ezine 2021

Blockchain with Cloud Computing

What lies in the shadows of the web

AI overtaking jobs ?

UAV to monitor air quality

Cyber Security

*& emergence of **ML** based **IOT** devices*

tcet

tcet BRIGHT IT ENGINEERS

Volume XII

FIND INSIDE

GRADUATE ATTRIBUTES

1. **ENGINEERING KNOWLEDGE**: Apply Knowledge of Mathematics, Science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

2. **PROBLEM ANALYSIS:** Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

3. **DESIGN / DEVELOPMENT OF SOLUTIONS:** Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations

4. **CONDUCT INVESTIGATIONS OF COMPLEX PROBLEMS:** Using research based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.

GRADUATE ATTRIBUTES

5. **MODERN TOOL USAGE:** Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

6. **THE ENGINEER AND SOCIETY:** Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice

7. **ENVIRONMENT AND SUSTAINABILITY:** Understand the impact of professional engineering solutions in societal and environmental context and demonstrate knowledge of and need for sustainable development,

8. **ETHICS:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

GRADUATE ATTRIBUTES

9. **INDIVIDUAL AND TEAM WORK:** Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.

10. **COMMUNICATION:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.

11. **LIFE-LONG LEARNING:** Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

12. **PROJECT MANAGEMENT & FINANCE:** Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects in multidisciplinary environments

PROGRAM SPECIFIC OUTCOMES

PSO-1 *To develop the culture of augmenting existing technologies to create scalable IT solutions.*

PSO-2 *To combine various technologies like IoT,Cloud and Analytics to provide integrated solutions to real time problems of government or industries.*

PSO-3 *To master in moulding any problem into a web or internet based solutions.*

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DEPARTMENT OF INFORMATION TECHNOLOGY

ABOUT THE DEPT.

The department of Information Technology, started its journey in the year 2002 and is committed to deliver the program with rigor and with active industry participation. Department has 120 seats intake at first year and 24 seats as lateral entry at 2nd year for engineering diploma students. The department believes in student centric approach. Its dedicated team of faculty members inculcate relevant knowledge, skills and attitude in students to become successful professionals. The U.G. programme is accredited by National Board of Accreditation (NBA), New Delhi for three years w.e.f. 16.09.2011. UG Programme has been re-accredited for 3 years by NBA w.e.f 1st July 2016. Also the programme is permanently affiliated with UOM since AY 2015-16 onwards.

MISSION

The IT department is committed to enrich students by rigorously implementing quality education with focus to make them industry ready, while imbibing in them professional ethics and social values to become responsible citizens

VISION

"The department of IT will strive to be at the top position among the renowned providers of IT education"

FOREWORD

Dr. Kamal Shah

Dean, R&D cell

Rekindling the spark of innovation and fostering curiosity in young minds holds pivotal significance in today's rapidly advancing world. Ezine, published by the Department of Information Technology, aims at incorporating student's ideas and encourages their active participation to facilitate the learning process. Ezine has established a significant benchmark in showcasing the unveiled inherent talent of the students by giving them an unparalleled opportunity and an excellent platform to not only express their ideas and creative potentials but also voice out their personal opinions on the topics which hold utmost relevance in a student's life. A departmental magazine precisely targets not only disseminating knowledge but also introduces a whole new captivating and enthralling realm of contents, wherein students get to explore their interests and feed their curiosities. Ezine, unlike other technical magazines, hasn't restricted itself only to the domains of science and technology but has also incorporated other prominent domains, providing students the feasibility to explore inter-disciplinary aspects of topics and stimulate their inner inquisitiveness. The platform provided to the Editorial Committee has been well utilized in harnessing the capabilities of all thevibrant students.

I extend my heartfelt congratulations to the entire Editorial board for presenting before us this eager awaited college magazine, fulfilling not only the arduous criteria of punctuality but also pro-curing content of paramount excellence.

Dr. Bijith Marakarkandy

HOD - IT Department

It is a pleasure to write a foreword for the online magazine Ezine which has over the years shown cased exemplary writing skills of the students .

Education can be in general categorized into three types, Employment generating, Expanding outlook and Non-academic. To become well rounded graduates it becomes necessary to have a flavour of all the three types of education. Publication of 'Ezine' is an initiative that nurtures the innate and cognitive capacity of students to create appealing content which helps hone their creative and literary skills.

Congratulations to all the students whose writing have been selected for publication in the current volume of Ezine. Thanks to the editorial team and the authors for their efforts in putting forth their contributions which are pertaining to emerging areas in technology.

The magazine has a variety of articles that would attract readers with a technical bent.

I hope you enjoy reading the magazine .

Dr. Sangeeta Vhatkar

Deputy HOD, ACM Branch Counsellor

It was Harry S. Truman who said,

"Not All Readers Are Leaders, But All Leaders Are Readers".

Reading Can Quickly Build Our Expertise. Without reading, our expertise will be limited. Reading allows us to spend time with smart people, smart world, and smart technology. In TCET students have been engaged in various path-breaking innovative research activities all throughout year. E-zine magazine is yearly magazine published under TCET-ACM Professional body. This year E-zine magazine focus on current trends and technology like Blockchain, IOT & Security. This E-zine magazine also motivate non-technical articles and sketches. Every year students are participating in the event with full enthusiasm.

This online E-zine magazine is useful for researcher and innovators. Students have developed a great habit of exploring unique ideas in various trending technologies. The department aim to facilitate Holistic student development with multidisciplinary learning, and I am sure that many students will make indelible mark nationally and internationally in the field of information technology.
My Heartiest congratulation to TCET-ACM publication head and congratulation to entire editorial team for great work. I am confident that E-zine magazine will provide platform for overall development of stakeholders.

I am thankful to the management of Thakur college of Engineering and technology for providing State-of-Art Infrastructure and all possible support in carrying out multidimensional activities and events.

Dr. Aaditya Desai

Faculty in-charge for E-zine

"Reading is to the mind, as exercise is to the body."

-Brian Tracy

Dear readers,

It is with great pleasure we present to you our XIth edition of E-zine, the Digital magazine, an initiative of Information Technology Department. E-zine is a great example of a digital magazine for the students and by the students.

This edition of E-zine includes articles from various topics like, Blockchain Technology, Cloud Computing, Artificial Intelligence and Machine Learning. Also we have not restricted ourselves to the technical articles in this edition, we have also included non-technical topics like poetry, articles from general topics, sketches and many more.

Due to restrictions on face-to-face meetings, all the work done by our editorial team was done online through video conferencing. Congratulations to the editorial team for putting so much effort into making this E-zine edition a great resource of reading.

Finally, I extend my thanks to the management of Thakur College of Engineering and Technology for providing us a platform like E-zine to publish our work.

Yours sincerely,
Dr. Aaditya Desai
Faculty in-charge for E-zine.

Mr. Ranveer Shah

ACM TCET - Publication Head

The human desire for exploration leads to discovery.

Ever wondered what's common among a Car, Valorant, shower and bitcoin wallet?

They all are the results of exploring and implementation of their ideas.

The Students have developed a great habit of exploring various fields and documenting them which has resulted in unique ideas and innovation in various technologies.

The idea behind the magazine is the same i.e., to broaden the knowledge of the readers that leads to innovative ideas from various articles from the students, alumni and teachers.

All the authors have done an admirable job in contributing their work without which the EZine wouldn't have been what it is.

I also would like to thank the faculty in charge Mr. Aaditya Desai and all other faculty of the IT department for their support.

I would also like to appreciate the ezine working committee for their hard work and dedication shown while making the Ezine.

ARTICLES

Maslow's theory and Yoga

Hi friends,

Season's Greetings!! Abraham Maslow in 1943 wrote a research paper on 'Theory of Motivation' which shook the psychologists world over. People in the west were not so familiar with spirituality and self-realization those days.

It is nothing new to understand and classify the needs of a human being or to an extent any living being present on this earth. This classification was broadly explained in Bhagwad Gita thousands of years ago. The seven chakras mentioned in Bhagwad Gita are also derived in Yoga and meditation.

Maslow's theory of motivation

The first of all chakras is the root chakra or muladhar chakra which is red in colour. This chakra represents fertility, success, wealth and confidence. Muladhar chakra is said to be located at the base of the spine. According to Maslow, these are the basic needs of human being like food, water and shelter.

Second of these chakras is the Hara chakra which is Orange in colour. This represents the creativity, enthusiasm, excitement in a person. Maslov calls this security of a human being like job security, health, etc. This chakra is supposed to be present just below the navel person where the belt is tied up.

Third of the chakras is the Solar Plexus or Manipur chakra which is yellow in colour. This chakra represents happiness, joy, ego, fear and wisdom. (Remember Lord Ganapati's big belly!). The chakra is the entire belly region or what we call as the abdomen. Maslow calls this as a representation of morality in a person.

Next chakra is the Heart chakra or Anahat chakra which is green in colour. This chakra represents love, gut feeling, bravery and compassion. Maslow calls this level as that of love or belonging like freindship and family.

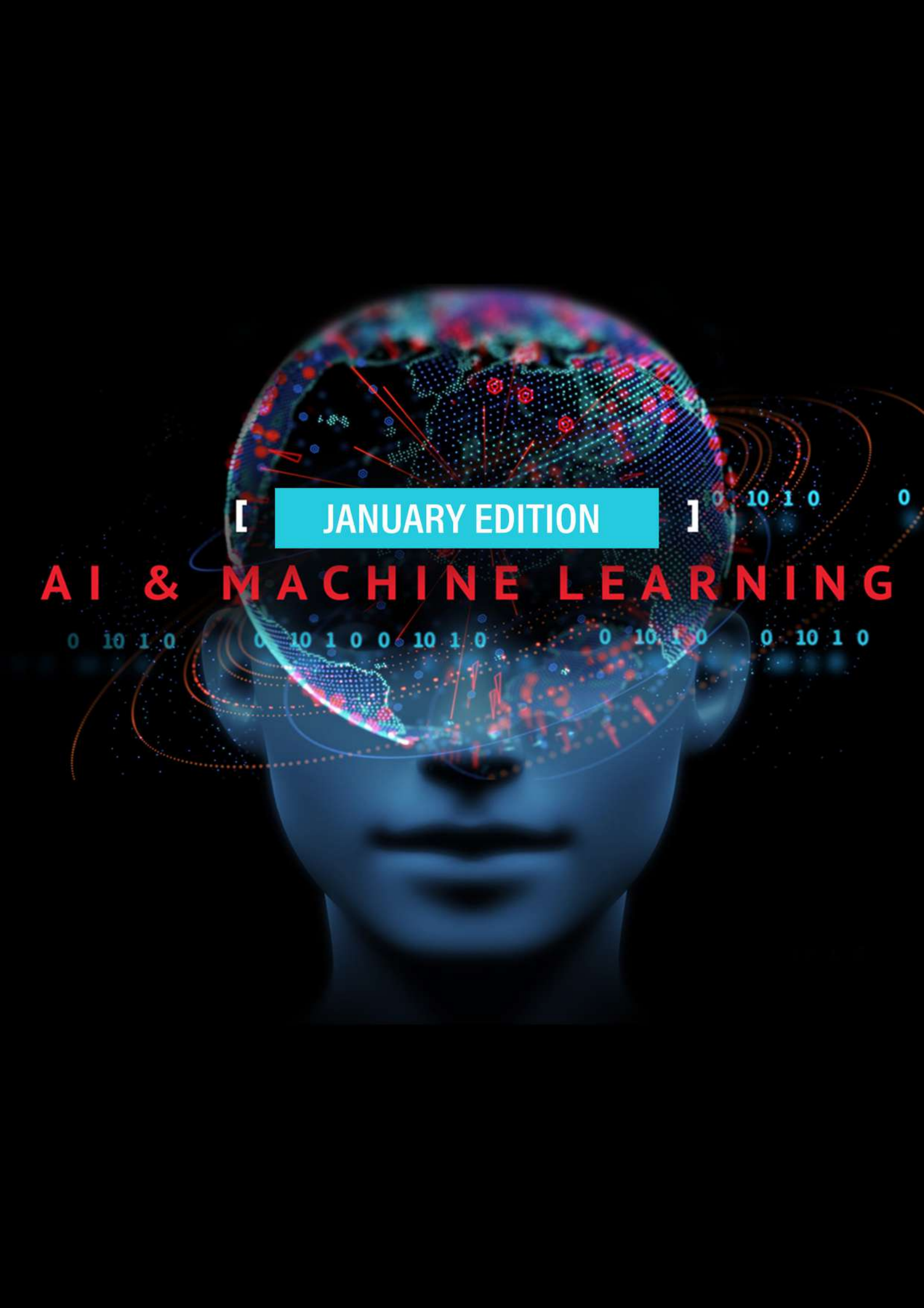
The fifth chakra is the Communication or Swadhisthan chakra which is sky blue in colour. This chakra represents the communcation skills of a person or whether that person is able to express his feelings or not. Communication skills here means both verbal and non-verbal communication skills. Maslow calls this as rescpect for others and respect by others.

The sixth chakra is the decision chakra or the third eye chakra. This chakra is represented by Indigo colour. It represents foresightedness, judgements, sixth sense, decision making power and memory. Maslow calls this as self esteem.

The final chakra is the sahastrar chakra which is dark blue in colour. It connects the living being with the universe or to be precise with the GOD. Maslow calls this spontaneity or acceptance of fact.

Now that I have state the chakras it is interesting to know that these chakras are located at the same positions where our endocrine glands are located in our body. Also interesting to know is that the chakras have colours of the rainbow; remember VIBGYOR?

Dr. Aaditya A. Desai,
Assistant Professor


[JANUARY EDITION]
AI & MACHINE LEARNING

WILL AI AND ML TAKE OVER YOUR JOB IN CYBER SECURITY INDUSTRY??

A It is a much-layered question to be answered as AI and ML are going to change the turn of our world in every single way. However, before answering this question it is required to know why AI and ML will be used or is used in some areas of cyber-security.

Introduction

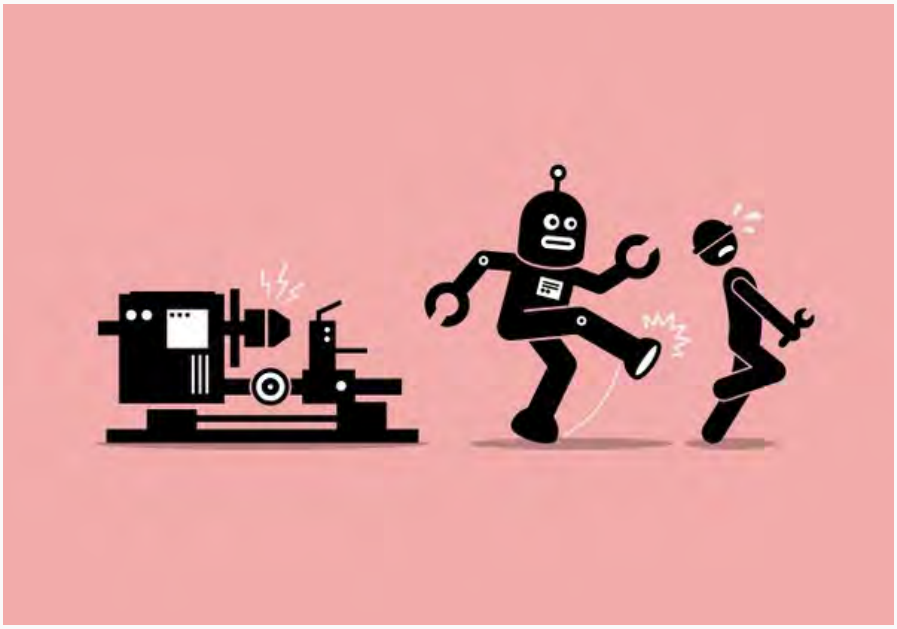
Cyber thieves or to be more scandalously called HACKERS, always keep enhancing their game to perpetuate their victims and making their crime scene clear. Hence it creates a major need for improvement in the field of cyber-security, where AI and automation come into the picture. In the course of automation, AI and Machine Learning play a major role. Researches claim that these technologies can tackle, defeat and overpower such cyber threats very much conveniently than a man behind a computer desktop, which is a huge deal in the cyber-security industry. As nowadays with technology and the internet at their primes, every minute, detail of a person's life is at a risk. This has become a prominent problem for corporate sectors as they have to be accountable for many details in their device's core.The problem becomes more difficult as there are no skilled human resources to tackle these threats.

The Drawback

TO ADD TO THE DRAWBACK, SEVERAL CORPORATIONS CANNOT AFFORD TO HAVE CYBER=SECURITY GROUPS REQUIRED TO SECURE THEIR APPLICATIONS AND SYSTEMS. STARTUPS, ABOVE ALL, ARE AT GREAT RISK FOR OBVIOUS REASONS. THEY LACK ESTABLISHED SECURITY OPERATIONS AND ALSO THE FUNDS TO CONFIRM THEM. THEREFORE, COMPANIES HAVE TO ALTER A MINIMUM OF A NUMBER OF THE PROCESSES NECESSARY TO GUARD THEIR SYSTEMS AND DEVICES FROM OUTSIDE ATTACKS. OTHERWISE, THEY WILL STILL BE VULNERABLE.

The Current Situation

As it turns people working in the field of security address their jobs to be stressful, which is true, it requires great efforts and tons of workload to fulfil the client's requirements, so this is a good reason why IT professionals in security are paid so well. But there is no denying that the work is so stressful, here automation helps to reduce some of the workloads on the shoulders of the professionals and creating a better workspace environment. When surveys were taken among the people working in these sectors regarding the involvement of AI and Machine Learning in their jobs, the responses were quite diverse. Some of them took it positively and said it will be a reformation in their working style and will help in their jobs. Whereas, some took it not so positively, and commented it would create a threat to jobs of the IT professionals or to be precise the lower working sectors of this industry.



A.I. will make jobs kind of pointless' — so study this

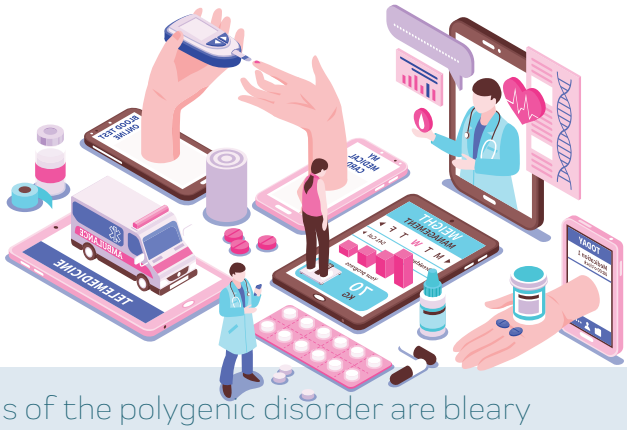
ELON MUSK

Conclusion

However, as working professionals we all know that the automation brought in our jobs will reduce false positives, prioritizing alerts, and creating a more secured environment for your data by reducing the time required for the investigation of threats and thefts or to respond to incidents. Thus, to be honest, AI and Machine learning will help a professional to be more productive in every single way possible. On the other side of the wheel, the industries say that it will delay the hiring process as even if they have gaps in their organizations they will still require trained individuals to operate and control their systems. So in short, there might be a delay or postponing in the hiring of budding professionals because of these tools but there will still be quite a good amount of opportunities for trained and brilliant minds that have the interest and are ready to work in the sector of Cyber-Security.

Ashutosh Choudhary
SE-IT-A

Diabetes Prediction Using Machine Learning



ABSTRACT

Polygenic disorder is associated with unwellness caused attributable to high aldohexose levels within the figure. the polygenic disorder mustn't be unheeded if it's untreated then polygenic disorder might cause some major problems during a person like heart-related issues, excretory organ issues, vital signs, eye injury and it can even have an effect on different organs of the figure. The polygenic disorder will be controlled if it's expected earlier. to realize this goal this project work we are going to do early prediction of polygenic disorder during a figure or a patient for higher accuracy through applying, varied Machine Learning Techniques. during this work, we are going to use Machine Learning Classification and ensemble techniques on a dataset to predict polygenic disorder. These techniques embrace logistical Regression (LR), Support Vector Machine (SVM), Gaussian NB, and Random Forest (RF). The accuracy is different for each model when put next to different models.

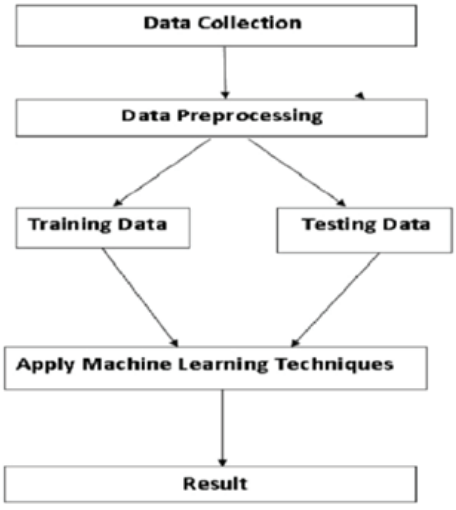
Signs of the polygenic disorder are bleary inventive and discerning, extreme hunger, uncommon weight reduction, common evacuation, and thirst. To accomplish this, this work explores the prediction of unwellness by taking varied attributes associated with polygenic disorder disease. For this purpose we tend to use the Pima Indian polygenic disorder Dataset, we tend to apply varied Machine Learning classification and ensemble Techniques to predict polygenic disorder. Machine Learning may be a methodology that's accustomed to training computers or machines expressly. during this paper, parameters used at intervals the facts set to find the polygenic disorder ar aldohexose, vital sign, pores and skin thickness, Insulin, Age. immense volumes of statistics units are generated by health care industries. These facts set may be an assortment of patient data concerning polygenic disorder from the hospitals.

Introduction

Diabetes is not a hereditary disorder, but a heterogeneous cluster of disorders that may ultimately end in a boom of aldohexose at intervals of the blood and lack of aldohexose within the piddle. The polygenic disorder is usually ensuing from biology, the approach of life, and surroundings. consumption a dangerous weight loss set up, being overweight play role in developing the polygenic disorder. High glucose tiers can even end in excretory organ diseases, coronary heart diseases. the surplus of sugar within the blood will damage the little blood vessels in your frame.

METHODOLOGY

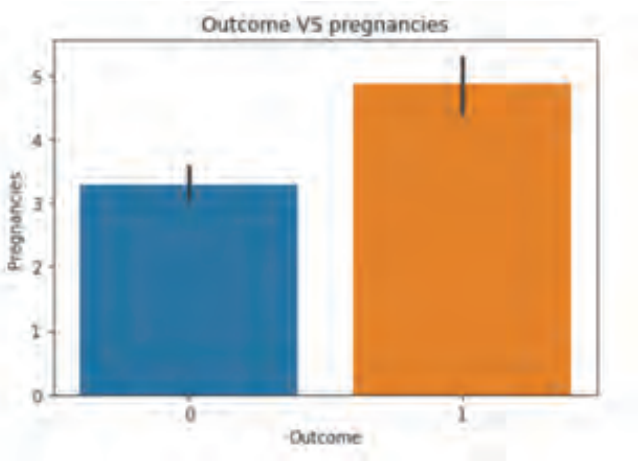
The goal of the paper is to analyze for the model to predict polygenic disorder with higher accuracy. we tend to experiment with totally different classification and ensemble algorithms to predict polygenic disorder.
In the following, we tend to concisely discuss the part.



A. Dataset Description- the info is gathered from the UCI repository that is known as Pima Indian polygenic disorder Dataset. The dataset has several attributes of 768 patients.

Sr. No.	Attributes
1	Pregnancy
2	Glucose
3	Blood Pressure
4	Skin thickness
5	Insulin
6	BMI(Body Mass Index)
7	Diabetes Pedigree Function
8	Age
9	Outcome

Distribution of Diabetic patient- - we tend to create a model that predicts polygenic disorder but the dataset was slightly unbalanced having around five hundred categories labelled as zero suggests that negative suggests that no polygenic disorder and 268 labelled as one suggests that positive suggests that diabetes.
Here we've got shown outcomes i.e polygenic disorder patient-supported pregnancies.



B. Data Preprocessing:
Data pre-processing is that the most significant method. Most healthcare-related information contains missing natural depression and different impurities which will cause the effectiveness of knowledge. to boost quality and effectiveness obtained once the mining method, information pre-processing is completed. To use Machine Learning Techniques on the dataset effectively this method is crucial for correct results and eminent prediction. For Pima Indian polygenic disorder dataset we want to perform pre-processing in 2 steps.

1). Missing Values removal - take away all the instances that have zero (0) as price. Having zero as the price isn't potential. so this instance is eliminated. Through eliminating digressive options/instances we tend to build a feature set and this method is named features set choice, which reduces duplication of knowledge and helps to figure quicker.

2). Splitting of data- once cleanup the info, information is normalized in coaching and testing the model. once information is spitted then we tend to train associate rule on the coaching information set and keep take a look at information put aside. This coaching method can turn out the coaching model supported logic and algorithms and values of the feature in coaching information. social control aims to bring all the attributes beneath an equivalent scale.

C. Apply Machine Learning-
When information has been prepared we tend to apply Machine Learning Technique. we tend to use different classification and ensemble techniques, to predict polygenic disorder. The ways applied on Pima Indians polygenic disorder dataset. the most objective to use Machine Learning

Techniques to investigate the performance of those ways and notice the accuracy of them, and conjointly been ready to work out the responsible/important feature that plays a serious role in prediction. The Techniques are as follows-

- **SVM:** SVM is that the normal supervised learning rule. It will the complicated information transformations and separates the info supported the outputs and it will be used for each classification and regression challenges. In SVM different hyperplanes divide the info. In this, we've got to pick the hyperplane that divides the category higher to seek out the higher hyperplane you have got to calculate the space between the planes and also the information that is named Margin. If the space between the categories is low then the prospect of miss conception is high and contrariwise. thus we want to pick the category that has the high margin

- **Random Forest:** Random forest may be a supervised system about to grasp a group of rules. it is also wont to remedy classification and regression besides. This algorithmic rule consists of the trees. the number of tree structures gift within the information is directly proportional to the accuracy of the result. every internal node among the tree corresponds to an associate attribute and each leaf node represents a category label.

- **Logistic Regression:** Supply regression may be a machine about to grasp a classifier. This set of rules is employed to separate the observations for distinct categories. The outputs are given by victimization the supply regression square measure primarily based wholly on the chance feature. It uses the fee perform that is called a letter of the alphabet perform is a lot of complicated than the traditional linear perform. supply Regression limit price|the price} perform value between zero to one.

PROCEDURE

The procedure of Proposed Methodology-

Step1: Import needed libraries, Import polygenic disease dataset.

Step2: Pre-process information to get rid of missing information.

Step3: Perform a proportion split of eightieth to divide the dataset as coaching set and 2 hundredth to check set or in keeping with your comfort..

Step4: choose the machine learning algorithmic rule i.e. Support Vector Machine, supply regression, Random Forest, and Gaussian NB.

Step5: Build the classifier model for the mentioned machine learning algorithmic rule supported by the coaching set.

Step6: take a look at the Classifier model for the mentioned machine learning algorithmic rule supported the take a look at the set.

Step7 Perform a Comparison analysis of the experimental performance results obtained for every classifier.

Step8 when analyzing supported numerous measures conclude the most effective playing algorithmic rule

OUTCOME

In the given table we can see the algorithmic rule which provides higher accuracy on the info set.

Algorithms	*Accuracy*
SVM	*75.32*
Gaussian NB	*77.27*
Random Forest	*78.57*
Logistic Regression	*79.87*

CONCLUSION

The main aim of this project was to style and implement polygenic disease Prediction victimization Machine Learning ways and Performance Analysis of that ways and it's been achieved with success. At last, by the victimization of these four machine learning algorithms, we tend to had measured completely different parameters among the dataset and that we had come back through an improved accuracy rate with supply Regression with nearly eightieth. This work may be extended by adding the other algorithmic rule which might provide higher accuracy than supply Regression.

Rahul Jha
SE IT A

TESLA DRIVING ITSELF IN INDIA

The upcoming official announcement that Tesla cars will soon be on the roads of India in mid or late 2021, due to its self-driving feature which makes the car futuristic and classy but the question is will it work on Indian roads. The answer is pretty hard to say but with Data Science and AI(Artificial Intelligence) it maybe possible.

Keeping in mind about how people follow laws in India, Tesla should analyse about how a car works here in all cities having different characteristics of roads.
Also, Tesla autopilot doesn't work in narrow spaces, so it is pretty sure that Tesla autopilot will not work on small roads of India.

LIFE IS GOOD BUT IT CAN BE BETTER (WITH DATA ONLY)

"Tesla Inc. aims to dominate the world automobile market."

Thinking of Cities in India like Mumbai, Delhi, there aren't any issues with having autopilot cars. We all know that Tesla works best in traffic and it will help inroads where we honk for an hour but a still car moves for a second. Tesla is a winner but we don't know as anything can happen when it comes to Indian road. But for time being let's say it will be a success in the matter of autopilot in heavy traffic regions.

Tesla Inc. aims to dominate the world automobile market by building the world's 1st self-driving car, and it considers Autopilot to be the crucial commencement.

Customers are fond of it. They've logged over 1.5 billion miles on Autopilot, typically pushing the boundaries of the software system. Although the owner's manual warns drivers to closely supervise the car everytime, which hasn't stopped some people from reading books, napping, strumming a guitar, or having sex.
This case is in America so if it comes to India we will get to know new and creative problems which even Tesla official in the USA would have never thought of.

Praveer Dwivedi
SE IT A

CYBERPSYCHOLOGY

The intersection of Technology and The Mind

With the increase in technological advancements pushing the boundaries of science over the past decade, Cyber-psychology became an emerging discipline that focuses on the science of human-machine interaction. Since technology has dramatically changed the way we work, interact with each other, and spend our free time, the need for Cyber-psychology arose.

Through its further emergence, we can better understand the matters within our society, ranging from online addictions and identity formation to profiling cybercriminals and grasping the root cause of cyberattacks.

Two major subtopics to be touched upon are: the first one being Cyberbullying; a much more known and spoken about term these days.

CYBERBULLYING

Cyberbullying is a grim reality of today's world that often comes to pass under the mask of anonymity. Thus, leading to crueler or harsher abuse from the harasser. Essentially, electronic communication is used to mirror the same process as the person being bullied in real life. Typically by sending messages of intimidating or threatening nature.

There are a few aspects of cyberbullying that differentiate it from traditional bullying, which make it a unique concern for parents. It is hard to discover since it is difficult to access an online space of an individual.
Cyberbullying, though different from traditional bullying can be equally terrifying and traumatizing. Bullying through an electronic medium does not limit only to harassment or threats. The rise of social media has opened up an ever-growing number of ways for cyberbullies to hurt their targets.

Amanda Lenhart Former director of Teens And Technology states that "One in three online teens have experienced online harassment and girls are more likely to be victims". Online stalking, exclusion from a social circle, outing of private pictures are different tactics that the offender might adopt to humiliate or traumatize the victim.

Cyber interventions may provide a way for youth to access resources and help without making a 'big deal' out of it. However, it may not necessarily be risk-free since
these interventions don't change the students' attitudes about cyberbullying.

Online Identity and Behaviour

The creation and sharing of information and ideas through social media have become a primary form of communication and information exchange. People tend to behave differently online when compared to a face to face interaction. Generally, cyber-psychology views cyberspace as an extension of one's psychic world. In psychological terms, there is no difference between the meaning of the dematerialized digital artifacts and our physical possessions – they both help us express important aspects of our identity to others.

And these identity claims provide the core ingredients of our digital reputation. A great deal of scientific research has highlighted the portability of our analog selves
to the digital world.

The research by Cambridge Psychometrics Centre, led by Dr. Michal Kosinski shows that Facebook "likes" reflect how extroverted, intellectual, and prudent we are. Mining tweets reveal how extroverted and emotionally stable people are.

This can be done by analyzing the content of tweets (personality predicts what words you are more likely to use) as well as the number of tweets and followers people have. Twitter can also be used to infer the 'dark side' personality characteristics, such as how Machiavellian, psychopathic, or narcissistic people are.

Current mainstream research in cyber-psychology focuses mainly on the general psychological effects of computers and devices on identity formation, self-presentation, and behavioral changes. However, the field also includes the study of the impact of artificial intelligence and trans-human technology on the human mind, though no extensive findings or development has occurred in this area.

Things talked about above are usually considered as something known as fundamentals. The main motto, on the other hand, is ignored. On the other hand, even if it is understood, it just remains as learned knowledge that is never actually implemented. There is a vast scope of and about this topic in the future. If delved and explored, it will probably help in decoding the way the human psyche functions.

Pratibha Dwivedi
SE IT A

Software level Green Computing for Large System

Green computing is the environmentally responsible and eco-friendly use of computers and their resources. In broader terms, it is also defined as the study of designing, engineering, manufacturing, using and disposing of computing devices in a way that reduces their environmental impact. The energy-efficient compiler is a software level green computing technique. Besides compiler optimization, an effective scheduling approach makes efficient use of resources to directly impact the green aspect. Therefore, the focus of this paper is the identification of energy conservation measures for software level and their utilization at compiler and scheduler.

Introduction

Global warming has stimulated the need to rethink the environmental impact of technology. Green or environment-friendly computing attempts to reduce consumption of energy to reduce consumption of fuel required to produce it that entails the toxic impact on the environment. The increasing need for tighter energy budgets demands vigilant energy conservation and thus driving us to propose energy-aware hardware and software. Effective energy conservation however is an accumulation of both design and best practices..

High performance and energy conservation are conflicting goals in green computing. One way to conserve energy can be to reduce logic voltages; however, this causes slower circuits and low frequencies, which leads to degradation of performance. In the past few years, cloud computing has gained much popularity as it reduces the execution time of a program by distributing it on different machines over a network.

To solve a large computationally intensive problem, a cluster of several low capacity machines is more beneficial in terms of cost and performance compared to a high-capacity machine. Because a high-capacity machine does not fully utilize its resources at a time, hence it consumes more energy. Therefore, significant performance improvement with energy conservation can be achieved through distributed or cloud computing among green strategies implementation.

Energy-aware c omputer system architecture.

The focus of this paper is to present research on two software level optimizations for energy conservation one of them is an energy-aware compiler and the other is an energy conserve scheduler. Both proposed techniques did not have any relation between them. However, programmers can use both approaches at a time. The compiler is software that facilitates programmers to describe the solution of their problems at an abstraction level and then translates that abstraction into machine-readable form. They are a good source to optimize energy on the software level. Most often energy-aware compilers are used by software developers to designed embedded systems, thus they are hardware dependent. A major contribution of this paper is to propose an energy conservative distributed compiler that uses green techniques during compilation to generate optimized energy conservative executable..

However, performance and energy conservation are conflicting goals, but the aim of this paper is the trade-off between both of them. Therefore, executable formed by the green compiler will conserve energy as well as substantially maintain the performance of the compiler by distributing code over the network at compile time Green strategies for compilers

A.Cache skipping

In programming, environment loops have significant importance. In loops, replication gives high performance but causes high-energy consumption due to repetition of the same thing. A good approach can be skipping cache operations during unnecessary replication.

B.Use of register operands

Every machine has a different energy consumption cost to access resources from memory. Most studies show that memory reads and writes have higher cost as compared to the use of register operands. Register operands have less abstraction than memory accesses (read/write) and therefore consume less energy. Instructions with register operand have approximately 300 mA cost per cycle while instructions with memory operands increase this cost by 430 mA per cycle for reading and 530 mA per cycle. Thus, compilers need to use register operands more. This will result in shorter running time and energy conservation due to exclusion of possible cache misses.

C.Instruction clustering

Some environments have a special type of architecture that allows a compiler to execute a pair or cluster of instructions in one cycle. For example, in signal processing applications, a cluster of related or similar signals can be compiled in one run. It will reduce the running time of the program and leads to energy conservation

Conclusion

The green compilation is a software level technique to conserve energy. A green compiler applies several green strategies to reshape source code during intermediate code conversion and generates energy conservative executables. In this paper, several techniques for green compilation are highlighted. This paper also discusses techniques that a software developer can adopt to develop energy conservative programs. A distributed green compiler is proposed that uses some of the identified techniques at the compilation level

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SE-IT-B

INTERNET OF THINGS

IOT

FEBRUARY EDITION

Design and development of aerial vehicle (UAV) for air quality monitoring

ABSTRACT

If you're considering a fast, complete, knowledge assortment of pollution sources it doesn't invariably happen attributable to the quality of websites, mobile resources, or physical barriers. Invisible tiny Vehicle, Vehicles equipped with varied sensors are introduced to watch air quality, as they'll give new ways, methods, and analysis opportunities for pollution and pollution observance, as well as learning climate trends, like global climate change, urbanization, and industrial air safety. This project aimed to mix knowledge on the employment of UAVs in air quality studies and appraise their edges and application list. Intensive literature reviews victimization 3 Scopus knowledge, internet of information, Google Scholar, and twenty-five papers were on the market. a tiny low quantity of paper means the sphere remains in its early stages of development. Therefore, whereas the facility of UAV air quality analysis has been established, varied challenges still ought to be thought-about, as well as craft endurance, payload, sensory size, accuracy, and sensitivity. So to see, the challenges don't seem to be simply technical, in apprehension, the policy, and rules, that dissent from country to country, represent a significant challenge to facilitate the widespread use of UAVs in house analysis.

KEYWORDS

- Environmental science
- Aerospace engineering
- Control system design
- Automation
- Robotics
- Environmental engineering
- Environmental pollution Air pollution
- Air quality health index
- Automatic pollution monitoring
- Air pollutant concentration
- Pollution abatement

INTRODUCTION

The composition of encompassing air changes unceasingly, thanks to each natural and phylogeny emissions, once free into the atmosphere aerosolized pollutants, affect air quality and health of folks. Associating between adverse health outcomes and poor air quality has been incontestable and pollution has been recognized because the tenth-largest health risk issue globally. Moreover, part pollution conjointly reduces agriculture yields, visibility, daylight at ground level, and downfall conjointly will increase part heating still. These will impact highlight the requirement for continuous air quality assessment. well, data on the characteristics of aerosol distribution and aerosolized waste concentrations area unit required once quantifying their effects on human health and also the atmosphere. However, the spatial and temporal resolution of information from the bottom, manned craft, and satellite measurements area unit comparatively low and sometimes not possible for native and regional applications.

In addition to the current, satellite and mobile sensors are often pricey. However, taking measurements preparing to pollutants the sources cannot invariably be getable and it'd be too dangerous or risky for manned craft to fly preparing to rock bottom. Together, these reasons highlight the utilization of little, light-weight UAVs for a variety of applications, along with atmospheric measurements.. tiny light-weight UAVs will give additional correct data on air distribution throughout the part column, that is required for an improved understanding of air quality and composition in specific part layers. Aerial vehicles cowl giant areas and may monitor remote, dangerous, or troublesome to access locations, increasing operational flexibility and backbone.

Since the appliance of UAV is comparatively new, the aims of this review area unit to compile data on the employment of UAVs for air quality studies; and assess their major edges and vary of applications. This paper includes finding vital measures into keys areas of UAV in implementation, part composition, pollution, and global climate change and methodology to that. Finally, the current challenges, along with getable solutions and future applications of UAVs, vogue unit presented.

Environmental Drones (UAVs), as defined by the authors, unit programmed autonomous drones used for pollution observation, detection, Associate in Nursing abatement at altitudes on high ground level in an extraordinary region. UAVs prove Air Quality Health Index (AQHI) maps of lined regions for environmental information observation and long-run analysis. UAVs sq. measures the first aerial systems (especially drone-wise) designed to conduct aerial pollution abatement following roaring pollution detection. This experiment is supposed to visualize the hypothesis that UAV's area units are typically used to conduct automatic pollution detection and abatement.

MATERIALS & METHODS

MATERIALS:

The UAV is an Associate in Nursing associate aerial robotic system designed to automatically get relevant weather information, significantly AQHI information, at a particular station or location. The UAV incorporates a base station at things where environmental information is to be nurtural. rock bottom station consists of a compact device with power connections running down the side to continuous power offer to the drone intermediate weather information acquisition.

Chassis:

A changed hex copter with the frame measurement 800-millimeter x 320 millimetres and manufactured from composite materials. the intrinsically damping system will permit the multi-rotor to be assembled while not further frames and dampers. The unmanned Aerial Vehicle weighs three.7 weight unit with the most take-off weight of eight weight unit. The unmanned Aerial Vehicle uses a sixteen,000 mAh LiPo half dozen cell battery, which might give a hover time of roughly twenty min with no further payload. Moreover, the flight time with the payload utilized in this study has been calculated to be 12–13 min. A hovering motor power consumption is 800 W operational with a minimum take-off weight.

Brushless Motors:

Six brushless motors were accustomed convert the electrical battery power to mechanical power to spin the propellers for system flight. every motor is mounted on the hex copter arms and glued in situ with screws and bolts.

Propellers:

Six propellers measurement thirty-eight cm × thirteen cm area unit used in conjunction with the brushless motors. The propellers were mounted with the motors to avoid any injury to the drone.

Electronic Speed Controllers:

Electronic Speed Controllers (ESC) unit used for varying the speed of electrical motors. Four ESCs were connected to the aboard Li chemical compound battery. every ESC was connected to a motor. By varied the values sent to every ESC, the UAV system are often autonomously.

Development Board:

The development board want to program the UAV system to perform autonomous pipeline police work was the Arduino Uno Rev three.

Gyro meter:

The GY-521 Gyro meter was wont to stabilize the UAV system throughout take-off, an aerial patrol of the crude pipeline, and landing. it's capable of providing acceleration, orientation, and gyrometric knowledge for the UAV system in 3-axis.

Altitude Sensor:

The detector wants to verify the measuring instrument altitude of the UAV system was the BMP085. This was vital as a result of the system was autonomously programmed to fly to a definite altitude before commencing police work.

Global Positioning System (GPS):

The GPS is employed in locating the position of the UAV.

XBEE:

A combination of XBEE professional 900HP wireless modules helps establish wireless affiliation between the UAV and therefore the host laptop up to a distance of fifteen.5 km. However, the gap is augmented up to forty-five metric linear units reckoning on the antenna. The wireless affiliation is employed to relay the GPS location and therefore the knowledge of the detected sites to the police work team. The XBEE is mounted on an XBEE defend, that is stacked on the Arduino Mega 2650.

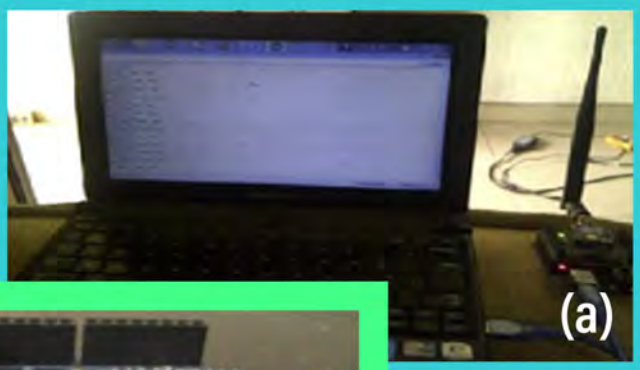
Sensors:

We will see Gas sensors square measure classified in line with their operational principles with the foremost common being thermal, mass, chemical science, potentiometric, aerometric, conductometric, and optical sensors. Here, the DISC mini may be a moveable instrument of tiny dimensions (180 mm× ninety mm× forty mm), low weight (640 gr, 780 gr together with probe provided by the supplier), and long battery period (8 h operative). So, it's wont to live the number of particles with diameters move between ten and five hundred nm, with a time resolution of ones.
So, it is used to measure the number of particles with diameters ranging between 10 and 500 nm, with a time resolution of 1 s.

Fig. (a) XBEE Pro 900HP on XBEE Shield stacked on Arduino Mega 2560.

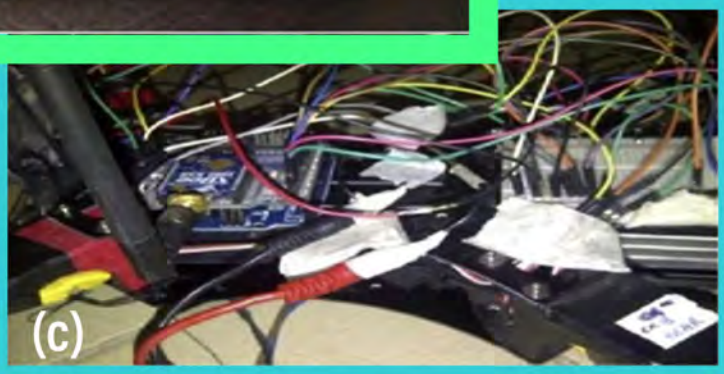
(b)First XBEE connected to the pc at the surveillance station

(c)Second XBEE connected to the drone system.



(a)

(b)



(c)

(a) Gas Sensor

(b) Gas sensor mounted on top of the UAV

Air Pollution Sensors

Each of the air waste material concentrations square measure measured by individual and different sensors. standardization for every detector is done weekly. The UAV system keeps track of your time mechanically and sends recalibration commands to the sensors once per week in between weather knowledge acquisition.

Air waste material sensors square measure designed and made largely to be used during a stable setting. enhancements can have to be compelled to be created to defend the aboard pollution sensors from the UAV's electronic interference to make sure correct AQHI measurements.

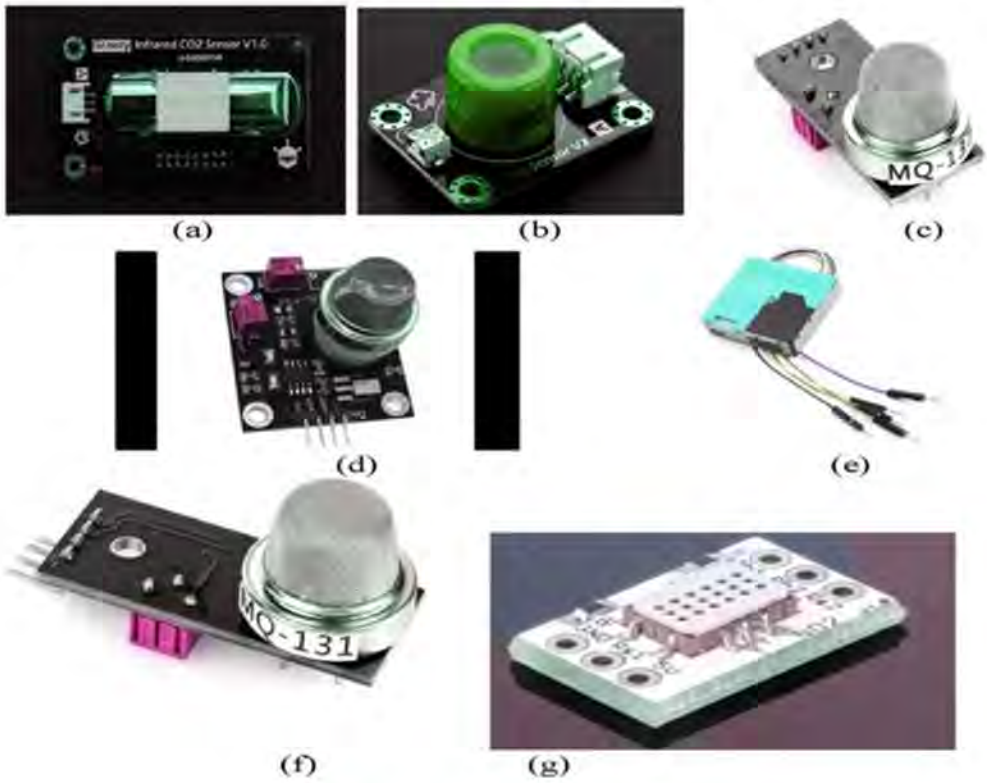


Fig. Gas Sensors used in the UAV
(a) CO 2 Sensor. (b) CO Sensor. (c) NH3 sensor. (d) SO2 sensor. (e) PM sensor.
(f) 03 sensor. (g) NO2 sensor

Payload Design:

In this, the UAV system design will use radio-electronic equipment to transmit period knowledge together with data on the three-dimensional location of the UAV and payload parameters to the bottom station. Here, the Arduino MEGA 2560 microcontroller (transmits the information and was chosen over alternative devices like the Raspberry, Pi, B+ microchip which could have each higher hardware (e.g., memory) and software system (e.g., operational system).

Moreover, such devices will like a lot of power and square measure slower. Hence, Arduino is simpler to use for its property and programming, higher speed for receiving and sending the knowledge, additionally lower power consumption. Arduino will power all four gas sensors at the same time.

PdUC ALGORITHM:

In this context, AN formula referred to as Pollution-driven UAV management (PdUC) has been used, supported the taxis metaheuristic conception, to go looking a locality for the very best pollution concentration levels. Once this pollution hotspot is found, the flying drone covers the complete space by following a spiral movement, ranging from the foremost impure location. Our formula consists of 2 parts: (i) a groundwork phase, during which the UAV searches for a globally most pollution worth, and (ii) a quest part, wherever the UAV explores the encircling space, following a spiral movement, till one among the subsequent conditions occurs: it covers the complete space, the allowed flight time ends, or it finds another most worth, during which case it returns to the search part.

METHODOLOGY:

The drone, at the start, checks its current battery charge level to determine if it has sufficient power for take-off. Each UAV comes with a battery case at the base for battery charging. These batteries are contained within the base. Once the drone lands on the ground, it can be connected to the charger for recharging of its batteries.

Power is supplied to the motors of the drone using the ESCs, causing the drone to lift into the air. Using the altimeter, the drone moves up until it achieves the desired height, Ealtitude, at which the environmental air quality can be measured. The Ealtitude selected is such that when pollution abatement options are implemented by the UAV, the affected air and time of exposure to the abatement option are maximized. Once the drone reaches the Ealtitude, it hovers at this particular height while the environmental data is collected using the onboard sensors. These data include the following: date and time of data collection, barometric pressure, temperature, humidity, wind speed and direction, precipitation, AQHI for O3, PM, NO2, CO2, SO2, CO, NH3, and the maximum AQHI. The drone system is a centralized system, with the computer at the monitoring station on the ground collecting the measured environmental data. Each drone makes its own decision autonomously, as they are programmed to operate individually to cover specific geographic regions and areas.

After measuring and acquiring the environmental air index mentioned above, the system initiates an automated analysis of the data. The level of pollution for each pollutant is classified using a customized automated algorithm, and the air pollutants that are above the recommended threshold set by Health Canada and Environment Canada are identified.

For those pollutants above the recommended threshold, onboard pollution abatement solutions are implemented. When the Environmental Drone detects a pollutant concentration above its recommended level, it automatically implements and releases an onboard pollution abatement solution for that specific pollutant. The volume of pollution abatement solution released depends on the level of pollutants detected. This will ensure that the pollution concentration level is brought down to acceptable levels. These on-board abatement options will be used to alter measured high AQHI of pollutants and will be carried out at the Ealtitude to maximize the effective area and the length of time for AQHI correction.

The onboard pollution abatement options used by the UAV will mainly be chemical processes to convert the pollutants at that altitude into harmless gasses and liquids. Presently, the UAV is equipped with the onboard pollution abatement for NO2 only. Future models will also be equipped with on-board pollution abatements for O3, PM, CO2, SO2, CO, and NH3. The length of time the UAV implements an abatement option will be determined by the measured AQHI for that particular pollutant. If there are no pollutants with AQHI above the predetermined threshold, the drone will descend back to the ground. If there are pollutants with AQHI above the predetermined threshold, the drone will descend back to the ground after implementing the appropriate solutions.

After the descent, the UAV transmits all the acquired data to the monitoring station through text messages, XBEE, and the internet. The UAV also transmits the necessary abatement implementation utilized, including length of time of implementation, and names and volumes of compounds used for each abatement solution implemented. The UAV then waits

for an hour before proceeding to obtain the required environmental data again. Each UAV will be equipped with a GPS shield so the exact location at which the drone takes its measurement will be known. Multiple UAVs can be used to obtain environmental data and AQHI for different pollutants in different locations.

After the transmission of environmental data to the monitoring station, custom-designed software will be used to generate AQHI maps. These are maps that show the measured AQHI for different locations within a specific region, and the measured AQHI for each location will be supplied by a single UAV. For every air pollutant measured by the UAVs, a single AQHI map will be generated.

Detailed environmental analysis (especially for air pollution) can then be conducted at the monitoring station using the generated AQHI maps

INTEGRATION:

The DiSCmini can be easily integrated on the UAV as a small and lightweight monitor. Moreover, careful positioning of the sensor to avoid possible issues with the aircraft centre of gravity is needed. The custom-made gas sensor payload includes the four gas sensors. Further details on each sensor are provided. Hence, the integration process resulted in a system that is capable of measuring PNCs and five gases simultaneously.

Fig. Integration of the various components on the UAV

CONCLUSION:

Even though we've multiple choices to observe pollution in urban situations, being crowdsensing is AN rising approach arousing nice interest, finding AN possible approach for industrial or rural areas remains an undone task. Recently, pilotless Aerial Systems have knowledgeable new rise, providing a platform for the short development of solutions because of their flexibility and relatively low cost; in reality, they will be a decent option to solve the previous needs, permitting the observation of remote area units that are tedious to access. To mechanically analyze pollution values at intervals in a given space, we tend to additionally integrate AN adaptational algorithmic rule for autonomous navigation known as a Pollution-based UAV system (PdUC).

This algorithmic rule permits AN UAV to autonomously monitor a particular space by prioritizing the foremost contaminated zones. Above all, PdUC combines completely different ideas with a taxis metaheuristic, a neighbourhood particle swarm improvement (PSO), ANd an adaptational Spiralling technique, to style AN algorithmic rule that is in a position to quickly look for hotspots having high pollution values and to hide the encircling space likewise, thereby getting an entire and careful pollution map of the given region. we tend to compare the planned PdUC answer against the table game and Spiral quality models through simulations enforced in OMNeT++. Simulation shows that PdUC provides considerably higher performance by reducing prediction errors, particularly concerning the accuracy achieved for the high-values vary.

FUTURE SCOPE:

In the close to future, the UAV will be additionally changed to create the battery even a lot of long-lasting. The UAV model will be created less significantly so the vertical height will be inflated and also the hovering of the UAV is a lot stable. a lot of sensors will be mounted on the UAV to enhance the accuracy of the reading. the fabric wont to style the model will be improved therefore the strength will be inflated and also the weight will be decreased.

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StudentConnect

The IDEA

In this era of youth ambitiously seeking after their dreams, numerous students face challenges while buying books or other stationery materials. Henceforth it is fundamental for all the students to get a stage where they can unhesitatingly associate with their seniors and buy previously used books and other stationery items from them at a lower cost. The StudentConnect Application is one such open door for the young engineers. It is an easy-to-use interface where the users can purchase or sell the supplies and books which are not useful to them. This application provides a platform where the students of a college get an opportunity to connect with their seniors while buying or selling books or other stationery items. One of the significant benefits that the users of this application get is that they not only get to connect with their seniors but also save substantial amount of money. The money that the engineering students spend in purchasing the books and their stationery items is high and by this application they can decrease it significantly. To provide security, authentication of a student will be done as they upload a scanned copy of their college identity card.

> *"Design is not just what it looks like and feels like. Design is how it works"*
>
> *- Steve Jobs*

Furthermore, Neumorphic components are used in the application to make it simple and delightful for the students to use. Its aesthetic is marked by minimal and real-looking UI that's sort of a new take on skeuomorphism — hence the name. It is about the shade of the whole screen, and conveying a totally special experience for users which gives them a feel that segments like buttons or cards are actually inside the background, and are just noticeable in light of the fact that they're jutting out from the inside. The overall style is about strong tones, low difference and the correct play of shadowing.

The PROTOTYPE

The proposed system aims to provide a platform for students to buy proper books and stationery from their seniors right within the college campus ensuring safety along with convenience and helping the students get the maximum use out of the study materials they purchased.

Students who usually buy previously owned study materials have to purchase these items by physically visiting various different shops where a certain potion of money is charged by the shopkeeper for acting as a medium to provide them with these materials.

Similarly, while selling these study materials to the same stores, students get a significantly low amount of money for their items as shopkeepers look to gain commission from selling these items later.

The proposed system also helps in eliminating the need of a middleman and allows the students to directly buy and sell and negotiate an optimum price for their study materials amongst themselves without having the need to physically visit a shop ensuring that both the buyer and the seller benefit from the deal. Hence, StudentConnect gives the users a platform to connect with their seniors by buying and selling books and other stationery materials from them. Easy to understand interface makes this application simple and convenient for students to utilize. Neumorphic Components contribute towards making the user interface minimalistic yet visually and aesthetically appealing.

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SE IT A

COOLING SYSTEMS USED IN QUANTUM COMPUTING

Computations performed using the quantum phenomena such as superposition and entanglement is called Quantum Computing. And the computers which can perform such quantum computations are known as Quantum computers. These computers can solve computational problems many times faster than normal (classical) computers.

Quantum computing began in the early 1980s when physicist Paul Benioff proposed a quantum mechanical model. Later, it was suggested that a quantum computer had the potential to stimulate things that a classical computer cannot.

There are several models of quantum computers (or rather, quantum computing systems), including the quantum circuit model, quantum Turing machine, adiabatic quantum computer, one-way quantum computer, and various quantum cellular automata. The most widely used model is the quantum circuit.

What does a quantum computer look like?

At first glance, a quantum computer resembles a giant chandelier made of copper tubes and wires, that's also what the experts call the structure, a chandelier. Its core contains a superconducting chip on which the qubits are arranged like on a chessboard pattern. The qubits on the chip are tiny capacitors made of niobium, which is a chemical element that's as hard as titanium. Their charges, similar to the rotating coins, are made to oscillate. In other words, they have no fixed states. Between them, there are small adjustable couplers. These consist of tiny antennas that respond to microwaves, called resonators.All told, this means the superconducting chip is located in an electromagnetic microwave field. It operates under extreme cold, at temperatures near absolute zero. For the IBM quantum computer, for example, the temperature is 0.015 Kelvin.

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Classical computers require built-in fans and other ways to dissipate heat, and quantum computers are no different. Instead of working with bits of information that can be either 0 or 1, as in a classical machine, a quantum computer relies on "qubits," which can be in both states simultaneously, called a superposition, thanks to the quirks of quantum mechanics.

Those qubits must be shielded from all external noise, since the slightest interference will destroy the superposition, resulting in calculation errors. Well-isolated qubits heat up quickly, so keeping them cool is a challenge. The current operating temperature of quantum computers is 0.015 Kelvin or -273C or -460F. That is the only way to slow down the movement of atoms, so a "qubit" can hold a value.

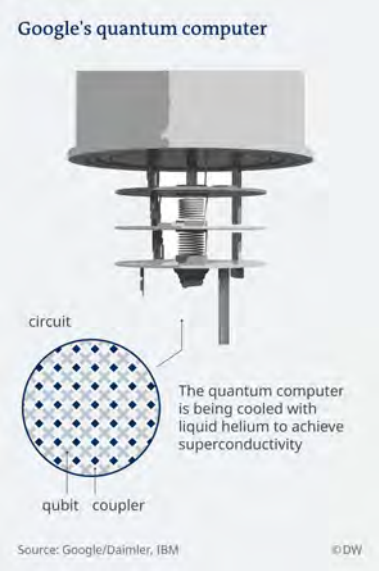
NEEDS AND HAZARDS

The electronics that power them won't run at such low temperatures, and also emit heat that could disrupt the qubits, so they are generally stored outside the refrigerators with each qubit is connected by a wire to its electronic controller. Such low temperatures can only be achieved by cooling down the chip with the help of liquefied helium. Only regular helium is not enough. The engineers use dilution refrigerators with a Helium-3/ Helium-4 mix to achieve extremely low temperatures, but this system is cumbersome and elaborate and is not user-friendly.

And there are many adverse health effects of helium such as:

1. **High voice, dizziness, dullness, headache, suffocation when inhaled.**
2. **Can cause frostbite in contact with liquid.**
3. **And on the loss of containment this gas can cause suffocation by lowering the oxygen content of the air in confined areas**.

Thus, to avoid these the alternative cooling methods are being thought of by researchers e.g. The researchers at VTT Technical Research Centre of Finland developed a new fully electronic refrigeration technology, this functions by transferring heat from one place to another through an electric heat pump.



CONCLUSION

Part of what makes fighting environmental problems such as climate change, global warming, etc. so hard is that finding solutions take years or even decades to develop. But the quantum computers have the potential to solve many complex problems in minutes that would take conventional computers hundreds of years to complete. Quantum computing would represent a breakthrough that could cut down on the time needed to research and develop solutions exponentially, turning the work of decades into years or less.

Where can quantum computing be used at

·Supply-chain problems are complex. Optimizing dynamic supply chains is currently not feasible with available computing resources.

·Insurance companies are under statutory obligations to provide a valuation of financial instruments to regulators such as bonds and derivatives, options, and risk on insurance products. The best can they do is to meet regulators' valuation requirements, which is not sufficient to value operational risk.

·Drug discovery involves simulating molecules that are demanding with existing computing capabilities. The alternative, supercomputing, is the current but costly process. Some drug and biotech companies are already in the experimental phase.

·Materials industries: Chemicals, Metals and Mining, Paper/Packaging, all of these industries are looking for better computation and optimization models for innovation and efficiency, not to mention better chips or batteries.
·Banking/Investment: Need better portfolio optimization, asset pricing, risk analysis, fraud detection, market predictions.

·Blockchain relies on cryptographic methods, which may be open to constant attacks from the advancing capabilities of bad actors' newest technologies.

·Industries counting on better batteries, chips or network architectures can explore quantum computing to simulate new possibilities or optimize existing structures.

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SE-IT-B

DOCVERSE

A web-based application for patient health-care. The application will take all the necessary details of the patient, the first time the patient logs in and will store it, this, in turn, reduces paperwork. The patient can then consult any doctor as per their requirement and book an appointment. Then a channel between the doctor and patient will be created. A meeting between the patient and the doctor then takes place. Using the voice prescription, the doctor prescribes medication to the patient. Integrating voice prescription felt vital because it reduces paperwork and more than that, the illegible handwriting of doctors has caused innumerable deaths in the past. We can nullify this petty negligence and save lives just by prescribing readable medications.

Another scenario supposes the doctor has recommended certain tests to be done. The patient gets their tests done and virtually uploads their test results on the application for the doctor to see. This in turn reduces another trip down to the hospital and the doctor is remotely able to prescribe the further part again, through voice prescription, which gets stored in the person's profile.

I feel like this "medical diary" of a person might prove to be a boon and escalate the way doctors' can treat patients. Instead of using trial and error, the doctor has the complete patient history right from birth and this, in turn, will aid the doctor better to treat his/her patients.

What is different in DOCVERSE?

Practo is a paid app that we need to pay to get services. As soon as a patient will book/call for an appointment for the first visit, an amount of money is deducted from the doctor's wallet which needs to be refilled regularly. The strategy is that they will keep the said doctor's name on the first page with the highlights saying, "Prime benefits available".

Practo's model thus depends on the idea that it is providing the patient to the doctor and thus it is taking a commission for the same. This model is like an Auto Walla standing at the railway station and alluring patients that he will take them to the "best doctor". I think this is unethical because it depends on the dictum that what is more visible is more marketable. Patients should choose doctors on their correct reviews and not their marketability. To sell their product, they started pitching doctors against each other.Practo has removed the book appointment option for non-Prime subscribers making it almost compulsory to have prime.

Technology Used:

- Database – MySQL (Demo inventory of doctors/hospitals).
- Backend – Python, Django (Python web framework).
- Frontend – HTML, CSS, JavaScript, Bootstrap (CSS framework).
- Software Development Process - Agile Methodology

> **One of the biggest challenges to medicine is the incorporation of information technology in our practices.**
>
> **- Samuel Wilson**

Added Features:

- Homepage – Login/Signup.
- Demo inventory of doctors/hospitals – Initially decided to do a survey but could not be done due to COVID-19 lockdown. So now we have manually filled in the inventory for the prototype.
- GPS – Using HTML Geolocation API.
- Filtering/ Appointment Booking.
- Doctor's part – Sign in on the homepage. Channel creation between doctor and patient. The doctor can see the appointments to schedule, according to his/her timetable. If there is a patient emergency the doctor may also prioritize that patient.
- Voice Prescription – We had two options, according to research conducted: Google APIs and Alexa. Google was charging around 75p/15secs, so we opted to go for open source and free Alexa APIs.

Why Django ?

According to our research, we discussed our project with 2 industry people (my own father and another teammate's elder brother) and they both suggested that Django would be apt for this project. Also, we have studied Python in our college curriculum and hence thought this would be good to build our project on existing knowledge.

Alternatives to Django: Flask, Ruby on Rails, ExpressJS, ASP.NET, Spring-boot.

The Future

- Expanding the region served from local area to at least Mumbai region.
- Increase and persuade the range of doctors in each specialty field on board the app.
- Implementing hospital online bill payment features.
- Implementing chatbot for not-so-urgent issues like cough, cold etc. where one can prescribe over-the-counter medications.

Pradyuman Rai,
Shreya Patil,
Yash Sarda
BE IT B

Wi-Fi Based Transmission Secured by RSA Algorithm

Beyond 32 characters the system asks for the key, entering the key will send the encrypted message to a different system. Then the opposite system asks the key to decrypt and view the message.
If the user entered appropriate key the message will get decrypted otherwise it is going to display a garbage value thus securing the communication.

The data will be decrypted with the proper key solely , otherwise, it returns some can garbage value. Inputs are taken from the keyboard. After starting the system, we'll be capable of entering a message to the system. The utmost limit of the message is 32 characters.

Abstract

The Wi-Fi-based secured wi-fi communication utilizing RSA encryption permits us to speak wirelessly with a safety feature. The data transfer during communication between two programs is encrypted utilizing RSA encryption which is extremely safe as it is asymmetric.

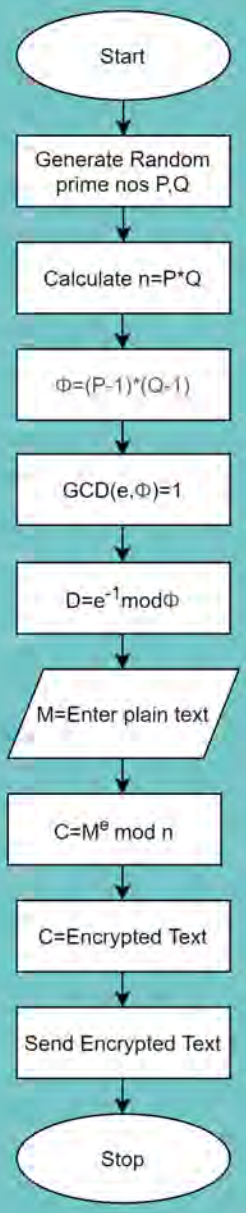
Jhanvi Pandya
SE IT A

RSA WORKING

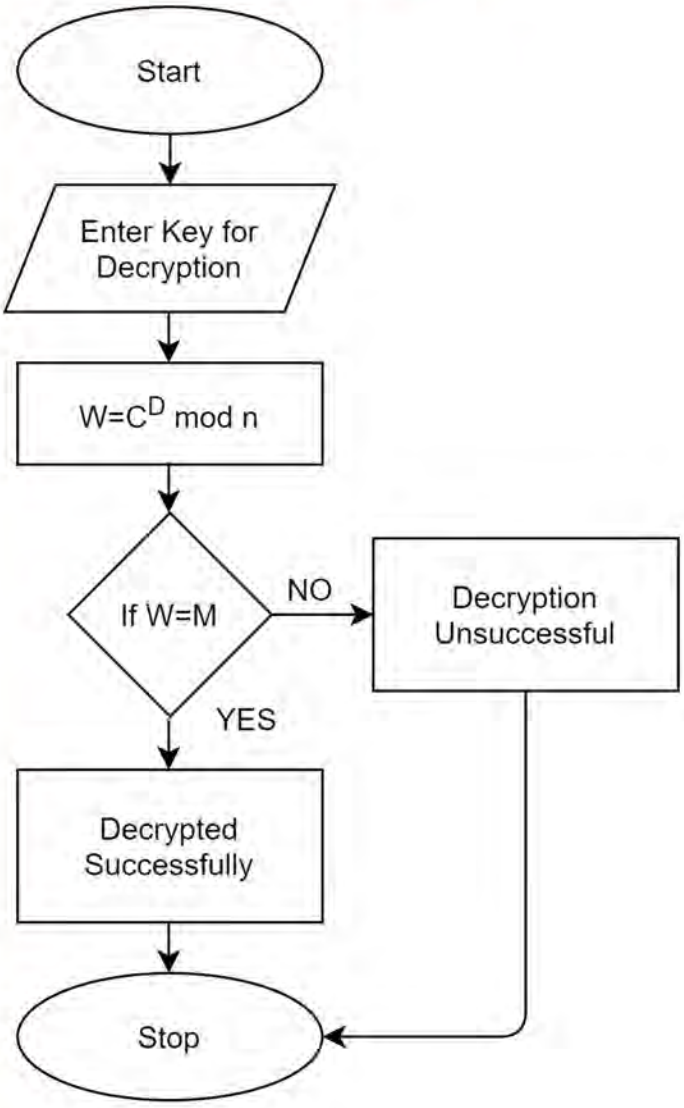
This technique makes use of RSA (Rivest–Shamir–Adleman) algorithm for encryption and decryption of the message. RSA algorithm is an asymmetric cryptography algorithm.
Asymmetric means that it uses two different keys i.e. Public key and Private key. As the name describes that the Public Key is given to everyone and Private Key is kept private.

Public Key= (e,n) M'=Me mod (n) Where M=Original message
Private Key= (d,n) M=M'dmod (n) M'=Encrypted message

For encryption:



For decryption:



PROPOSED SYSTEM

01

The project uses 2 trans-receiving units as communication and user interface.
Both of the trans-receiving units essentially consist of an equal number of components connected to them.

02

ATmega328 microcontroller is used at both the ends to process all the data that is inputted through the keyboard.
For wireless communication ESP8266 Wi-Fi modules have been used.

03

The ESP8266 Wi-Fi modules are configured by the user in a way that they can be connected in an adhoc manner.
Once the connection has been established in between the two communicating units the chat can be utilized by typing on the keyboard. The length of the message cannot exceed 32 characters.

04

When the system has received user inputs and the user has asked for sending of information to the other unit, the system will ask for a private key of the user to perform RSA encryption over the message.
RSA encryption is performed over the message using the private key inserted by the user and a public key pre-configured in the system at the time of programming.

05

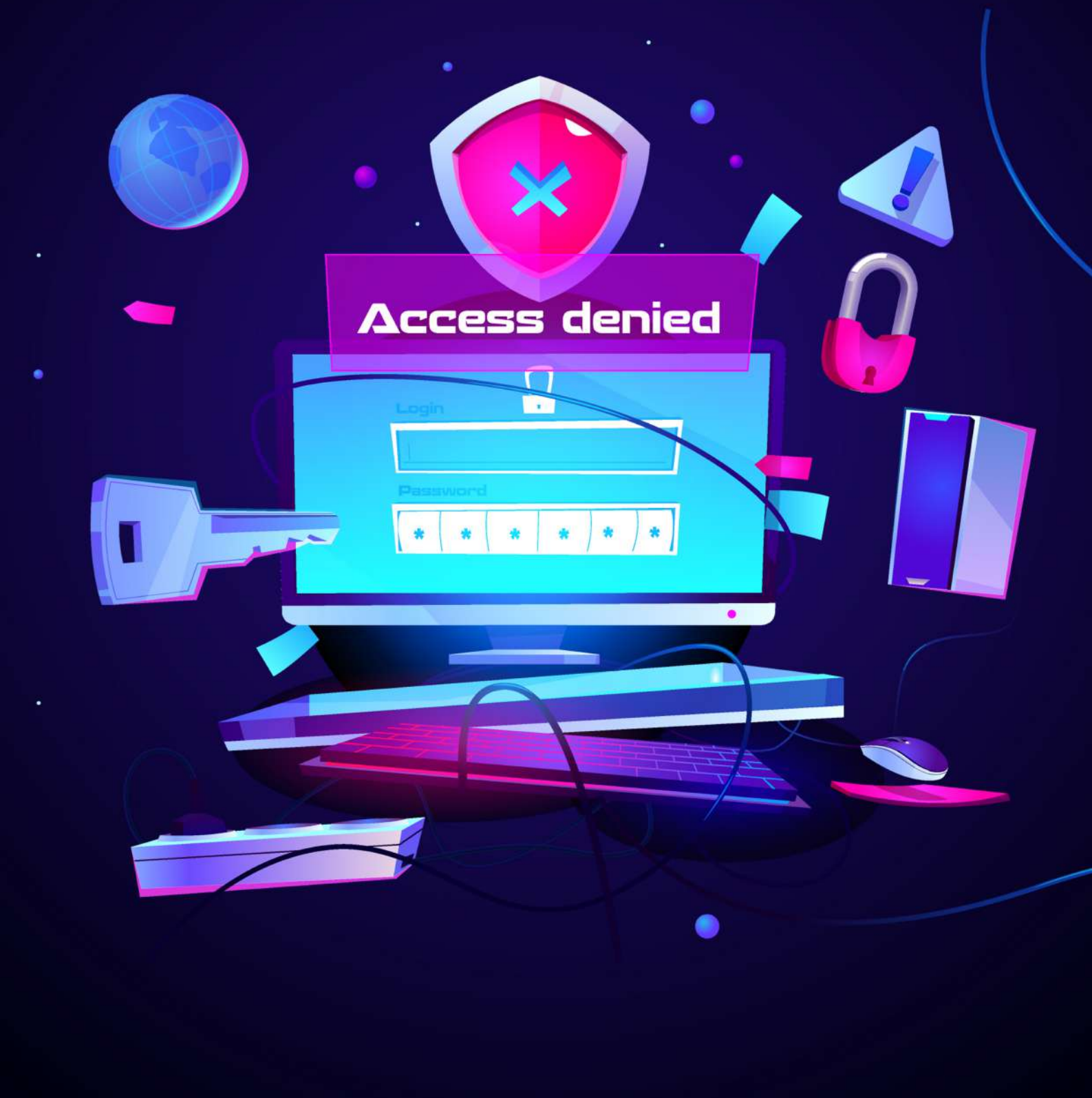
When the encrypted information is received, the receiving end user should enter his/her private key which will successfully decrypt the message and display it over the LCD.
On pressing enter the user can initiate or end a message for typing or sending it respectively.

CONCLUSION

This project demonstrates the working of Wi-Fi-based secured wi-fi communication utilizing RSA encryption. Further, the RSA algorithm can also be used even more efficiently by using it along with AES symmetric algorithm, so that the drawback of this algorithm i.e. takes more time due to its mathematical complexity can be mitigated.

CYBER SECURITY

MARCH EDITION



CYBER-SECURITY

In 21st Century

Abstract

Cyber-security is a major concern nowadays. It's necessary to protect ourselves from the threats on the internet. In this article, I am giving the whole idea about what is cyber-security, its types and some healthy tips to protect from threats. This paper mainly focuses on types of threats and safety tips to protect from cyber-crime.

Introduction

Cyber-security is the practice of defending computers, servers, mobile devices, electronic systems, networks and data from malicious attacks. it's also known as information technology security or electronic information security. A strong cyber-security strategy can provide a good security posture against malicious attacks designed to access, alter, delete, destroy or extort an organizations or user's system and sensitive data.

TYPES OF CYBER-SECURITY

Cybersecurity is a broad umbrella term that encompasses several specific practice areas. Cybersecurity can be classified into various categories-

·**Network Security**: The process of protecting the network from unwanted users attacks and intrusions.
·Application Security: Apps require constants updates and testing to ensure these programs are secure from attacks.
·**Data Security**: As inside of networks and application is data. Protecting company and customer information is a separate layer of security.
·**Cloud Security**: Many files are in a digital environment or the 'cloud'. Protecting data in a 100% online environment presents a large amount of challenge.
·**Mobile Security**: Cell phones and tablets involve virtually every type of security challenge in and of themselves.
·Identity management: Essentially this is a process of understanding the access every individual has in an organization.

IMPORTANCE

In today's connected world, everyone benefits from advanced cyber defence programs. At an individual level, a cyberattack can result in everything from identity theft, to extortion attempts, to the loss of important data like family photos Everyone nowadays relies on power plants, hospitals and financial service companies. Global cyber threats continue to evolve at a rapid rate. A report by Risk Based security revealed that a shocking 7.9 billion records have been exposed by the data breaches in the first nine months of 2019. So securing these and other organizations is very much essential and important.

Cyber Threats

The threats countered by cyber-security is three-fold:

·**Cybercrime:** includes single actors or groups targeting systems for financial gain or to cause a disruption.

·**Cyber-attack:** often involves politically motivated information gathering.

·**Cyberterrorism:** is intended to undermine electronic systems to cause panic.

Here are some common methods used to threaten cybersecurity:

·**Malware:** malware means malicious software. Malware is software that a cybercriminal or hacker has created to disrupt or damage a legitimate user's computer. Often spread via email attachment or legitimate-looking download. Some common malware is a virus, trojans, spyware, Adware.

·**SQL injection:** An SQL injection is a type of cyber-attack used to take control of and steal data from a database. Cybercriminals exploit vulnerabilities in data-driven applications to insert malicious code into a database.

·**Phishing:** Phishing is when cybercriminals target victims with emails that appear to be from a legitimate company asking for sensitive information like credit card data and other personal information.

·**Romance Scams:** In Feb 2020, the FBI warned U.S citizens to aware of confidence fraud that cybercriminals commit using dating sites, chat rooms and apps. Cybercriminals take advantage of people seeking partners, duping victims into giving away personal data.

Others: Man-in-middle attack, Dridex malware

Safety Tips

Here are some safety tips for users to prevent themselves from cybercrime:

·**Update your Software and operating system for the latest security patches.**

·**Use anti-virus software for the best level of protection.**

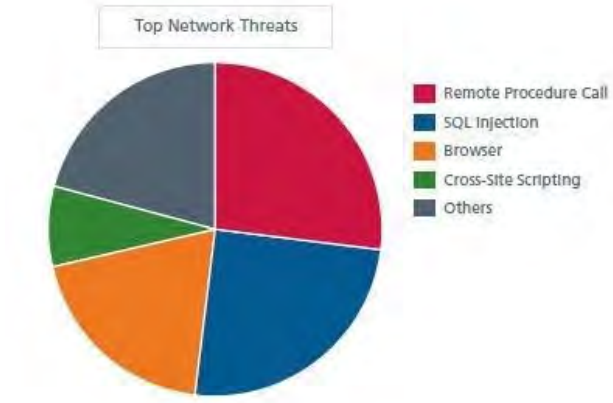
·**Do not open email attachments from unknown senders.**

·**Do not click on links in email from unknown senders or unfamiliar websites.**

·**Avoid using unsecured WIFI networks in public places.**

·**Practice good password management which is not easily guessable.**

·**Always back up your data**



Conclusion

Cybersecurity is a vast topic that is becoming more important because the world is becoming highly interconnected, with networks being used to carry out critical transactions. Cybercrime continues to diverge down different paths with each New Year that passes and so does the security of the information. The latest and disruptive technologies, along with the new cyber tools and threats that come to light each day, are challenging organizations with not only how they secure their infrastructure, but how they require new platforms and intelligence to do so. There is no perfect solution for cyber crimes but we should try our level best to minimize them to have a safe and secure future in cyberspace.

Rahul Jha
SE-IT- A

THE DARK WEB

Beyond our regular world of the internet which we can access easily and freely through our day-to-day lives, lies a world of hidden platforms and communities known as the Dark Web which is accessed only by the most sinister and shady individuals. The dark web can only be accessed by using specific software that is not publicly available. This software allows people to hide their personal information and location by hiding them behind various IP addresses. This allows such people to carry out their criminal or illegal activities without the fear of getting tracked and caught.

There are numerous kinds of wrong doings committed in this world and one of the recently evolved platforms is the Dark Web. Terrorists use the dark web to spread their influence and ideology to others.

They often use it to communicate with one another regarding illegal activities that cost the lives of thousands of people.

This near-complete anonymity from the public allows them to carry out such actions. The dark web is a terrifying place that should never be entered. It is filled with antisocial personalities who share their ideology with people who share similar ideas and interests.

A recent report was conducted and found that 57% of the content residing within the Dark Web consists of illegal content such as pornography, illicit finances, drug hubs, weapons trafficking, counterfeit currency, terrorist communication, and more.

The Dark Web is a host for marketplaces that allow vendors to sell illegal items to consumers using Bitcoin rather than actual money. Since we don't know much about the depth of the Dark Web, who knows that slavery might also be taking place there. It is believed that the Dark Web marketplaces are so successful because consumers of these illegal items feel safe shopping there because they can be almost certain they will never be caught thanks to the hefty precautions used within these sites.

This high level of anonymity nurtures illegal activities within the Dark Web including not only drug trafficking but also credit card fraud, identity theft, as well as leaks of sensitive information.

Among all of the crimes committed within the world, those committed on the DW are often considered all the more dangerous. This being said, we must note that virtual crime is no different from crime in the reTal world. The Dark Web is a platform on the internet that allows for near-complete anonymity on the web. This created a world for criminals to be able to exist in communities committing delinquent acts just about unnoticed by the overwhelming majority of individuals on and off the web.

It also allows for criminals to be able to reach a much larger audience than ever before, creating an outsized problem when it involves terrorist and extremist groups, as well as the buying and selling of illegal items. As a responsible citizen, we should spread awareness of such topics and help people understand that they should avoid sharing their personal details with unknown people over text or calls because we never know whom we are dealing with on the other side as even a seemingly normal person can also be a part of an unknown organization connected to the dark side of the web.

Krutish Bhandari
SE IT A

Blockchain

*The blockchain is an unquestionably keen creation – the brainchild of an individual or gathering of individuals known by the alias, Satoshi Nakamoto. However, from that point forward, it has advanced into something more noteworthy, and the principal question everyone is asking is: '**What is Blockchain?**'*

THE DEFINITION

The blockchain is a basic yet clever method of passing data from A to B in a completely mechanized and safe way. One party in an exchange starts the cycle by making a block. This block is confirmed by thousands, maybe a huge number of computers circulated the net. The checked block is added to a chain, which is put away across the net, making a one-of-a-kind record, yet an extraordinary record with a novel history. Misrepresenting a single record would mean adulterating the whole chain in a large number of cases. That is for all intents and purposes not possible. Bitcoin utilizes this model for money-related exchanges, yet it can be used in multiple different ways.

A blockchain is, in the least complex of terms, a time-stamped arrangement of unchangeable records of information that is overseen by a group of computers, not possessed by any single entity. Every one of those blocks of data is secured and absolute to each other utilizing cryptographical standards.

A few of the critical highlights of Blockchain that separates it from the internet:

i. **Transparency**
ii. **Decentralization**
iii. **Immutability**
iv. **Ease of tracking**
v. **Security of data**
vi. **Peer-to-peer interaction**
vii. **No third-party interference**

HOW DOES A BLOCKCHAIN WORK? (THE SPREADSHEET ANALOGY)

The traditional means of sharing documents with collaboration is to send a Microsoft Word document to a different recipient and raise them to create revisions thereto. The issue with that situation is that you need to stand by until accepting a return duplicate before you can see or roll out different improvements since you are bolted out of altering it until the other individual is finished with it. That's how databases work today. Two proprietors can't be meddling with a similar record immediately. That is how banks keep up cash adjusts and moves; they momentarily lock access (or reduction the equilibrium) while they make an exchange, at that point update the opposite side, at that point re-open access (or update again). With Google Docs (or Google Sheets), each party have access to an equivalent document at a similar time, and therefore the single version of that document is often visible to both of them. It resembles a shared record, yet it is a shared report. The disseminated part becomes possibly the most important factor when sharing includes a few people.

Imagine the number of legal documents that ought to be used in that approach. Instead of passing them to each other, losing track of versions, and not being in sync with the other version, why can't all business documents become shared instead of transferred back and forth? So numerous sorts of legitimate agreements would be ideal for that sort of work process. You needn't bother with a blockchain to share reports, however, the shared record's relationship is a ground-breaking one.

THE FUTURE

Blockchain holds an incredible future in the occasions to come, more and great names use Blockchain and its application. We are anticipating some large changes in the business. Organizations like Walmart, Amazon, IBM, Infosys, Microsoft, Apple, and other enormous names are intending to execute Blockchain as a piece of their standard business tasks. They are attempting to think of its applications so Blockchain before long becomes as progressive as the web.

ARYAN DIXIT
SE-IT-A

CLOUD COMPUTING

THE FUTURE OF IT INDUSTRY

Abstract

Since the start of the digitalized era, we have faced the problem as to where to store the data, how the processing power can be increased, without any security issues or hardware change. Many devices were made for storing digital data like hard-disks, pen-drives, etc. but they didn't tackle the issue of data loss. We humans had only one thing in mind, that was to create something that doesn't take space in the physical world yet it should have the capacity to store digitalized data on a large scale and at the same time increases the computing power of a device and cloud computing was the answer for it.

Introduction

Cloud Computing is the most recently discovered technology that took the IT industry on a whole new level. Cloud Computing is a type of data centre where a person can store his/her data or even run their application on the cloud without a need for maintaining services or hard-drives. As the term cloud computing is quite famous in the Big Data concept, it has the ability to stored data on a large scale. Large IT organizations like Google, Amazon, Microsoft, Intel have their cloud storage or even provide cloud services like Google Drive, AWS (Amazon Cloud Services), Microsoft Azure. Most of these companies use cloud services to store or share data with the people who have access to the data or even modify the data.

Features of Cloud Computing

1). Resource Pooling

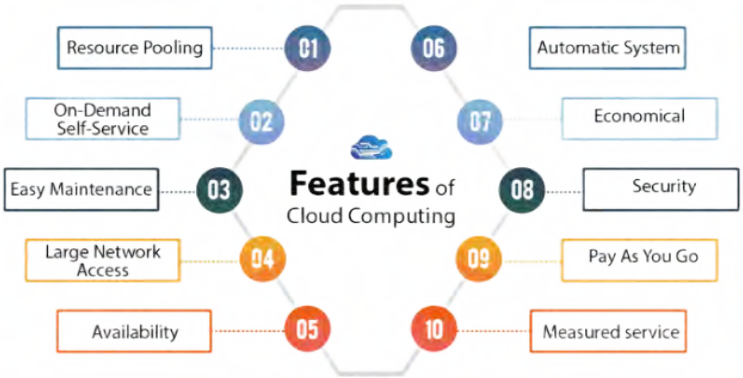
As the term implies, resource pooling is the method where the cloud providers offer services to multiple clients, customers with provisional or scalable services. These services can be modified as per the clients wish.

2). On-Demand Self Service

Considered as one of the most valuable features of cloud computing where the user can continuously monitor the server uptime, capabilities of the server, allotted network storage and even its computing capabilities.

3). Easy Maintenance

As the name implies, cloud service technology is very easy to maintain. The next to negligible downtime and frequent updates for cloud services increase the performance of the cloud services.



4). Large Network Access
This is the most used feature of Cloud computing where the user can access the data stored in the cloud or even upload data from anywhere in the world, just with a device that has an internet connection.

5). Availability
As it implies, users can modify the capabilities of the cloud services as per requirements. This feature allows the client to expand his storage capacity if needed.

6). Automatic System
It can analyse the data needed and provide necessary support on a small scale for some services.

7). Economical
In Cloud Computing, the amount usually spent for basic maintenance and the modification required by the user is very low.

8). Security
Cloud Security is considered one of the best features of cloud computing, as data is not lost even if the server gets damaged as it creates a backup of the data stored. Access to the data can only be done by those who authority over it while hacking is very difficult.

9). Pay as you go
In Cloud Computing, a user/client has to pay only for the services or the storage that they have utilized. No extra charge is taken for non-utilized services or storage.

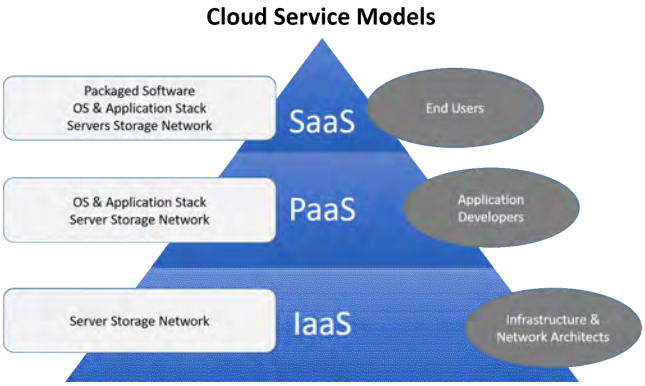
10). Measured Service
In this, the resources that are being utilized are analysed, by supporting charge per use capabilities. This means that virtual instances that are running in the cloud are getting monitored, measured and reported back to the user by the service provider.

Model of Cloud Computing

1). Software as a Service (SaaS)
In the SaaS model, an application is hosted by a cloud service provider. Users can access these applications using this service. These services are managed from a central location which is hosted on a remote server. The services are purchased on a pay as you go basis. Google Apps and Dropbox are the perfect examples for SaaS.

2). Platform as a Service (PaaS)
Specifically created for users that are programmers so that they can develop, test, run and manage the applications in whichever language they require. It has unique characteristics of integrated web services and databases. AWS Elastic Beanstalk and Window Azure based on PaaS model of cloud Computing

3). Infrastructure as a Service (IaaS)
It is computer infrastructures managed over the internet, which helps the user to avoid the cost of purchasing and management of the physical servers. It has automated administrative tasks along with GUI and API based access. AWS and Google Computer Engine (GCE) are based on the IaaS model of cloud computing.



Conclusion

This article describes cloud computing technology along with its advantages and application.
As cloud computing is relatively new to the market, the future scope of this technology is extremely vast.
In the end, we conclude that Cloud computing can easily be the future of the IT industry with its ability to store data virtually, along with increasing computational power without any need for hardware.

Aniket Singh
TE-IT-B

WORKING COMMITTEE

Pratibha Dwivedi

Jhanvi Pandya

Areesha Sayed

Ranveer Shah

Himanshi Jain

Manwitha Anchan

CODE OF ETHICS

The Department of Information and Technology of TCET believes that Engineers make a direct impact on almost all aspects of Human Life for its betterment. IT Engineers should strictly adhere to the high principles of ethical conduct. In order to inculcate high standards in professional behaviour, the department advocates the following code of ethics for all the students, Faculty members & staff of the department.

1. Strive to be professionally competent to provide high quality product & services.
2. To responsibly make decisions, minimizing hazards to society and to disclose potential factors that maybe a threat to health and society.
3. Be fair to all individuals and not discriminate between individual based on religion, race, sex, age, disability, national origin, etc.
4. Give credits to contribution of others viz. copyrights, patent, intellectual property., etc.
5. Protect and respect privacy and ensure confidentiality of information whenever appropriate.
6. The knowledge gained during the course of study will not be misused for carrying out any illegal activities, intruding and hacking of networks.