depicts the few facts associated with all above mentioned scenario with suggesting probable solutions for it.

Keywords: Potable, Gadgets, Technology, innovation, development, issues

INTRODUCTION
The future of technology seen as making the computer personal. The human and computer interaction increased drastically. It's not hidden fact that nowadays people desire direct interaction with technology. Screens are not adequate as they don't improve our relationship with computing. The devices don't possess personality. Its always wait for instruction. The machine sits on idle waiting for your orders. The interaction is now becoming essential need of humanity where people really want magical objects in the form of portable gadgets.

On the positive side for the new developer, many of these new technologies flash in the marketplace and fade away quickly. This because this new innovations lose their marketability in favour of the next generation's technology and patently better ways of doing the same functions. The setback for a coder is natural: a regularly growing learning curve. Production needs to adopt dynamic actions as techniques are frequently evolving as there is no option. Numerous innovations that were on edge only a couple of years prior are totally antiquated today.

WHAT ARE UPCOMING INNOVATIONS?
Last few years, an enormous number of experienced developers have been changing their focus from developing for computers to developing apps for mobile devices like the iPhone, Android and BlackBerry. New devices and operating systems, like Android, Bada, BlackBerry, iOS, Windows Mobile etc. making the cell phones advertise a focused goldmine for whoever has the fitting aptitudes.

Two new advances that are ready to have more noteworthy interest later on and could possibly reshape programming in progressive ways are Internet-associated TV and the Kinect gadget.

Internet TV speaks to the converging of Internet abilities and customary TV. Similarly as cell phones made application scaling down typical, the characteristics of the bigger TV screen and good ways from the gadget will in general make new use designs and innovative strengths.

Kinect transforms your body and voice into the info gadget for interfacing with XBox 360. A basic flood of a hand can control and control the substance that is shown on your screen. One day soon, Kinect-like highlights will be repurposed for use on PCs or different gadgets as an enhancement to your console and mouse. Simply envision the product advancement potential outcomes; it's essentially stunning.

COMPONENTS CAUSING EASY ENTRY IN MARKET
A significant number of the most mainstream development tools are freely available on internet, and creators give itemized description of the ideas and procedures to learn them. Online instructional exercises and data to defeat basic troubles enable designers to rapidly recuperate from any common "staying focuses" in the learning procedure.

WHAT ARE THE INTEGRAL COMPONENTS FOR AREAS TO FOCUS ON?
- **Need of Skills, Competition:** More challenge brings lower hourly rates; the more prominent the interest for the expertise, the higher the hourly rates. Today, contracting manager's focus on the last couple years of work and the developer's utilization of definite ranges of abilities. Inclination and a wide scope of abilities don't really guarantee employment.

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- **Tools and Resources:** Development devices are promptly accessible with direction online to get familiar with the different required skills.
- **Out-Dated Skill Set:** The ceaseless release and refinement of technologies abbreviates the life expectancy of individual language uses and versions. Organizations may lock into technologies that limit developer's capacity to pick up to new ideas. Developers must endeavor to remain current instead of enable skills to end up stale.
- **Knowledge and Current Job Status:** Management normally direct developers which of the significant innovations are utilized, yet developers may control the sub-technologies. Regardless of whether there is no presentation to more up to date technology, the comprehension and use of current project methods like Agile and design patterns ought to be persistently considered and refined. A job additionally need the added benefit of giving exposure to new technologies which will shapes the activity that developer can meet all requirements for next.
- **Device and Platform:** The attraction a developer feels for a gadget or innovation might be the biggest spark in learning the details and launching a career using that ability.
- **Language Demand:** several language usages are just derivatives of previous versions or subsets of the language. A developer's flexibility to follow a language through its common usages is essential to the success of His or her job.
- **Motivation to Learn:** There ought to be applicable level of imitative required from the organization to inspire the developers to learn new technologies in their free time. This can be arranged using organizing some small competitions among the developers. Some developers thrive on learning new things and continued to play with technologies even in their off hours. Others have to step away fully to refresh themselves for the subsequent day's set of needed development tasks.
- **Market an Idea:** Simply being normal developer isn't enough to create most selling software system. A developer should be able to establish suitable need in the market and have a selling plan to promote the product.

DEVELOPER CAREER THROUGH TECHNOLOGY CHANGES

Developers must take the responsibility of managing their own career. Status as an employee or as a contractor doesn't lessen this responsibility. They additionally should be conscious of the impact that a short mechanical life-cycle may have on their vocation. They have to know their very own qualities and shortcomings and how to get ready for industry and business changes. Dealing with these duties appropriately enables designers to position themselves in the most beneficial manner, when change, unavoidably, comes thumping. Programming improvement is a profoundly unstable industry. Outdated advances, in addition to the occupations and professions of the individuals who become stagnate in them, get left behind.

IN CURRENT ERA CHALLENGES FACED BY DEVELOPERS:

Building a high quality product is the end goal for any organization, but software developers often run into a myriad of challenges on the way, while staying on top of new technologies and trends. The product advancement procedure is experiencing some irregular changes – improvement strategies are developing, robotization is getting to be widespread, and new apparatuses and libraries are rising every day. A process as complex as software development comes with its own set of challenges that you might encounter every day; challenges that need to be addressed almost immediately to reduce the impact they have on your end product.

1. Integration: Coordinating outsider or other custom applications, for example, your ERP, site, or stock administration database adds generous multifaceted nature to your task. What's more, the greater test with coordination is that they stay covered up all through the advancement procedure, and surface just toward the end, prompting additional costs, delays, brought down quality, and here and there even disappointment of the project.

2. Security: As the almost of gadget operate software's runs with internet. It's crucial for development to not to have any loopholes in product. A recent study estimates that 96% of all web applications contain at least one serious vulnerability.

3. Disregarding Best Code Practices: Not checking on code, or smothering mistakes are only implies that designers use to spare time and fulfil time constraints. Following a formal quality confirmation procedure is basic for an effective launch.

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4. Adapting the Latest Market Trends: Taking into account the most recent innovation prerequisites, for example, versatile first or portable just or work area initially is regularly testing. In the event that you don't have assets with hands-on involvement in the most recent and inclining innovations, it is certain to affect your opportunity to advertise.

5. Requirements Volatility: A major reason for the complexity of software projects is the constant changing of requirements. Requirements gathering is a lot more than a handful of business consultants coming up with their ideal product but it is understanding fully what a project will deliver.

6. Undefined Quality Standards: Defect distinguishing proof is unavoidable during usefulness testing, regardless of whether the item has experienced exhaustive unit testing during the advancement stage. When you come out with the test approach, scenarios, conditions, cases, and scripts to complete the functional testing of your project, make sure your test plan covers all the requirements that are to be delivered by planning several cycles of testing.

7. Infrastructure Issues: An unestablished project environment is always a common challenge in terms of its impact on project delivery. To guarantee proficient task advancement, test and pre-creation situations ought to be made accessible during the improvement, testing, and client acknowledgment testing (UAT) stages.

8. Test Environment Duplication: Testing a software system in a controlled environment is difficult since the user is not immersed in a completely realistic working situation. It's impractical to gauge how a user will really use the application in different situations on a regular basis until it's deployed. Testing the software or app or product in a separate real-life test environment is critical to your software's success.

PREDICTION OF FUTURE DEVELOPMENT TACTICS

1. Virtual reality: Currently VR systems are main attraction in the industry, but adoption has been slow. However VR systems are making big moves to expand the market in near future. For designers who dream what it probably been similar to work close by VR offers another generational chance to be at the intersection of diversion and tech.

2. Cybersecurity: Security is top-of-mind for each venture, association, and government on the planet, which means assets will stream to grow new arrangements. Cybersecurity activities can be isolated into two classifications: Internal and outside. Inside, organizations will be centred on structure security into their product. DevOps groups should concentrate on mechanizing security testing into their product advancement lifecycle.

3. Blockchain: Beyond digital currency, Blockchain is a technology poised to revolutionize nearly every industry. Many of the legacy technology company's such as IBM introduced their own blockchain platforms. Organizations in each industry are going to begin building applications on blockchain stages, which means the interest for blockchain designers will detonate. Up and coming years will be a dash for unheard of wealth for designers who devote themselves to blockchain, and most will leave away a ton more extravagant.

4. IoT : Wearables gadgets like the wellness watches get the greater part of the consideration, yet they are simply little instrument in the tremendous IoT biological system. From vehicles to streets, remote ocean oil apparatuses to lounges, about everything is transforming into an information gathering gadget. These gadgets gather huge measures of information, and IT organizations are investigating less expensive and quicker strategies for handling everything. That is the place IoT registering is going to assume significant job in not so distant future.

5. Artificial intelligence: We're reaching the point where businesses absolutely need to adopt AI in order to stay relevant. Voice-activated home assistants, smartphones, Big Data, and Insight-as-a-Service vendors will all have big years as a result of this AI adoption. But the biggest winners of current era are data scientists and Chief Data Officers (CDO) who will be in high demand for a long time.

PROBLEMS THAT GADGET TECHNOLOGY WILL CREATE

1. Health: The excessive use of miniature technology can cause symptoms of actual physical harm. For instance, there are numerous examinations demonstrating that a few people's dependence on their cell phones assumes the nature of an enslavement, and that they along these lines endure withdrawal side effects on the off chance that it is detracted from them similarly that a medication client would. An expanding number of individuals' whole feeling of character and self is tied up with the manners by which they present themselves online in different settings, so losing access to the web is equivalent to losing some portion of themselves. What's more, once more, the more that we become dependent on other innovation, the to a greater extent an issue this will be.

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2. Personal Well-Being Reduction: Spending long periods of time with gadgets could have negative effects on your personal wellbeing. Partly this is as a direct result of the reduction in real-world social interaction, which is almost universally recognised as a vital element of maintaining good mental and emotional health. Automation will also have a profound impact here. It is already being suggested that AI and machines could replace the majority of existing jobs in the foreseeable future.

3. Boundaries Loss within Virtual/Online Worlds: One problem that applies equally to children and adults is that many of the social standards and rules that exist within our societies do not apply in the same way in online or virtual contexts, and this can have problematic consequences. There is now a generally perceived issue with tormenting, misuse and "trolling" conduct via web-based networking media.

4. Exclusion by Technology: Technology would itself be able to make individuals moved toward becoming prohibited in different ways. There is developing attention to the manner by which calculations can dig in and fuel existing inclinations and therefore cause individuals to move toward becoming barred or minimized. For example, calculations which work on informational indexes concerning regions in which there is innate racial inclination -, for example, criminal equity – simply enhance that predisposition and produce results that look bigot, except if purposeful move is made to forestall this incident.

5. Loss of Real-World Social Skills: Spending large amounts of time within online or virtual environments may affect one's behaviour and ability to function out here in the real world. This could take a number of forms such as Depression, Depersonalization, Loss of empathy, Lack of social skills, Loss of sense modalities etc.

ANALYSIS AND CONCLUSION

Increasingly more products are delivering functions using electronics and software. As a result, many traditional manufacturing companies are actually transforming into high-tech product development companies. As this transformation occurs, these companies are finding that developing high-tech products requires management of complex product trade-offs. A borderless data condition could be the future answer for cutting edge item advancement.

No matter how big or small, solving software development challenges never comes easy. From challenges in requirements gathering to integrating new technologies with a customer's existing technology environment, from ensuring end-to-end security to challenges of duplicating the test environment, from adapting to the latest technological advances to handling requirements volatility – software product development requires developer to be clear and focused about the problem set out to solve in order to achieve what set out to achieve.

There's only happenstance ahead for designers with the privilege range of abilities. The vast majority of the product advancement slants in future require something other than essential programming learning, yet it's never past the point where it is possible to add extra abilities to our tool box. As there is scope widens, the flexibility and ease to get knowledge is also increased. The main point here can be mentioned as developer as need to be ready to face and accept the challenges and must have hunger to acquire knowledge. The future technology mentioned in paper will help developers to be ready to face them with more preparedness.

As the innovative technologies comes in the form of problem and solutions in developer's life, it is similar with user's life. The gadget form of techniques attracts and creates the problem in users life same as developers. It could be only suggested that moderate level of use of these technique can only help the users to not have bad impact on their lives. The technology might be seen as prestigious but the user have to apply their own mind to determine the type of gadget to have and limitation of their use in daily life. The disciplined life style will be helpful for the developer and user in regard with the technologies.

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PRELIMINARY STUDY ON SECURITY ASPECTS OF GENERIC SOCIAL NETWORKING PLATFORMS

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ABSTRACT
A Social network is a public structure made up of people and associations nodes. They provide a virtual environment for people to share their information with their family, friends or even unknown. Social networking sites are a powerful and fun way to communicate with the world. As sharing have become easy the privacy of our data is major concern. This paper discusses the importance of "Security" in social network, analyzes security risks and adopts the mechanism to protect privacy.

Keyword: Security network, social networking sites, security issues, privacy.

INRODUCTION

The internet technology brings people together to exchange messages with one another. Internet is the easiest way to stay connected with people and it is the cheapest communication medium for quickest communication. The growth of internet technology found social networks to exchange ideas, thoughts, interests, activities, etc. There are many social networking websites such as Facebook, Twitter, Whatsapp, Instagram, Snapchat, exist but very few are mostly used by the people all over the world. Users of online social networks must need an E-Mail address to create the profile to start the communication process. Once the user profile is activated the users will be provided with the communication interface to start the communication with one another.

As sharing of Information have become easy the security have become a major concern. Information security should be at the forefront of everyone's mind since so much of our personal information is out there on the Internet. Information security is necessary because of the risk generated when technology is used to process information because information may be disclosed in the wrong way or to the wrong person. Information security is broken up into three major areas, which are called the CIA of information security. These areas are confidentiality, integrity, and availability. Confidentiality deals with authorized access. Integrity deals with making sure that the information is not tampered with or corrupted in any way. And finally, availability is just making sure the information can be accessed and where it is supposed to be.

Even though the use of social network sites and applications is increasing day by day but users are not aware of the risks associated with uploading sensitive information. The reason why cyber-attack on these networks is because users upload their personal information that commonly include their interests, social relationships, pictures, confidential information and other media content, and share this information to the whole world. Employees at work place too, unknowingly share information putting their corporate infrastructure and data at a risk. The volume and ease of accessibility of personal information available on these sites have attracted malicious people who seek to exploit this information.

The rise in attacks in the last few years tell us that social networks and their millions of users have to do a lot more to protect themselves cybercrime attacks. It is important to understand the risks and challenges in order to avoid loss of privacy.

SECURITY ISSUES

Inessential to say, social networking is not without its security risks. The major concern is the data privacy. The desired information is available to the government and various agencies because the social networking sites have its central repository which stores the information of the users using that particular application. Teenagers and many users being unaware about the fact make their sensitive data available to them and get into trouble.

Few security risks are mentioned below

1. Users' Anonymity: Multiple users of online social network applications make use of their real name as the profile name. When the attacker search victim name in the search engine, the attacker will lead to the particular user profile. Hacker can obtain all the possible information of the victim through the social networking websites.

2. Personal Information: Users provide information like their full name, DOB, contact information, work profile, address of residing, etc. This make the work of hackers easy to get the relevant data. Through the obtained data the hacker can make the clone of the account and use it for irrelevant activity. This is the most popular security risk because it is very easy to do without the permission of the user. Though many users

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keep the privacy setting as private still details can be obtained by the hackers through various hacking technique.

3. Image Tagging: Many users tag the images with full name or even ID. This tagged image can be accessible to friends of friends thus making the information known to the unknown.
4. Image Hacking: Users post real image everyday on application like Instagram (example). This images are viewed by friends and due to lack of privacy settings the images are public and can be accessed by multiple users. The image can be hacked in various ways like- saving the image, print screen, screenshots etc. Hackers can easily hack the required data and can use for inconvenient activity.
5. Phishing: The purpose of phishing is to harm economically that is the phishers try to retrieve the profile information to know about the banking or the financial information of the users.

PREVENTION STRATEGIES

- Restrict the "amount" – Restrict the amount of personal information you post. Do not unfold information such as your residential address or information about your schedule or your daily routine. Also be aware when posting information, including photos, videos and other media content. Internet is always "public" –. Thus, it is user's responsibility to post information that you are comfortable with anyone seeing. This includes your personal information you post and those in which you are tagged in. Also once you delete the content it is still stored in the application repository.
- Beware of strangers – Internet make communication easy and to make our social circle rich. In order to avoid unwanted access we must limit the people allowed to contact our social application. Even if you interact with unknown make sure to limit the amount of information you reveal.
- Be Radical – Don't believe in everything you see or read. People affix false post about social topics, even including their own identity information. So before accepting or believing make sure to check the authenticity of the user.
- Settings Policy– Make sure to stay updated with the site's privacy settings. The default settings may allow anyone to see your "profile", but you may have an option to customize your settings to restrict access to only certain people. Sites may change their features periodically, so make sure you review your privacy/security settings regularly to make sure that your choices are still appropriate.
- Beware of third-party applications - Third-party applications may provide entertainment or functionality, but use caution and common-sense when deciding which applications can access your personal information. Avoid applications that seem suspicious, and make sure to modify your settings to limit the amount of information which the applications can access.
- Use strong passwords - Protect your account with passwords that are hard to be guessed.Keep different password for different application. Make the password with combination of upper and lowercase letters with numbers and symbols creates a more secure password.
- Use an Anti-virus - Anti-virus software helps protect your computer against known viruses. Since the attackers are continually creating new viruses, it is important to keep your virus definitions up to date.
- E-mail or Message- Various vendors send messages asking about bank details, personal information, health related scheme, Tour packages etc.So beware about whom to trust and always cross verify the message received.
- Harassment- If someone is harassing or threatening you, make sure you use proper measures to remove them from your friends list, block them, or report them to the site administrator using proper channels.

Make sure to post information which is relevant. Latest research have found that 70% of job recruiters rejected candidates based on information found online. So sharing of information online creates a reputations. Also remember online friends are your "Pseudo-Friends" so beware of what you share with them.

CONCLUSION

The only solution to social network security and privacy is to have proper knowledge to what to share and updated privacy setting. Don't add or accept request of users you are not sure about. Share and trust only relevant information. Education plays a vital role. Educate yourself and also people around the disadvantages of sharing all the information on public platform. Today's teenagers believe in showing a lifestyle just to impress people and friends around which leads them in trouble. Know whom to trust and not to live in a virtual

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environment to impress people around. Common Sense is the only key to protect our precious time and information we share.

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PRELIMINARY STUDY ON VERSATILITY AND AUTHENTICITY OF INFORMATION ON SOCIAL PLATFORM – CONTEMPLATING USE OF ARTIFICIAL INTELLIGENCE

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ABSTRACT
Information is one of the most valuable assets since years. Whenever we want to know any domain information about it is the most preliminary thing that we will look upon. Information has also an evolution as in if we look upon certain number of years back the generation, dissemination and view of information was quite on different prospect to what it is today. The major carriers were satellite, radio, newspapers and television. The sources of information have drastically evolved. The paper discusses on the versatility as well authenticity of information with respect to some of major social platforms. The paper also helps to understand the working of sources of information. The paper will focus on any one social platform in brief. There will be suggested proof of concept presented which can be an approach towards social information check and their relevant sources. The paper will discuss the next level approach for the same. With respect to technical aspect the domain of artificial intelligence will be described with a suggested model on how it can play role for the analysis of sources and authenticity of information. The paper on first level may not provide generic model for all social platforms nor for all types of information. The later stage can work on it with some inputs and corrections from the first stage.

Keywords : Social media, social platform,Information,authentic information, fake news, Artificial Intelligence , authentic information sources , television , radio , newspaper

INTRODUCTION
The communication domain has reached a peak where we can have an analogy of information with light. The speed with which the information travels, the globalism of information and its presence irrespective of time are some of the traits to justify the analogy. Social media is a platform where we can find the union of this information. It's a creator, generator and producer of information on a global level. Information from various domains, by various people across the globe unites. Social media has completely changed the perspective of information generation and sharing. The past references of information were narrow with respect to domain, as in there were specialized places like sections of newspaper to view or share information of domains like Politics, Sports, Media, Health and Nutrition etc. Today social platform will serve as a single place to view, share or even create information of varied domains altogether, hence providing versatility. The popularity and usage of social media is increasing day by day. According to a recent social media statistics by Oberlo, there are currently 3.2 billion active social media users. Also 2.5 quintillion bytes of data are created on daily basis.

PURPOSE STATEMENT
To study and find out the outcomes for

- How versatility of information on social platform can be helpful?
- Can users rely on the information available on social platform? Is it authentic?
- What are the possible ways to quantify the reliability of information

OBJECTIVES OF RESEARCH
- To understand the mechanism of information creation on social media
- To study how the dissemination of information takes place
- To identify the domains of information available on social platform
- To segregate social platforms on the basis of their information versatility
- To understand the process of authenticity check followed by particular social platform
- To derive proof of concept where in Artificial Intelligence can be merged with the process of authenticity check

SIGNIFICANCE OF STUDY
- The information on social media reveals its creation and source.
- Users can get statistical check on the authenticity of information as well as the source of information
- Various social platform can design a strategy to eradicate fake information

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- The circulation of information intended for some specific purpose like politics, communalism, patriarchy etc. may decrease
- The study can help to derive a model where in users can be benefitted from social media
- Social media can serve as a platform where real information storage can be discovered.

Comparative Study on existing authenticity mechanism on social platforms

WhatsApp: WhatsApp follows an end-to-end encryption mechanism. It works in a way that only you and the person you are communicating with can read the sent messages and no else can read those messages.Watspp does not have any mechanism to check the content of information. The security mechanism works on device and not on text of information.

Facebook and Twitter: The authentication of information works on an architecture where information is checked manually. Not all the information is checked but if the information is of a form which can have a global impact, it is being verified. They have third parties employed which timely verify the information which is already uploaded. Many scenarios have taken place in society with respect to mislead of information. At times human or machine at the back end have corrected them; at times the information was broadcasted with major impact without being corrected. Facebook and Twitter both have consensus on use of Artificial Intelligence and machine learning as an automated intelligent mechanism for information check .Facebook uses natural language processing for document verification and AI mechanism in which the content of uploaded information is checked. If the information is false then it is deleted from user end may be on temporary basis or permanent basis and then the creation of the information is being traced.

The current working authentication of the social platforms will have either device authentication, encryption techniques or have authentication mechanism. The limitation is the authentication mechanism is at the back end. Users will have no idea on what is the level of correctness of information until they perform their own check. Also in a scenario where social platforms are integrated, the authorization mechanism should be such that it should work in generic basis.

Some of the scenarios where information authenticity was on stake on Facebook in 2018:

1. Lottery winner arrested for dumping $200,000 of manure on ex-boss lawn [visited 2,383,0211 times]
2. Former first lady Barbara Bush dies at 92 [visited 2,290,000 times]
3. Donald Trump ends school shootings By Banning Schools [visited 830,116 times]
4. North Korea agrees to open its door to Christianity [visited 760,314 times]

[Source: Buzzfeeds.com]

There are many other fake news reports, so according to the current authenticity mechanism the information will be displayed to user end and then it will be deleted if it is not authenticated, before it gets deleted it might have already spread to other social media also and read by many users. Also the authenticity mechanism is not domain specific.

To take the information correctness to next level not only for the organization but also for user perspective, there is a proposed model where Artificial Intelligent agent can help the organization as well as the users to understand the statistics of information correctness. The agent will feed itself from all the authenticated sources as well as it will have many manual feeds also.

RESEARCH METHODOLOGY

As the data generation is anonymously big and variant, most of the information will surpass the authenticity gateway and thereby easily getting it place on social platform.

At an initial level there should be segregation of reliable sources of information on internet like BBC, The Hindu, and The New York Times etc. to many more. When new information is created check the following aspects of information like date of information creation, credentials of information creator, TLD and Domain, URL and the link of information to various other sources.

Research Methodology Technical Breakdown

- An artificial intelligent agent can be created for specific social platform. The agent will hold the knowledge on the sources available as well locations of the existing information sources.
- The agent will infinitely poll on a social media environment and will start its action as soon as it receives percept as new information. Once the new information is generated it will check its signature.

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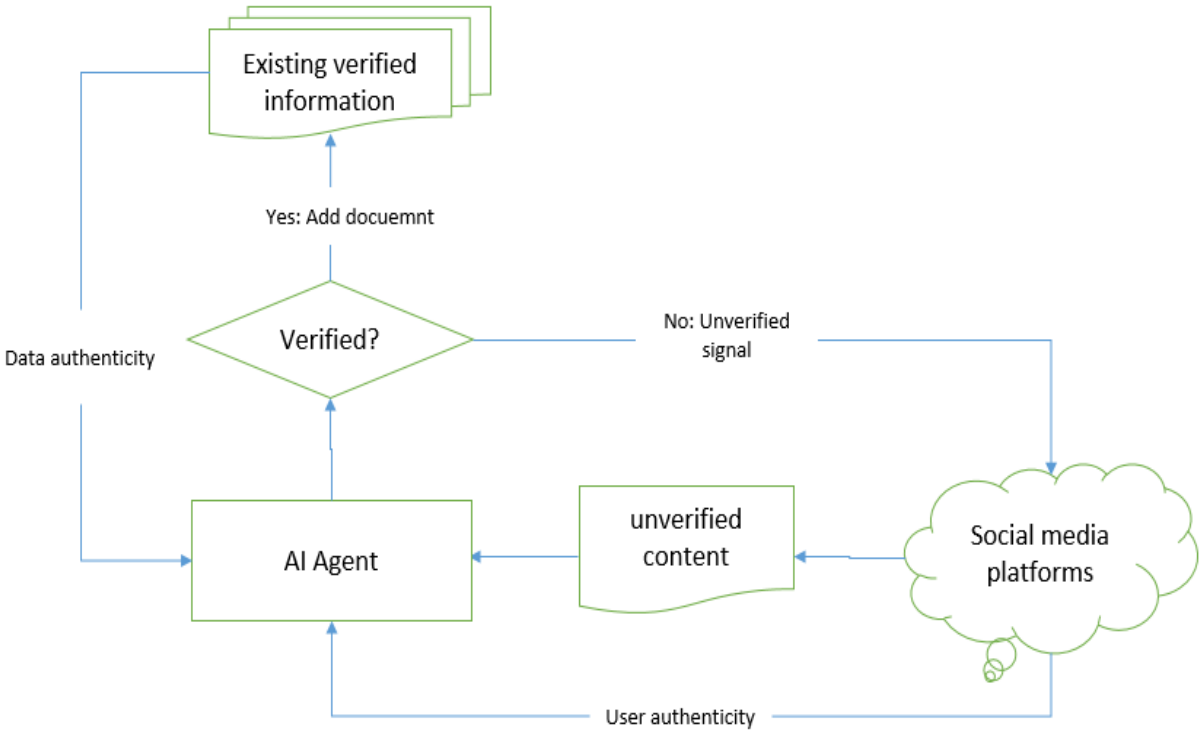
- The information signature will include: credentials of creator of information, time at which the information is created and other network parameters.
- Once the user authenticity tests positive, the statistics of information authenticity can be started.
- The presence of the information will be checked on reliable sources, for which an another Artificial Intelligent program can work and can exhaustively check the reliable sources mapping with the provided information, thereby returning analysis of the same.
- Depending on the analysis, the authenticity statistic of information will be generated and will be attached with view of information.
- Artificial intelligent agent will keep trace of statistics as well as user responses on the same. The search will be more exhaustive and promising once the system grows.



SUMMARIZING AND BROADER IMPLICATIONS

The proof of concept will make social platform better and authentic place for creation and dissemination of information. A consciousness of information creation will be created thereby allowing only genuine sources to be a part of it.Digital Acts on Information Authenticity can take a new path towards constraints of social media in cyberspace.

LIMITATIONS AND CHALLENGES

The biggest challenge will be for the users and social media to accept the limitations of freedom while publishing the information.

The limitation will be that it won't be able to check the existing stored information on social media, also the model will not be able to check the all the information created in its initial stage of working.

The results and the authenticity statistics of information will be still at a challenging level as compared to newspaper, radio and satellites.

FUTURE SCOPE

Using different technological aspects, open source libraries and bridging to make the proof of concept of working Artificial Intelligent agent and its integration with major social platforms.

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SOFTWARE EVALUATION: A TESTING ROADMAP OF INCOMPLETENESS TO PERFECTION

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ABSTRACT
Software engineering is the meticulous approach of software development having the wider scope to detect the inaccuracy in the resulting software results. The comprehensive landscape of software testing is ad-hoc, ambiguous and costly in some cases. Testing methodology is context dependent that means varies as per the type of application. Sometimes this large spectrum of software testing creates software evaluation process more non-optimistic. The software process follows variety of testing strategies. The work done in this paper gives a roadmap view of evaluating software to get complete product.

Keyword: Software engineering, meticulous approach, ad-hoc, large spectrum, roadmap

INTRODUCTION
Software evaluation is an important means of accessing quality of software through the software testing. The increase in number of errors supports a broader way to look at the software results. The longevity testing is very difficult to maintain. In the current trending technology, testing the overall system has become a very important aspect of boosting the quality. It is too expensive to achieve it. For the better working environment of the software it can be tested using varieties of software testing types. It covers the category of functional and nonfunctional testing. These techniques are dispersed in the following general scale: acceptance testing, unit testing, performance testing, integration testing, stress testing, correctness testing, reliability testing, acceptance testing - alpha testing, beta testing, security testing, system testing. The grey scale of testing provides the box approach- white box, grey box and black box testing. It is dependent of the processes or internal working of the software. Look and feel testing is more suitable for the GUI based projects where it expects look at the software interface and gives a feel after using it. These feelings may be the errors or successful design of interface. Usability testing produces a user friendly system. The overall software testing is not a single activity, it is the combination of several methods in the entry and exit criteria of STLC (Software Testing Life Cycle) to certify the completeness of the software product.

LITERATURE REVIEW
The scope of the software development is expandable in any dimension. The constriction of software is possible for any kind of system. The mandatory requirement of estimating the software construction accuracy to produce the results is supportable by the various testing methodologies offered by CASE (Computer Aided Software Engineering) tools. These methodologies are task oriented. The black and white nature of testing covers many perspectives of testing. Flow testing is performed by white box testing technique and the multifactor testing orthogonal as well as with different range analysis. The heterogeneity of the software

It is challenging to change the requirements from the design phase, Shift left testing is one of the flexible approach supports a change. It is an effective means of performance testing in parallel with development activities. Due to tester's involvement from the beginning, testers can understand what-if scenarios to clear the test area. Shift right testing gives the broader horizon of testing with end user assessment report. Exploratory testing is unstructured methodology which is ad-hoc in nature. It is an investigation approach can be called in-depth learning. The aim of the interface testing is to test the communication interface between two or more software components.

The testing methodology may be manual or automated. Manual testing executed by the human being, so that sometimes it is time consuming and unreliable. The knowledge skill of the human is important in it. Automated testing is a script based approach. The varieties of testing techniques are facilitated in both the categories.

FOUR DIMENSIONAL ASPECTS
Testing performed in all the directions. The effective way of top-down integration testing permits to wrap the software units in the below of each other as per the relationship of it. It is decided as per the cyclic dependency of each component. This is like a waterfall approach in downward direction. It is difficult to evaluate the higher level component at the initial level. The meaningful system functions are observable by the downward addition of other components. The simplified approach of bottom-up integration testing first observes the spread out component of software. It executes the test cases from small scale to large scale. Sometimes it is very critical to assume the results accuracy at the bottom level. The Big-bang approach is bidirectional approach can be called as fountain approach. It is hybrid view of top-down and bottom-up. Obviously it is complex way of testing for

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large scale systems. In smoke testing, the wrapped software components evaluated together to exposed the errors. It can be executed in any of the above directional approach. It is widely needed in agile development. These directional outcomes are inspected in regression testing. This may repeat some integrated parts of the software repeatedly. It is in-depth testing. Due to lack of time, Sanity testing can be used to check the health of the system by the surface level testing. Load testing or stress testing is also one of the ways of looking robustness of the system effectively. This interprets the health of the system in stress. Since Exhaustive testing considers all possible inputs of the system, so it is not exactly the smoke testing.

IN ACTUAL PICTURE

The choice of testing method depends on various factors, including project requirements, budget, timeline, expertise, and suitability. The superiority of the software is assured in compliance Quality standards. It is increasing complex due to high skill and technology. Therefore, the QA (Quality Assurance) has been shifted to QE (Quality Engineering). QE approach is automation process thorough the development of the software. It focuses on "one-size-fits-all" approach to assure the quality in all the development phases. Monkey testing undergoes through the random set of input to check the continuity of the system. The millions of monkeys are also not capable to find the all of the bugs in the software. Security testing has become a basic need of the software. The more you test software, the more immune it becomes to your tests can be coined as Pesticide Paradox. This implies that the repetitive testing technique will not be able to find new bugs in software. The strategic spectrum of software testing is used for the effective and efficient results. These testing strategies are more useable in the form of digital assurance standard. This compliance supports the digital transformation of the system in multiple platform. Since the software specifications are never final, Software testing is the never ending process.

SOFTWARE EXECUTION MANAGEMENT

Successful Software execution management can be termed in to Happy Path Testing. Happy Path testing is a procedure where the test uses the known input and executes without any exception and produce expected output. It can be turned in to sad path or bad path testing. Software Execution majorly depends on the operating system support and memory management. Binary Portability is testing an executable for portability across platforms and environments usually for the confirmation of system interfaces. This execution management includes Benchmark testing to test the end-to-end software with load testing. The software execution process expects exhaustive outcomes. Stress testing or load testing is the phenomenon of exhaustive evaluation of the system. It depends on the time constraints, system design and the combination of its inputs and outputs. The clear definition of the systems testing goals and its scope measures the effectiveness of the software testing.

CONCLUSION

The artistic way of evaluating the software with the various testing procedures depends on the experience and the knowledge base of the tester. The craft work of this testing involves examining the behavior of a system in order to discover unsearched mistakes in the execution environment of the system. The use of scientific methods is another aspect of Science of software testing. Some of the points from the large spectrum of software testing techniques have been mentioned to achieve Quality Engineering approach (QE). There is more focus in the testing tools based on the automation testing strategies. Traditional methods

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STUDY OF ASSESSMENT OF IMAGE INTEGRITY USING METADATA CIRCULATED ONLINE OVER SOCIAL MEDIA PLATFORMS

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ABSTRACT
Digital media like images and audios which are captured or recorded using smart devices is nowadays easily circulated by the people through numerous social media applications. But the literacy of the media is traditionally considered as a process or set of skills based on critical and rational thinking. There are many factors which play role in digital media literacy like social interactions, involvement of teacher in education and parental support. Yet there are cases where people have believed blindly the authenticity of the manipulated image circulated over social media apps and have taken laws in their own hands. These images not only affect the thinking of an individual but also have an adverse affect on the political environment of a particular country.

Metadata is the data embedded along with the jpeg image or an audio file taken by a smart phone. According to the standard specified by JEITA and CIPA every file should contain additional data which will depict the date and time of the image taken, settings of the camera such as orientation, aperture, focal length, and ISO speed information. Mobile phones have built-in GPS receiver that stores the location information in the exif header. This papers studies the effect on the metadata of the media when circulated over social media applications as Facebook, WhatsApp and through Gmail. Images taken by public if proved non-tampered will help the Law officials to put forth as a strong evidence before Court of Law to solve a crime case.

Keywords : EXIF, Image Metadata, Winhex

1. INTRODUCTION

Today we see everyone capturing pictures or recoding a video from his or her smartphone. Smartphone are capable of running all types of applications. It happens with more than half of population of world that upload images daily to one or the other social media platforms. These images float from one application to another via computers or mobile devices. Some people use image editors to enhance the quality of image or to give the image some artistic form. After editing again these images are floated into medias. The image editors do not take accountability on its own about images being edited and loses the original credibility. When images are edited for fun or art then it does not affect the society, but if they are edited to spread intentionally fake news which may have irreversible affect on lives of people then there is need to prove its integrity. There are various image file formats, but jpeg is popular among all. This paper studies the metadata which is stored in an image file by default, which is called as Exif data. Exif metadata is applicable to both image files and audio sound files. But this paper is restricted to the study of exif data applicable image files.

2. TECHNICAL BACKGROUND OF EXIF

Exif is an Exchangeable image file format. It is a standard developed by Japan Electronics and Information Technology Industries Association JEITA. Exif is a metadata which is added by default to an image files, JPEG or TIFF and audio files like Resource Interchange File Format(RIFF)-WAV file, whenever an image is capture or sound is recorded by digital cameras dedicated for photography and smartphones. Exif format also applies for images scanned by scanners and other digital systems handling images and sound files. It is noteworthy that though exif data is stored in scanned images taken by scanners, the standard does not have provision to store any scanner specific information. Whereas exif has a provision for camera manufacturer companies to store their customized data into exif tags. Again it is interesting to note that exif data do not applies to JPEG 2000, which is lossless compression and GIF file formats.

Exif format has defined metadata tags which covers information related to date, time, geographic location in latitude and longitude, camera model and make, orientation of image, aperture and information relevant to digital cameras. It also store thumbnails for previewing images. We can also add limited description to tags and store some copyright information.

Earlier the images captured by digital devices store time information which is set on the camera or the smartphone at that point of time, but it does not store the time-zone information along with the time thus proving the exif-stored time ambiguous. The exif version 2.31 which is updated in July 2016, added time-zone data into exif. The tags which help us to store are, OffsetTimeOriginal, OffsetTimeDigitized and OffsetTime.

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3. LITERATURE REVIEW

Linux and Mac operating systems do not allow Exif data to be edited. But there are various tools developed in various languages for Windows systems to make changes in few exif tags or to fully remove them.

The most powerful and flexible tool available for exif data is the open source ExifTool by Phil Harvey [1]. It covers various image file formats including executable formats. It is available both as a Perl library and as a command line application. XnViewMP is front-end tool for ExifTool, but with limited facilities for editing [2]. Open source Exiv2 developed in C++ by Andreas Huggel [3] also work for exif data. But it does not cover wide range of file types.

There are system libraries, libexif [4] for C language and Adobe XMP Toolkit [5] , Metadata Extractor[6] for Java, and PIL/Pillow for Python programming.

Exif is derived from TIFF image file structure. In TIFF the data is spread anywhere within an image file which is susceptible to get corrupted by software applications therefore for this reason most of the image editor software removes Exif metadata upon saving [7] .

If the image editing software wish to retain Exif data it happens sometimes that the editor fails to update the thumbnail embedded in the image which can cause the owner of the image to inadvertently disclose the compromised data[8].

In the article, written by Riny Weistra [9] Exif format takes up mandatory but unwanted DPI-value which is dots per inches of an image. This value has not yet been removed or cleared its purpose.

The study of Phil Harvey [10] shows that, MakerNote is an exif tag which helps camera manufacturers to place any custom metadata they wish to store such as focusing modes, post-processing settings, shooting modes, serial number, etc. which can prove useful in investigation, but since the contents are proprietary, the retrieval is difficult. Nikon cameras encrypt the detailed lens data in the MakerNote data.

Exif data can pose privacy problem since location and other camera information is embedded by default without the knowledge of owner. The privacy problem of Exif data can be avoided by removing the Exif data using a metadata removal tool [11]. If removal of exif data is avoided then this will be helpful for investigations.

Following image is taken from [12] where files were saved from Social Media web site on local computer and were checked to see what metadata fields are embedded even after saving. They find the result as shown in figure 1. Where a green light indicates good results, a yellow one not so satisfactory, red light depicts that the handling of metadata should be improved, and grey means that data was not available for testing.

Social Media site/system	Summary	Displays correctly?		Displays 4Cs?	Save As embedded?			Download embedded?		
		Exif	IPTC	IPTC	Exif	IPTC IIM	IPTC XMP	Exif	IPTC IIM	IPTC XMP
500px - www.500px.com Tested in late 2015	Some embedded metadata fields are shown, all correctly, but not the rights-relevant 4C fields. Metadata preserved in SaveAs file. Compared to 2013: SaveAs preserves metadata now = improvement	Exif	IPTC	IPTC	Exif	IPTC IIM	IPTC XMP	Exif	IPTC IIM	IPTC XMP
BEHANCE - www.behance.net Tested in late 2015	All rights-relevant fields and more are shown, all corectly. Embedded metadata is preserved in the SaveAs and the downloaded image file. Compared to 2013: not tested then	Exif	IPTC	IPTC	Exif	IPTC IIM	IPTC XMP	Exif	IPTC IIM	IPTC XMP
Dropbox - www.dropbox.com Tested in late 2015	No embedded metadata shown. Embedded metadata only preserved in the downloaded image file but not in the SaveAs. Compared to 2013: also SaveAs files preserved metadata then = decline	Exif	IPTC	IPTC	Exif	IPTC IIM	IPTC XMP	Exif	IPTC IIM	IPTC XMP
EyeEm - www.eyeem.com Tested in late 2015	No embedded metadata shown. SaveAs file was downscaled and all metadata was stripped off. Compared to 2013: not tested then	Exif	IPTC	IPTC	Exif	IPTC IIM	IPTC XMP	Exif	IPTC IIM	IPTC XMP
Facebook - www.facebook.com Tested in late 2015	No embedded metadata shown. SaveAs file preserved Copyright Notice and Creator in IIM, anything else is stripped off. Surprise: 2 IIM fields contain data generated by Facebook. Compared to 2013: at least 2 fields in IIM survive now = slight improvement	Exif	IPTC	IPTC	Exif	IPTC IIM	IPTC XMP	IPTC	IPTC IIM	IPTC XMP

Figure-1

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4. METHODOLOGY

In this paper an image was clicked by Vivo smartphone, then it was opened in Windows Winhex to observe the hexadecimal values for exif data. Its location was opened in Google Map so as to confirm the latitude and longitude. It was observed that when Internet connection is not established for that smartphone it gives latitude and longitude values, but as soon as it connects to Google Map it updates its location values with the actual human readable address of the location. Then this file was sent on Whatsapp application where it was observed that exif is being removed as soon as it enters the Whatsapp.

Following figure 2, is jpeg file when opened in hex reader shows the presence of exif. Also it has latitude and longitude details which can be locate on google map.

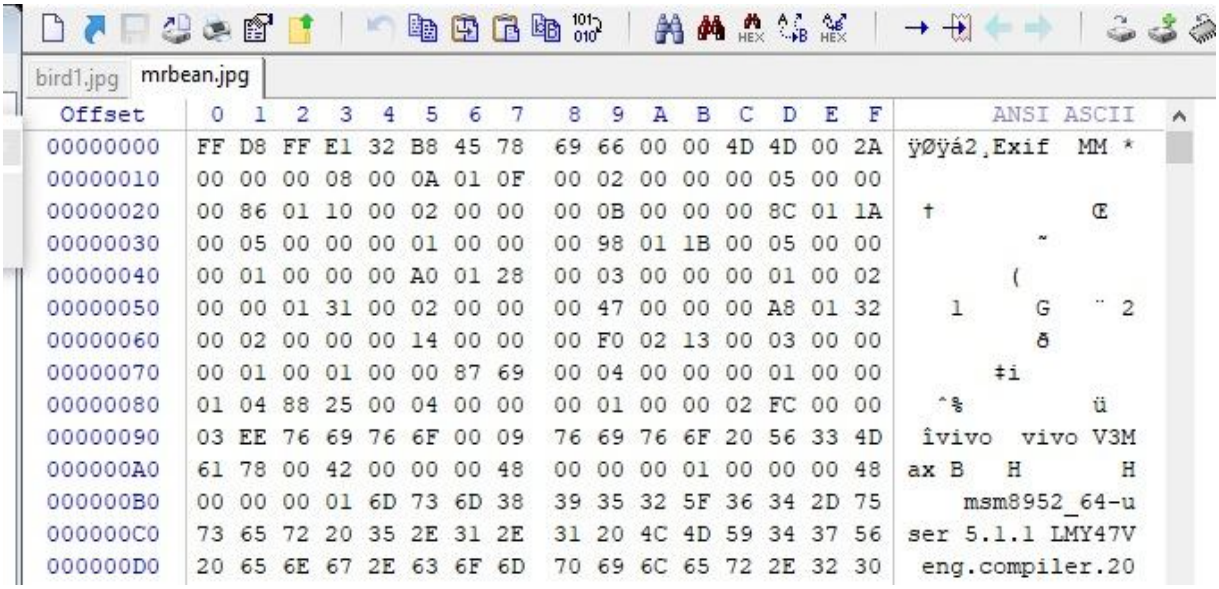

Figure-2.(A) Hex File

Figure-2. (B) Original File

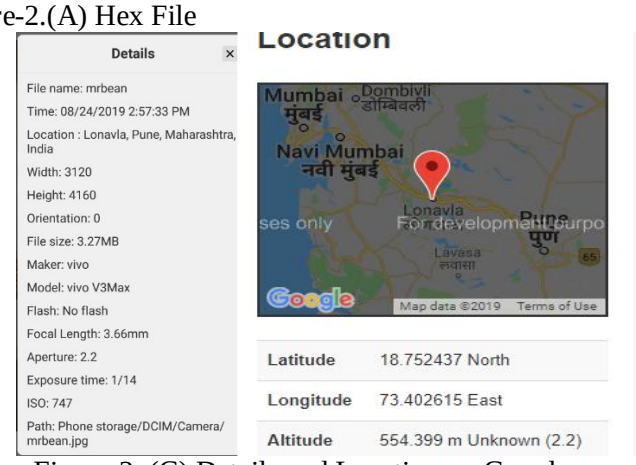

Figure-2. (C) Details and Location on Google map

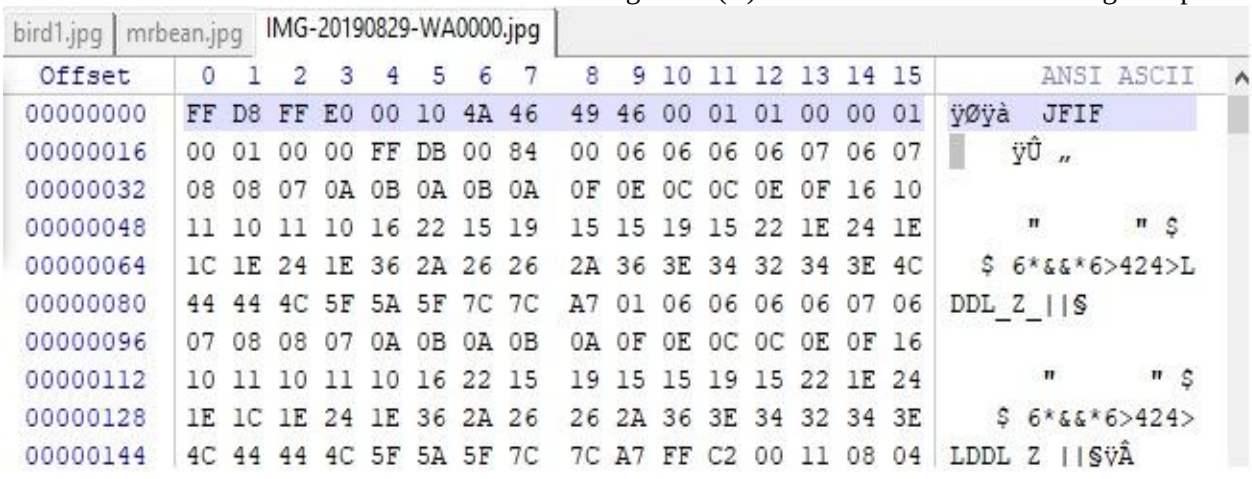

Figure-2. (D) Exif data removed by Whatsapp

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5. CONCLUSION

In order to maintain privacy of an individual the developer of the application removes exif data before sending into Internet. But if any crime happens and at the crime scene smartphone or any such digital device capable to storing location data is seized then it could help in investigation. Moreover the image editor programs should mandatorily display exif information whenever the file gets opened.

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MANUSCRIPT SUBMISSION

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1. Manuscripts should be submitted preferably through email and the research article / paper should preferably not exceed 8 – 10 pages in all.
2. Book review must contain the name of the author and the book reviewed, the place of publication and publisher, date of publication, number of pages and price.
3. Manuscripts should be typed in 12 font-size, Times New Roman, single spaced with 1" margin on a standard A4 size paper. Manuscripts should be organized in the following order: title, name(s) of author(s) and his/her (their) complete affiliation(s) including zip code(s), Abstract (not exceeding 350 words), Introduction, Main body of paper, Conclusion and References.
4. The title of the paper should be in capital letters, bold, size 16" and centered at the top of the first page. The author(s) and affiliations(s) should be centered, bold, size 14" and single-spaced, beginning from the second line below the title.

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5. The abstract should summarize the context, content and conclusions of the paper in less than 350 words in 12 points italic Times New Roman. The abstract should have about five key words in alphabetical order separated by comma of 12 points italic Times New Roman.
6. Figures and tables should be centered, separately numbered, self explained. Please note that table titles must be above the table and sources of data should be mentioned below the table. The authors should ensure that tables and figures are referred to from the main text.

EXAMPLES OF REFERENCES

All references must be arranged first alphabetically and then it may be further sorted chronologically also.

- **Single author journal article:**

Fox, S. (1984). Empowerment as a catalyst for change: an example for the food industry. *Supply Chain Management*, *2*(3), 29–33.

Bateson, C. D.,(2006), 'Doing Business after the Fall: The Virtue of Moral Hypocrisy', Journal of Business Ethics, 66: 321 – 335

- **Multiple author journal article:**

Khan, M. R., Islam, A. F. M. M., & Das, D. (1886). A Factor Analytic Study on the Validity of a Union Commitment Scale. *Journal of Applied Psychology*, *12*(1), 129-136.

Liu, W.B, Wongcha A, & Peng, K.C. (2012), "Adopting Super-Efficiency And Tobit Model On Analyzing the Efficiency of Teacher's Colleges In Thailand", International Journal on New Trends In Education and Their Implications, Vol.3.3, 108 – 114.

- **Text Book:**

Simchi-Levi, D., Kaminsky, P., & Simchi-Levi, E. (2007). *Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies* (3rd ed.). New York: McGraw-Hill.

S. Neelamegham," Marketing in India, Cases and Reading, Vikas Publishing House Pvt. Ltd, III Edition, 2000.

- **Edited book having one editor:**

Raine, A. (Ed.). (2006). *Crime and schizophrenia: Causes and cures.* New York: Nova Science.

- **Edited book having more than one editor:**

Greenspan, E. L., & Rosenberg, M. (Eds.). (2009). *Martin's annual criminal code:Student edition 2010.* Aurora, ON: Canada Law Book.

- **Chapter in edited book having one editor:**

Bessley, M., & Wilson, P. (1984). Public policy and small firms in Britain. In Levicki, C. (Ed.), *Small Business Theory and Policy* (pp. 111–126). London: Croom Helm.

- **Chapter in edited book having more than one editor:**

Young, M. E., & Wasserman, E. A. (2005). Theories of learning. In K. Lamberts, & R. L. Goldstone (Eds.), *Handbook of cognition* (pp. 161-182). Thousand Oaks, CA: Sage.

- **Electronic sources should include the URL of the website at which they may be found, as shown:**

Sillick, T. J., & Schutte, N. S. (2006). Emotional intelligence and self-esteem mediate between perceived early parental love and adult happiness. *E-Journal of Applied Psychology, 2*(2), 38-48. Retrieved from http://ojs.lib.swin.edu.au/index.php/ejap

- **Unpublished dissertation/ paper:**

Uddin, K. (2000). A Study of Corporate Governance in a Developing Country: A Case of Bangladesh (Unpublished Dissertation). Lingnan University, Hong Kong.

- **Article in newspaper:**

Yunus, M. (2005, March 23). Micro Credit and Poverty Alleviation in Bangladesh. *The Bangladesh Observer*, p. 9.

- **Article in magazine:**

Holloway, M. (2005, August 6). When extinct isn't. *Scientific American, 293*, 22-23.

- **Website of any institution:**

Central Bank of India (2005). *Income Recognition Norms Definition of NPA.* Retrieved August 10, 2005, from http://www.centralbankofindia.co.in/ home/index1.htm, viewed on

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