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THAKUR COLLEGE OF ENGINEERING & TECHNOLOGY
Estd. in 2001

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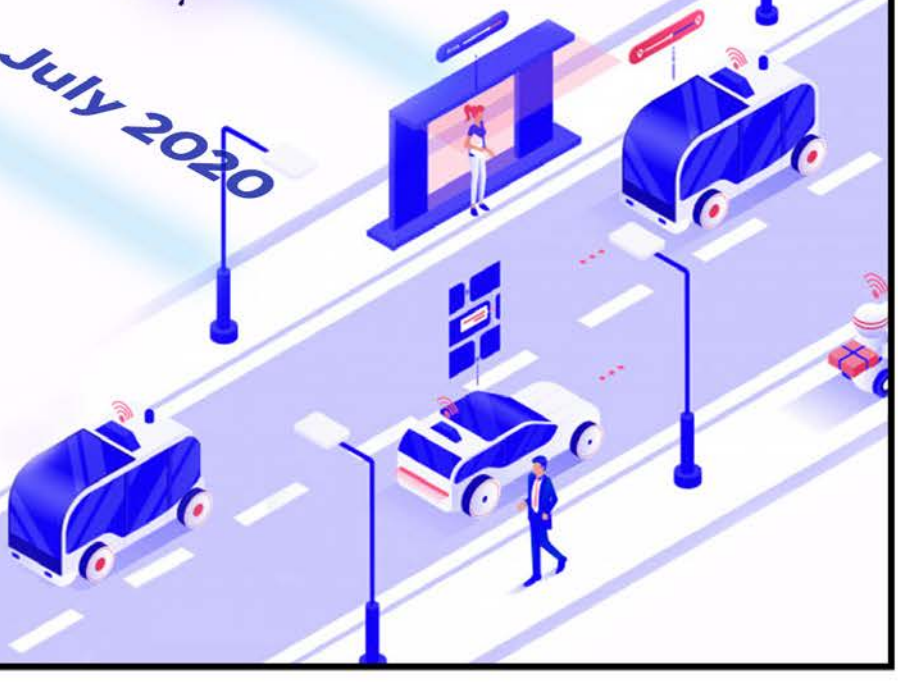


July 2020

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

Identity, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

Graduate

DEVELOPMENT OF SOLUTIONS

3

Design solutions for complex engineering problems and design system components that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations

CONDUCT INVESTIGATIONS OF COMPLEX PROBLEMS

4

Using research based knowledge and research methods including design of experiments ,analysis and interpretation of data and synthesis of information to provide valid conclusions.

Attributes

Graduate

MODERN TOOL USAGE

5

Create, select, apply appropriate techniques, resources and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

THE ENGINEER AND SOCIETY

6

Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

Attributes

Graduate

ENVIRONMENT AND SUSTAINABILITY

7

Understand the impact of professional engineering solutions in environmental context and demonstrate knowledge of and need for sustainable development.

ETHICS

8

Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

Attributes

Graduate

INDIVIDUAL AND TEAM WORK

9

Fuction effectively as an individual ,and as a member in diverse teams and in multi-disciplinary settings.

COMMUNICATION

10

Communicate effectively on complex 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 receive clear instructions.

Attributes

Graduate

PROJECT MANAGEMENT AND FINANCE

11

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.

12

LIFE-LONG LEARNING

Recognize the need for and have the presentation and ability to engage in independent and life-long learning in the broad-context of technological change .

Attributes

Program Specific

To combine various technologies like IoT ,cloud and analytics to provide integrated solutions to real time problems of government or industries.

To master in moulding any problem into a web or internet based solutions.

To develop the culture of augmenting existing technologies to create scalable IT solutions

Outcomes

TABLE OF CONTENTS

DEPARTMENT OF INFORMATION TECHNOLOGY

ABOUT THE DEPT.

The department of Information and Technology, started its journey in the year 2002 and is committed to deliver the program with rigor and with active industry participation. The Department has 120 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 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 affiliated with UOM since AY 2015-16 onwards.

MISSION

The IT department is committed to enrich students by rigorously implementing quality education with a focus to make them industry ready, while imbibing i n 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

Message from

THE DEAN'S OFFICE:

~Dr. Kamal Shah

Dean, R&D Cell

Rekindling the spark of innovation and fostering curiosity in the 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 the vibrant students. I extend my heartfelt congratulations to the entire Editorial board for presenting before us this eagerly awaited college magazine, fulfilling not only the arduous criteria of punctuality but also procuring content of paramount excellence.

Message from

THE HOD'S OFFICE:

~Dr. Rajesh Bansode

Head of Dept, I.T.

Our college have the distinction of being known as one of the pioneers in the field of IT education and has been accredited with Grade 'A' by NAAC.
As a Head of the Department ,my goal is to provide students with a balance of intellectual and practical experiences that enable them to serve a variety of societal needs. We train all students such a way that, they are compatible at national level as well as also stand at international level.The department consists of highly qualified faculty members who not only provide knowledge to the student but motivate them to be intellectuals and professionals in their approach.Our experienced faculty are the strong pillars of the department whose focus is to empower a diverse community of students to nurture their capabilities, transform their lives and find success through high quality teaching and learning. The Department offers four year Bachelor Degree. The department aims to nurture studentss to become world-class software professionals as Project Managers, System Analysts or Team leaders in Industry or become Entrepreneurs in their own innovative way. I am sure in times to come; many students from our department will make indelible mark nationally and internationally in the field of Information Technology and make us proud we are having hard-working students, a committed faculty members and a very healthy work-culture, are the basic elements that comprise the Department of Information Technology.

Message from

FACULTY IN-CHARGE:

~Mr. Aditya Desai

Faculty In-Charge, I.T.

"Reading is the gateway skill that makes all other learning possible."

-Barack Obama

The intention to provide platform for these expressions for students of the engineering college is very natural need. E-Zine launched at website of the institute is right approach and is important milestone in this direction. In today's competitive world, we do not know what the future holds for us, but we know who holds the future. This department has a rich tradition, and its growth and development rests on the shoulders of all Hibernians', past and present. Students are a great asset to the College as much as College is to them, and must grab all the opportunities provided, to get a sound education and should also remember to uphold values at all times and at all costs. The Department of Information Technology is striving hard towards the goal of providing innovative and quality education with high standard to achieve academic excellence and provides platform for the students to achieve their career goals. On behalf of editorial team I thank the management of Thakur College of Engineering and Technology for providing suh a wonderfulplatform for students and faculty memebers. Also many congratulations to editorial team for putting efforts into creation of E-zine.


ARTICLES

CYBERSECURITY ETHICS

ABSTRACT

Ethical hacking is a term which is mostly concerned with the Security, weaknesses and vulnerabilities of the data/content available on hardware or on cloud ware. An Ethical Hacker has the legal authorization to walk into the system or network.

The main job of an Ethical Hacker is to find loopholes in the network which could be potentially dangerous for company and its confidentiality. Hackers are often misunderstood as individuals or group of individuals trying to corrupt or steal data for their benefits or to harm an organization or company due to which the hackers don't have good reputation. As we know, a coin has two faces.

We know about the bad side of it, now the turn of other. When in a system any loophole is found which we need to fix but we are totally unaware about how to fix it, then the role of ethical hacker comes into picture. Without them the organization may never get rid of the loophole or it may go undetected.

KEYWORDS

Hacking, Ethical, Sensitive, Data, vulnerabilities, Black Hat, White Hat.

INTRODUCTION

We frequently come across to news like the hacker has stolen the passwords or sensitive data of an account. Commonly it is known and read in articles or journals that the hackers have been taken advantage of few vulnerabilities to access the data or company networks fraudulently.

Over the period of time the perception of hacker has been dropped to 'Black Hat' or 'cybercrime'. A hacker is ethical when he/she will not steal the data or perform any unauthorized action on the network to which one individual has access. Although in today's scenario there are two meaning of the ethical hacker. One, the person who is purposely breaking into others system to steal data and other who is authorized to do that. Ethical hacking is a way to do security analysis technically.

TYPES OF ETHICAL HACKING

Depending on the task of the hacker, there are basically 4 types of hacking. The hacking which is done to find out vulnerabilities and loopholes for the prevention and betterment of it falls under Ethical.

A. HACKTIVISITS

In this technique the hacker hacks into the system illegally and leaves any kind of messages, it might be to warn someone or threat or maybe any social or political perspective. In this type without consent of target the hacking is done.

B. CYBERWARRIORS

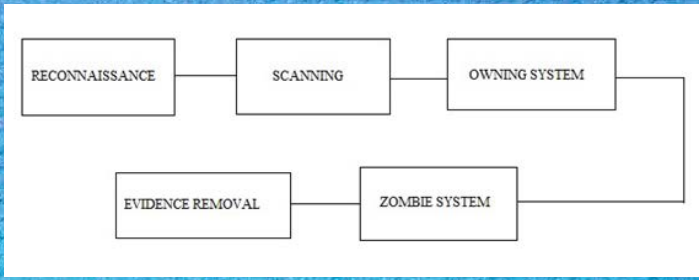
Cyber warrior is one who is hired by the organization to find out the loopholes in the system. Prior the system and the hacker is not aware of each other. After knowing the vulnerabilities of the system, the hacker makes the organization aware of the difficulties that may arise and suggest what prevention should be taken to get rid of the problem.

C. WHITE BOX PENETRATION TESTERS

White box hackers are legally authorized to penetrate the system and find out any type of vulnerabilities or loop present in the current system by just penetrating into the system. They help the organization to prevent all present loopholes in the system.

D. CERTIFIED ETHICAL HACKER OR LICENSED PENETRATION TESTER

They are the certified hackers who are performing duties of both hackers namely 'White Hat' and 'Black Hat'. Where they are certified from the International Council of E-Commerce and they need to recertify their license after every 3 years.



TYPES OF HACKERS

There are basically three types of hackers. They are identified by the work they do and with what intentions they are serving to the organization.

A. WHITE HAT

They are the hackers who are gaining access into the system legally and find the vulnerabilities and flaws present in the network or the system such that they can help the organization by creating the awareness about the same. This type of Hackers are hired by computer security companies where the sensitive data needs to be protected and network should be free of vulnerabilities.

B. BLACK HAT

A black hat hacker is opposite of white hat hacker. This type of hacker tries to access the sensitive data by taking advantage of vulnerabilities present in the system. They areonly concerned with the private gains from the organization. They never reveal their identities in front of society and they write the destructive codes to destroy or breach the security and access the computer network or system.

C. GREY HAT

The combination of namely white hat hacker and black hat hacker end up to grey hat hacker. The grey hat hacker can act in both ways as of white hat hacker and black hat hacker. They don't want to illegally penetrate into system to steal data. But once they breach the security they won't inform to the organization about the action.

CONCLUSION

Hacking has its own advantages and disadvantages depending on type of hacker. Where the battle of being ethical and non-ethical hacker has no end. Ethical Hacking is a tool where we get to know about loopholes and prevention can be done accordingly. Hacking plays very vast and vital role in computer world and security respectively. Being good or bad depends on hacker's community. A hacker can take the organization on top and create a lot of opportunities at the same time it would flip the coin and worsen the conditions for company. To prevent all the dangers to an extent, necessary measures should be taken and increase the security.

Vikas Tiwari

SECURITY IN DEVOPS

(DevSecOps)

WHAT IS DEVOPS?

DevOps is a set of practices that automates the processes between software development and other IT teams, in order that they can build, test, and release software faster and monitor software more efficiently. Before DevOps, the development and operation team used to work in complete isolation. Speedy deployment, faster time to market, reliable releases, faster bug fixes etc. are main goals of DevOps.

CICD AS DEVOPS MATURITY

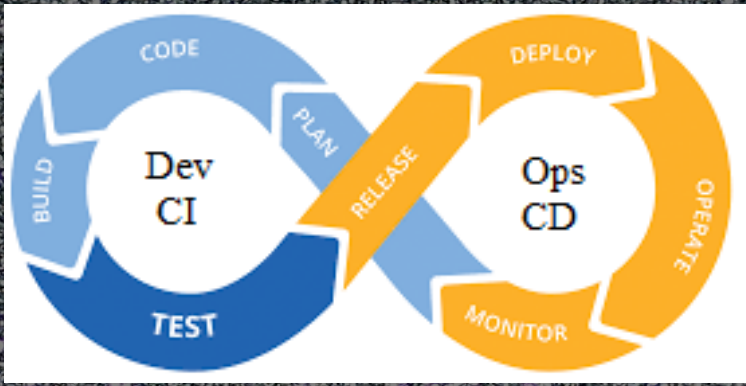
CI - Continuous Integration: Continuous integration is the practice of quickly integrating newly developed code with the main body of code that is to be released. Continuous integration saves a lot of time when the team is ready to release the code. Various automation tools can be used in CI journey for automating SIT, UAT, Code review (SAST) etc.

CT – Continuous Deployment: It's the practice of deploying all the way into production without any human intervention. In fact, with serverless technology like containers, deployment takes place without any production downtime.

WHAT IS DEVSECOPS?

DevSecOps is about introducing security in the whole life cycle of application development, testing, deployment and operations. The simple premise of DevSecOps is that everyone in the software

development life cycle is responsible for security, i.e. bringing operations and development together with security functions. DevSecOps aims to embed security in every possible way to all parts of the development process. It is about trying to automate core security tasks by embedding security controls and processes in the DevOps workflow.



For Example:

1.Introduction of secure source code review(SAST) and Greybox(DAST) testing in CICD pipeline

2.Introduction of any open source dependencies scanning tools in CICD pipelines

3.Introduction of tools for scanning the production(Live) environment for any security vulnerability

4.Introduction of tools for logging and monitoring the production environment

WHY DEVSECOPS IS IMPORTANT?

DevSecOps strategy introduces security at various stages of application development life cycle. This makes every stakeholder responsible for secure application deployment. Earlier, application security was thought as roadblock for deployment as application used to be scanned for security post UAT sign-off and in many cases people used to bypass security testing to achieve the business goals and timelines. Automating security in DevOps makes it mandatory to follow each and every security testing and controls in the application development life cycle.

Many developers use lot of open source components in the code without understanding the implication of inherit vulnerabilities in the used open source components.Various security controls/tool used in DevSecOps take care of such components by highlighting any issues in such open source components.

More automation from the start reduces the chance of misadministration and mistakes, which often leads to downtime or attacks. This automation also reduces the need for security architects to manually configure security controls.

Shrinivas Singh

ONLINE BUS PASS ISSUE AND RENEWAL USING QR CODE

Online bus pass generation system would be useful for the passengers to get their bus passes online instead of standing in long queues to obtain their bus passes.

KEYWORDS
Login, Apply, Payment, Generation, Notification

ABSTRACT

This project aims at providing an effective solution for maintaining Bus pass information using database. The system has two logins, one for user and the other for admin. This system is expected to perform functionalities like accessing basic information for authentication, verification and provide Bus pass for the passengers without placing them in long queues. The official in the bus, will verify the authenticity of the pass by scanning the Aztec code provided on the pass with a electronic device.

INTRODUCTION

Travelling would require the passengers to buy the ticket during the course of travelling. This

may be sometimes difficult due to the crowd and people may not buy the ticket for travelling. Also, the people require to travel longer distances and the cost of the ticket may be higher. For this reason, the government provides the bus pass facility to the people so that, they can avoid buying the ticket each time they use the bus services for travelling.

The bus pass issue system that is currently in existence is a manual process in which students and other commuters are required to submit an application forms along with their personal details filled. These application forms are to be checked and then the bus pass is issued to the concerned passenger after the application form is verified.

This is a tedious process, which requires the people to stand in long queues to get their passes. The previous system leads to a lot of time wastage for the commuters. Also, the bus pass issue takes place in the current system, only for a limited period of time during the day that is until evening. The commuters may not be able to acquire their passes once the depots at the bus stands, once the counters are shut down in the evening. Hence we are proposing web based system that resolves almost all the problems faced by the commuters in the previous manua l process.

This method is already exist in some areas of India such as Andhra Pradesh only renewal and we are trying to upgrade this method by adding some extra features such as issuing ticket and a remainder as soon as the pass expires. This application is intended to provide a pass for the new applicant and he can renew that pass once it gets expired. Payment can be done online using credit card. Through this application even public can view bus time table at any time with source and destination without logging in.

PROPOSED SYSTEM

Proposed System

The proposed system is intended to overcome the major drawbacks of the currently existing manual system. The features are as follows

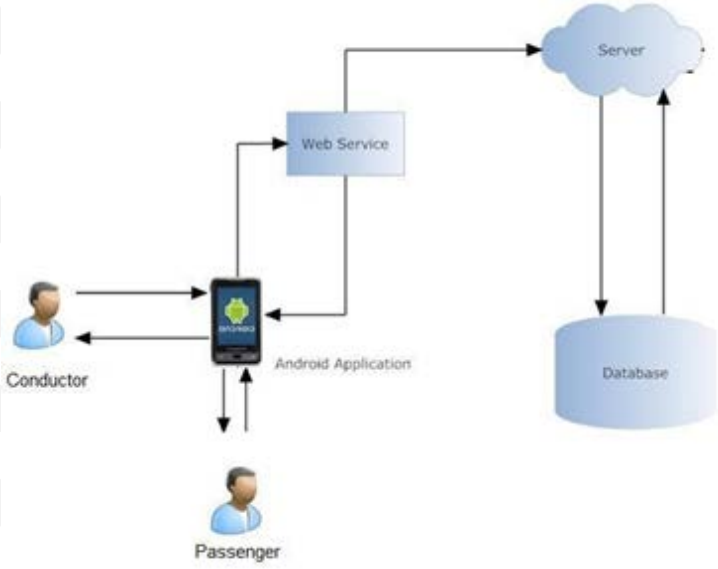


Figure 1: Architecture system

1.This online bus pass software system will help students and commuters get bus passes and eliminate the need of standing in queues for passes.

2.Public can find all the bus pass related information along with timetable without going to the bus station.

3.Minimum time is required to process the details submitted and to generate the bus pass.

4.Renewal can be done online with the reference identification that is provided during the registration of the pass.

Modules included in the System

Passenger Module:

1) Passenger has to register.
2)Passenger can login into application.
3)After login passenger can view his/her profile.
4)Passenger can book ticket/pass.
5)Passenger has to pay online.
6)After paying QR code is generate he/she can see the generated QR code.

Conductor Module:

1)Conductor can login into application.
2)Conductor can scan the QR code using scanner.
3)After scanning conductor can see the Passenger's details.

CONCLUSION

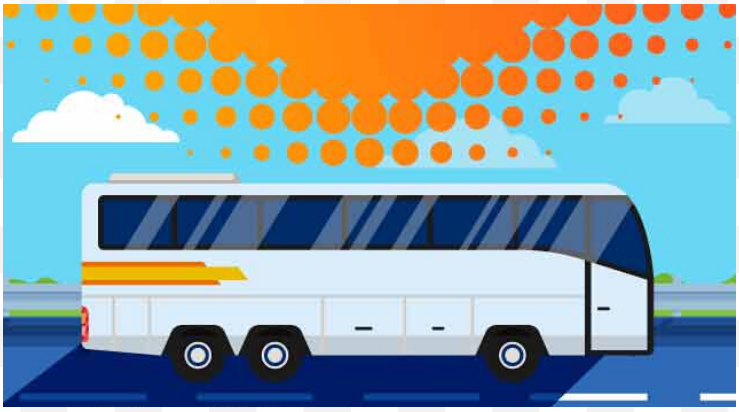
QR-Code technology would be more easily integrated into public transport system infrastructures.

QR-Code provides all the features which make it a valid technology for mass public transport ticketing: cashless transactions at high speed, stability and simplicity. The proposed solutions based on combinations of standards and technologies using current contactless infrastructures. Our proposed application will be feasible for novice users as well as professional users. The proposed application will be used for the booking a ticket without standing in queues for travelling through local trains and it's easy for ticket checker to check whether ticket is valid or invalid. This android application reduces the manual work of both ticket bookers and ticket checkers. It is basically the transition from a manual to digital system for ticket booking of as well as ticket checking of bus.

Thus the problem associated with BUS train ticket booking has almost solved.

ACKNOWLEDGMENT

The authors would like to acknowledge the reviewers for their valuable comments, which contributed to the clarity of the research and in particular for their suggestions for the statements of applications.



Aastha Shah
Sakshi Madkholkar

Augmented Analytics: The Future of data and Data Analytics

The term data basically refers to the individual units of information. Handling such big amount of data is today the essential need of any organization or business. So something termed as Big Data then came into existence and gained much importance. Big Data is defined to describe a collection of data that is huge in size and yet growing exponentially with time. In short, such data which is so large and complex that none of the traditional data management tools are able to store it or process it efficiently. Big data is found in three forms: Structured, Unstructured and Semi structured.

Today, the process for preparing and analyzing data, interpreting results and using those results to streamline business processes is a manual, time-intensive job.

As data volumes increase and become more complex, it becomes ever more difficult to identify the most accurate, relevant and actionable findings.. An approach that utomates insights using machine learning and natural language processing, augmented analytics is changing this manual process and marking thenext wave of disruption in how companies create, interpret and share data.

With this transformative approach, data analytics professionals will spend less time trying to understand data and more time finding the most relevant insights to share with executives and key stakeholders than with manual approaches, enabling companies to act in a more responsive, agile manner.

Augmented analytics is still an evolving field. At this point, most companies are not adopting augmented analytics for the entire end-to-end process but are starting with one small piece. In the next few years, I expect that that will change, and organizations will be using augmented analytics for the entire data analytics lifecycle. For now, it's important to know the significant benefits augmented analytics provide: speed, democratization and broad adoption. With these capabilities, enterprises are better equipped to anticipate customer needs, improve business processes and prepare themselves for competitive success in the future.

BENEFITS OF AUGMENTED ANALYTICS:

1. Accelerates data preparation and discovery.

2. Democratizing data analytics.

3. Enables adoption of actionable insights..

Priyank Singh

ARTIFICIAL INTELLIGENCE

HISTORY:

The idea of lifeless object coming alive has been around for quite a long time. Ancient Greeks had myth about robots or machines that did manual work. The start of present AI technology can be traced back to classical philosophers' attempts to describe human thinking as a symbolic system. But the broad spectrum of AI wasn't formally founded until 1956, at a science conference at Dartmouth College, in Hanover, New Hampshire, where the term "ARTIFICAL INTELLIGENCE" came to existence.Various scientists and professional which attended the conference were very optimistic about the future of AI."Within a generation the problem of creating 'artificial intelligence' will be solved "quoted an ambitious MIT scientist Marvin Minsky.

However achieving artificial intelligence wasn't that simple of a task. After several failed attempts despite government funding, interest in the field of AI dropped severely in period between 1974-1980 leading to period being known as 'AI winter'. However despite low levels of progress the British government seemingly kept their faith and kept funding in order to compete with the efforts made by the Japanese. Later in 1997 IBM's 'Deep Blue' defeated the chess grandmaster Garry Kaspakov.This was one of the foremost success in the field of AI.

WHAT IS AI?

At its core, AI is the branch of computer science that aims to answer Turing's question in the affirmative, the question being "Can machines Talk?". It is very hard to replicate or simulate human intelligence in machines. The never-ending

rise of AI has opened door to loads of debates, questions and discussions. All of these have ensured that no single definition of AI has been coined that can be universally accepted. The general definition of AI is “Machines that are intelligent” but this leads to further questions as it does not explain what artificial intelligence is? What makes a machine smart? Artificial Intelligence can be broadly categorised into two categories:

Narrow AI

Sometimes referred to as "Weak AI,", this kind of artificial intelligence operates within a limited context which handles one task at a time and is a simulation of human intelligence. Narrow AI is more often designed for performing a single task extremely well and while these machines may seem intelligent, they are operating under far more constraints and limitations than even the most basic human intelligence. Some examples of AI include:

- Google search
- Image recognition software
- Siri, Alexa and other personal assistants
- Self-driving cars
- IBM's Watson

Artificial General Intelligence

AGI, often referred to as "Strong AI," is the kind of artificial intelligence we see in the movies, like the robots from West world or Data from Star Trek: The Next Generation. AGI is a simple machine fitted with general intelligence and, much like us human beings, it can apply that intelligence to solve any problem. Much of Narrow AI is powered by sudden discoveries in ‘Machine Learning’ and ‘Deep Learning’. Understanding the difference between artificial intelligence, machine learning and deep learning can be often confusing. The creation of a machine with human-level intelligence that can be applied to any task is the Holy Grail for many AI researchers, but the quest for AGI has been fraught with difficulty.

FUTURE OF AI:

Artificial intelligence is a upcoming and flourishing technological advancement, from software’s like Alexa, to basic human command system. Every aspect of these technologies has been put to its best use . People need this technology in enterprises and even households. Artificial intelligence has made its way through all sectors of society. Every person is using this technology in some or the other way. Moreover, it is modified for different age groups in the society and industrial sectors.

The future of artificial intelligence is more fascinating than ever. People seem to have indulged in this debate for years now. Some researchers say robots will be the future and they will replicate humans completely. Another opinion shared is a human dependency on this sector will increase manifold. However, one thing is for sure, artificial intelligence is progressing faster than human can imagine, and no one knows what might come next.

BLOCKCHAIN TECHNOLOGY

ABSTRACT

Blockchain is a new technology that has emerged with the appearance of the Bitcoin, which has added a new way of dealing financially. Based on the success of this technique with the idea of Bitcoin, the technique has been relied upon and applied gradually in various activities, whether governmental or private and received the confidence and satisfaction of customers. The paper highlights the challenges ahead and opportunities in this Modern technology that is all set to develop our digital world.

KEY WORDS

Blockchain, Bitcoin, Blockchain Structure, Classification

INTRODUCTION

Blockchain technology is one of the approaches that has the possibility to enhance decentralization, transparency, equality, and responsibility on the internet. Blockchain is a distributed database of records that can be either public ledger of digital issues or transactions that got achieved and has been shared among participating parties across a large network of untrusted participants. It stores data in blocks and it can verify information which are very difficult to hack. It avoids the requirement of a third-party verification and thus deactivates any sector that leverages it traditionally. Using blockchain technology to store data can provide

higher security compared to storing all data in a central database. The use of these technologies in Bitcoin "mining" was ground-breaking in the data storage and management side, harm from attacks on a database can be prevented.

Further, since the blockchain has an openness attribute, it can provide transparency in data when applied to an area requiring the disclosure
of data.

FEATURES OF BLOCKCHAIN TECHNOLOGY

A few things happen when you allow anyone to participate inthe operation of a blockchain.

(1) Collaboration among competitors

Entities that wouldnormally be in competition with one another have a common platform in which they can openly collaborate without fear that one will surreptitiously circumvent the rules.

(2) Flexibility

It neither matters who the participants in a blockchain are, nor whether they remain the same over time. Therefore, applications can be built in a way that the composition of the stakeholders is continuously shifting.

(3) Resilience

An open invitation leads to a diversity of participants, each of which has a full copy of the blockchain running the application. This redundancy makes the system resilient to attacks and resistant to censorship.

(4) Distributed Verification

Programs and data reside in multiple locations and can be verified by many parties independent of one another.

THE STRUCTURE OF BLOCKCHAIN

A block contains main data; the hash of the previous block, a hash of current one, timestamp and other information. Figure 1 shows the structure of block.

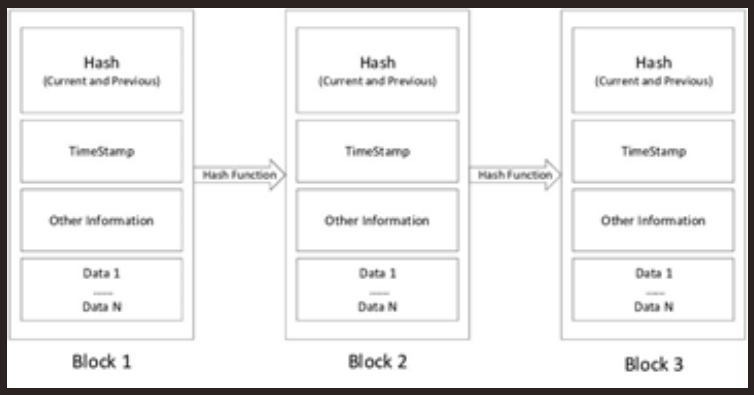


Figure1: Structure of Blockchain.

Main data:
Depending on the kind of service in which this blockchain is applicable, for example, transaction records, contract records or IOT data records.

Hash:
When a transaction executed, it had been hashed to a code and then transmitted to each node. As it could contain thousands of transaction records in each node's block, blockchain used Merkle tree function to produce a final hash value, and also Merkle tree root.

Timestamp:
Time of block produced.

Other Information:

Like signature of the block.

BITCOIN

In a seminal white paper in 2008, at the height of the US subprime mortgage crisis, an anonymous author, or group of authors, using the pseudonym Satoshi Nakamto, described the implementation of a blockchain that supported the creation and use of virtual currencies. This virtual currency was dubbed bitcoin. Unlike money, bitcoin is not issued by a central bank but rather created as a reward for peers in a peer-to-peer network who take it upon themselves to add a block of verified transactions to the existing bitcoin blockchain.

The bitcoin network consists of a group of globally distributed computers which are running open source software. When a transaction occurs, all the nodes in the system verify its authenticity. A set of the computers in the system, take it upon themselves to add blocks of verified transactions to the bitcoin blockchain in effect recording the transaction into a fixed distributed ledger.

USES OF BLOCKCHAIN

Blockchain has a large number of applications other than digital currency. The introduction of smart contracts opened the door for many financial applications using blockchain. In this section, we will discuss some of the most prominent use-cases of the blockchain.

Financial Contracts

Blockchain offers community verification that means that the terms of the contract should be known to everyone and cannot be retreated on. Thus, providing security to counterparties engaging in financial contracts.It is also, in theory at least, fixed, so providing a permanent and public record of all the contracts and what happened in them that can beused by regulatory organizations to understand the events in the market.

Asset Tracking

Another possible use-case for blockchain is as an asset tracking tool for ascertaining proof of ownership or source of a particular asset. The presence of stolen goods in the international supply chain is a problem that needs addressing. It is required to have a system which can be viewed by public, fixed, verified records of ownership that can be examined at any time to determine the source of any particular item.

Payment System

It is possible to use blockchain to implement payment systems in currency. This is a natural extension of its ability to manage payments and transaction in cryptocurrencies.

Digital Identity

Just as blockchain can be used to track ownership and source of goods, it can also be used to store the identity of people. Imagine that your passport is stored on a blockchain and the visas you get and your entry and departure from countries are recorded as blockchain transactions.

CONCLUSION

This paper has discussed the blockchain technology along with some of its important advantages.

The technology is still improving with lot of fields for different areas and industries and is set to change the world's manner.

But it is not free from challenges, some of them have been highlighted too. From the study above, it could be concluded that blockchain helps removing the involvement of third party in any transaction.

It can be implemented in the different sectors to avoid fraudulent and forgery activities.

Aastha Shah
Rohan Sharma
Janhavi Shetty

ARTIFICIAL INTELLIGENCE

NEW OPPORTUNITIES WITH ARTIFICIAL INTELLIGENCE!

ABSTRACT

Artificial intelligence is a very important aspect of robotics. It is collectively an attribute of a computer, robot, or other device capable of performing functions such as learning, decision making, or other intelligent human behaviours. Robotics is the field concerned with the connection of perception to action. Artificial Intelligence has a central role in Robotics if the connection is to be intelligent. Robotics challenges AI by forcing it to deal with real life objects in the real world. Robots combine mechanical effectors, sensors, and computers. AI has made significant contributions to each component.

INTRODUCTION

John McCarthy brought up the term artificial intelligence in 1956. AI is widely used nowadays. Artificial Intelligence is a science and engineering of making machines. It is an intelligence exhibited by machines, rather than humans or other animals. The field of AI research defines itself as the study of "intelligent agents": any device that perceives its environment and takes actions that maximize its chance of success at some goal.

Artificial intelligence is a very important aspect of robotics. The output of an AI algorithm can be used as the input to another programme or physical machine which executes a task, such as a robot. Robotic challenges AI by forcing it to deal with real objects. Robotics and AI augment and amplify human potentials, increase productivity, reduce time and are moving from simple reasoning towards human-like cognitive abilities. Artificial intelligence in robots gives companies new opportunities to increase productivity, make work safer, and save people's valuable time.

ARTIFICIAL INTELLIGENCE APPLIED IN ROBOTICS

Artificial intelligence in robots gives companies new opportunities to increase productivity, make work safer, and save people's valuable time. Substantial research is being devoted to using AI to expand robot functionality.

Commercially available applications include the use of AI to: Enable robots to sense and respond to their environment. This vastly increases the range of functions robots can perform. Optimise robot and process performance, saving companies money and time. Enable robots to function as mobile, interactive information systems in numerous settings from public spaces to hospitals to retail outlets, saving individual's time. Intelligent robots can make work safer and more satisfying. Robots are assuming an increasing range of jobs that are dangerous for humans, such as cleaning toxic or infected environments. AI expands the potential for robots to share tasks or processes with workers, taking on those parts of the task or process that are unergonomic and repetitive, such as lifting, fetching and carrying. These applications do not depend on AI, but AI technologies enable the robot to work effectively in unpredictable or rapidly changing environments.

RESEARCH AND DEVELOPMENT IN AI FOR ROBOTS

The main areas of focus of AI research in field of robotics are:

1.Expanding picking capabilities to deal with objects that are not rigid or are not in static locations.

2.Expanding robot mobility to work effectively in nonstandard environments.

3.Enabling control of robots through verbal commands and gestures. Making robots easier to programme: Robots can already be programmed by physical demonstration. Research is ongoing in applying AI to enable robots to learn by watching video demonstrations, and by independent trial and error. Reducing robot programming time and costs will increase robot adoption by small-to-medium sized companies, making them more productive.

APPLICATIONS OF AI AND ROBOTICS

Sense-and-respond: Traditionally, robots have been able to pick up objects in a pre- programmed trajectory in which the object must be known and in the expected place. Through machine learning, one of the technologies classed as AI, the robot can teach itself in a very short time how to pick up an object it has not encountered before, applying the appropriate level of force.

Mobile Information Robots: Mobile robots are being used as information booths to assist customers in environments such as hotels, hospitals, airports and shops. They can answer questions, lead customers to requested products or locations and can video-link the customer to a human service agent.

At the moment being, the number of robotics fields is nearly uncatchable, since robot technology is being applied in so many domains, nobody can identify how many and where they are. Some more applications of artificial intelligence and robotics are Industrial Automation Services for the Disabled Vision, Systems Planetary Exploration, Mine Site Clearing, Law Enforcement and many others.

ADVANTAGES OF AI WITH ROBOTICS

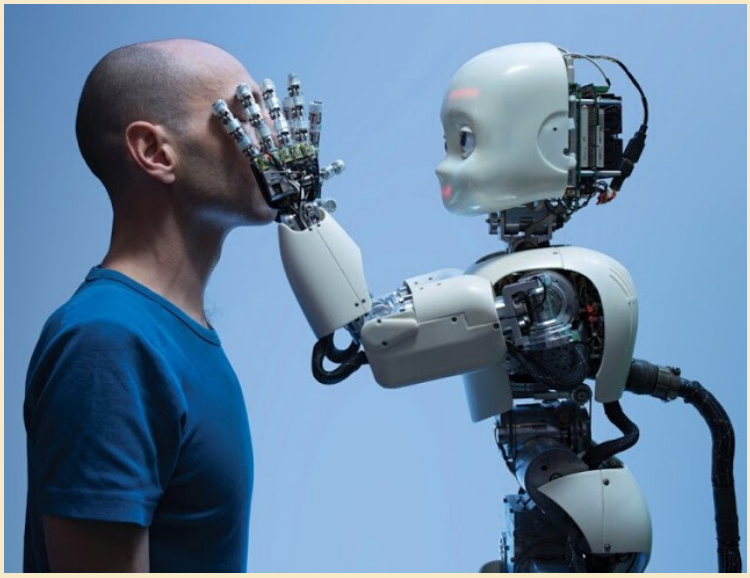
Errors are reduced and the chance of reaching accuracy with a greater degree of precision is a possible. Increasing the integration of A.I. tools in every day medical applications could improve the efficiency of treatments. It can avoid cost by minimizing the risk of false diagnosis.

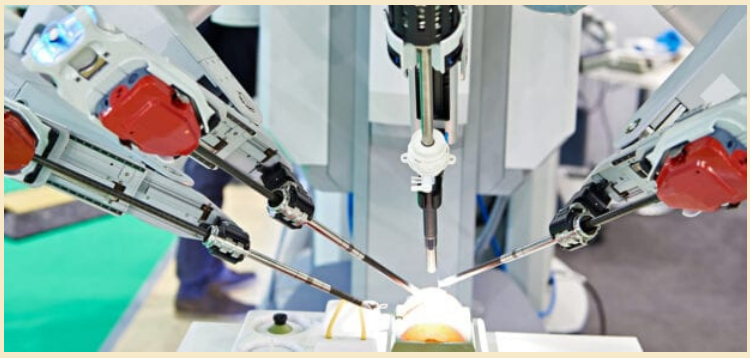
CONCLUSION

In the last two decades Robotics has literally exploded, both in terms of

research and applications. It has invaded the people's imaginary and almost all of the existing markets, up to the point that, on one side, we can spot at robotics news each single day and, on the other, Robotics is about to reach a market slice of 100 Billion dollars. The development tendency of AI is becoming open-minded and popularized as reflected in reduced self-references rates over time.

Finally, we explore the inner structure of this diverse area and conclude that the area consists of various topics. There are both differences and connections among them. These findings reveal the hidden patterns of AI in the 21st Century. They also provide scientists with new opportunities to improve the comprehension of AI with the ultimate goal of forging a better world.





Rohan Vishwakarma
Smruti Singh
Hetansh Shah
Pratishtha Singh

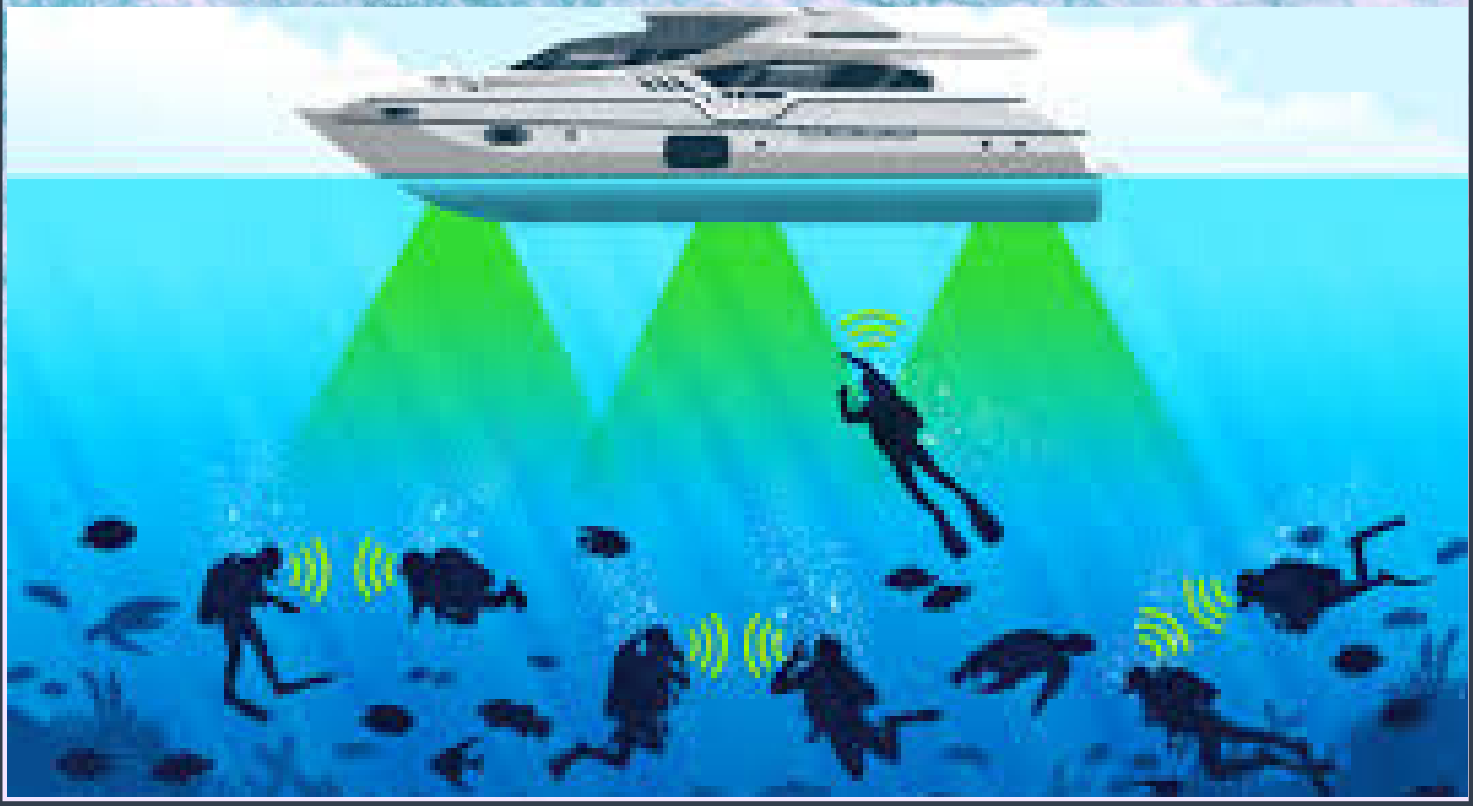
AQUA COMMUNICATION

ABSTRACT

Sensor networks are beginning to revolutionize data collection in the world, negligible work has been done to explore how sensor networks work underwater. Wireless communication, dense deployments self-configuration, local processing and maximizing the utility of any energy consumed. The primary application is seismic monitoring, with alternative applications including assistance during below water construction, pipeline and leakage monitoring, biological data collection, or underwater robot communication. Sensor networks ideally consist of many battery-powered nodes, widely deployed in an area for close observation and longterm monitoring.

INTRODUCTION

While wireless communication technology today has become part of our day-to-day life, the idea of wireless communications below water may still seem far-fetched. However, research has been done by scientists for over a decade on designing the model for wireless information transmission underwater. Significant progress has been made in atmospheric sensor networks to revolutionize sensing and data collection. To bring the pragmatic idea of long-lasting, dense sensor networks to the water environment, there is still a strong need to develop cost efficient and power efficient acoustic modems for close range communication. This article explains about Aqua



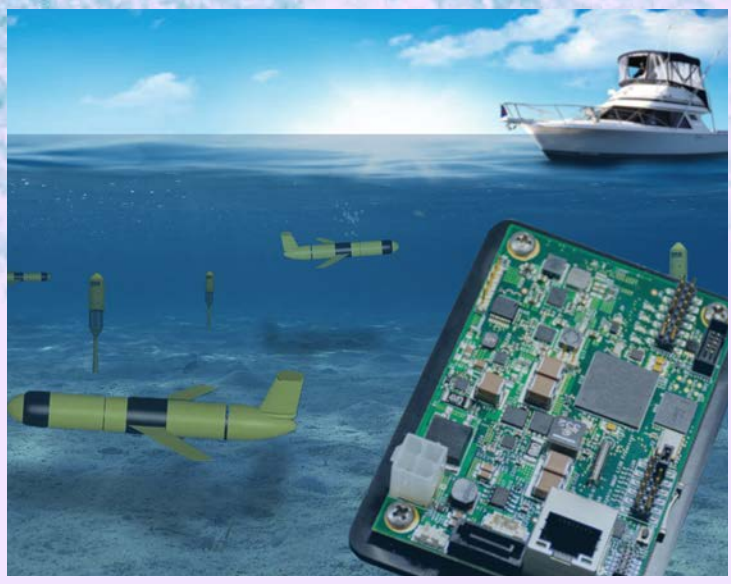
communication using a modem and presents designing and development of such a model. The below water acoustic channel presents strong challenges to the design of data communication networks.

Besides severe multi-path reflections, there can be bend in propagation paths due to discrete temperature distribution and numerous disturbances, such as bubbles and sound from man-made objects.

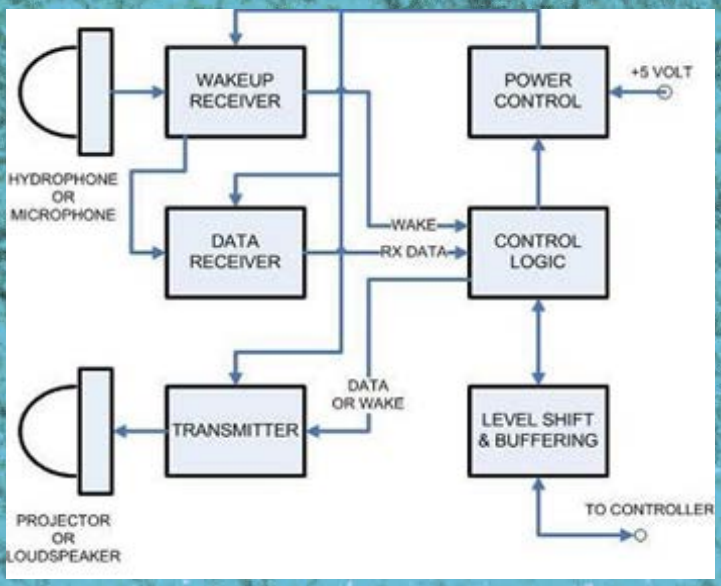
A penalty of this approach is that individual modems become expensive and power consuming, making use of hundreds of modem-equipped sensors economically not affordable.

We, therefore, explore a complementary path that emphasizes simple but numerous devices that benefit from dense sensing and shorter-range communication.

In addition to simple node-to-node channels due to close range, higher-level approaches can compensate for channel problems through methods such as routing, link-layer retransmission, and application-layer coding.



DESIGN



Objective is to design a below water modem to bring the characteristics that are being exploited in atmospheric sensor networks underwater. Primary goal is that the modem be cost efficient and affordable to make it feasible to purchase and deploy numerous sensor nodes. A corollary is that we need only close-range communication since wide-range communication can be attained by multi-hop routing over many individual nodes.

Actually, these choices reinforce each other, as working only on short range communication means we expect to avoid many of the difficulties faced in long-range, greatly simplifying the modem design. Target communication range is 50Km. The less power consumption operation is to allow long-lived monitoring, support for higher level protocols in software, and design for expected channel characteristics.

The design uses several methods to accomplish low power operation. To trigger the more expensive data receiver. When there is no communication activity, nodes can switch off most components except the wake-up receiver. The modem

hardware is split into three main parts: a wake-up receiver, a data receiver, and a single transmitter.

1 .Wakeup Receiver

The main goals for the wakeup receiver are good sensitivity and highly reduced power consumption. The only purpose of the receiver is to monitor the total energy level present in a thin band of frequencies and to generate an interrupt. We have taken 18 kHz as the frequency for the wakeup tone. This is an attractive frequency based on the background sound levels, as well as the attenuation characteristics in the deep water; both factors are dependent on frequency.

This frequency also lies in the normal audio range (20-20kHz) and allows the usage of standard audio hardware and software. Our selected bandwidth for the wakeup receiver is about 300 Hz. There are several possibilities to produce such a filter L/C with passive inductors and capacitors, Active RC using operational amplifiers Digital an ADC followed by a DSP. The need for reduced power argues against the active RC and digital designs.

2 .Data Receiver

The data receiver is a conventional design based on a commercial Frequency Modulation intermediate frequency demodulator chip, the Philips SA604A. Whenever the data receiver is switched on, the first stage of the wakeup receiver is also started. Due to the channel characteristics in the underwater environment, we are sending wideband Frequency Modulated wave.

First, we use a simple, single pole low pass and high pass filter to couple between the stages of the chip . A slim band design typically uses an LC resonator or ceramic band pass filter.

3 .Transmitter

The transmitter uses a Linear Technology low power oscillator as a voltage controlled oscillator (VCO). The oscillator output feeds into a Texas Instruments Class-D Audio Power Amplifier. This is capable of delivering 2W into a 4 Ohm load. By selecting lower gain we lower the output power level but extend battery life. We believe that the RSSI and variable output power together will help in the development of energy efficient communication protocols. The transmitter efficiency ranges from 85 to 95 percent.

4 .Transducers

In the ultimate application of below water communication, we will use piezoelectric transducers. These high impedance machines, and the modem circuit design is for high impedance operation. At the moment, we are using hi-fi tweeters, both as a transmitter and as microphones. Switching over to hydrophones will only require replacing the input and output impedance matching networks.

5 .Power Control

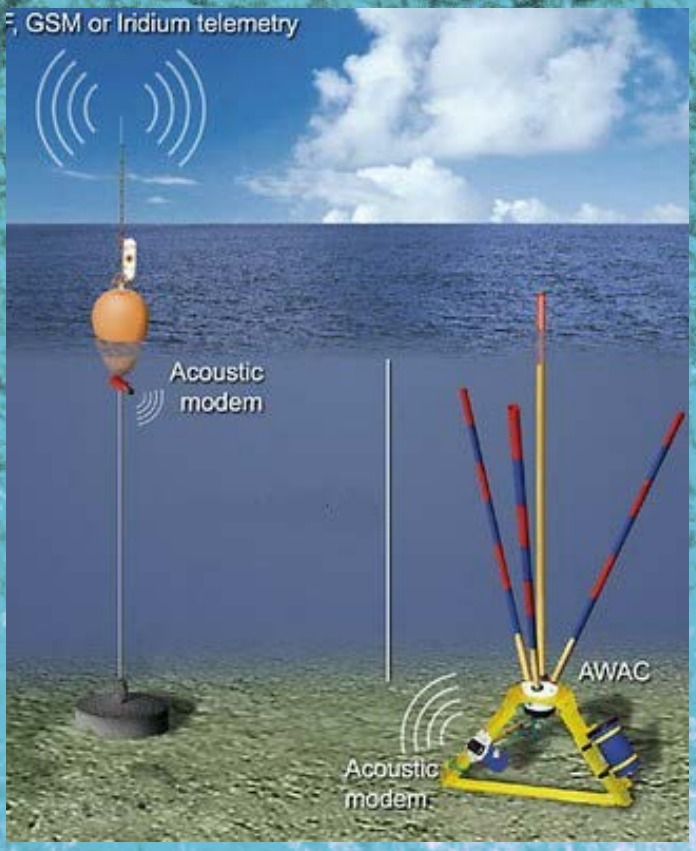
The modem operates from a single 5V supply. The choice of the supply voltage is driven by the double gate FETs used in the wakeup receiver. These are operated from a 12V supply in their intended application. While the modem is normally a 5V design we need to interface with microcontrollers.

The modem design includes two features to allow interfacing to any voltage level from 2.8 to 5V. Digital input and digital outputs are tied through a Texas Instruments voltage clamp which restricts all digital output signals to the micro-controller supply voltage.

CONCLUSION:

This article describes work on designing and developing a power efficient acoustic modem for below water sensor networks. The rationale behind design is to support huge scale, long lasting, and dense sensor networks powered by batteries. However, the entire idea is still being worked on. Especially on current devices which only make use of transducers for atmospheric communication.

The plan is to test this device with pragmatic underwater communication in the upcoming future.



Vikas Tiwari

JOB PORTAL

All of you at some point of time in your engineering life must have heard the term 'Job Portal'. Sometimes from faculties or sometimes from your own friends.

SO WHAT EXACTLY IS A JOB PORTAL?

The Textbook Definition: Job Portal is a platform that joins recruiters and the job seekers to complete their goals and requirements. Recruiters look for a right candidate who has the right qualification to handle the responsibilities efficiently. On the other hand, job seekers want a job where they can apply their skills and knowledge to grow their professional career.

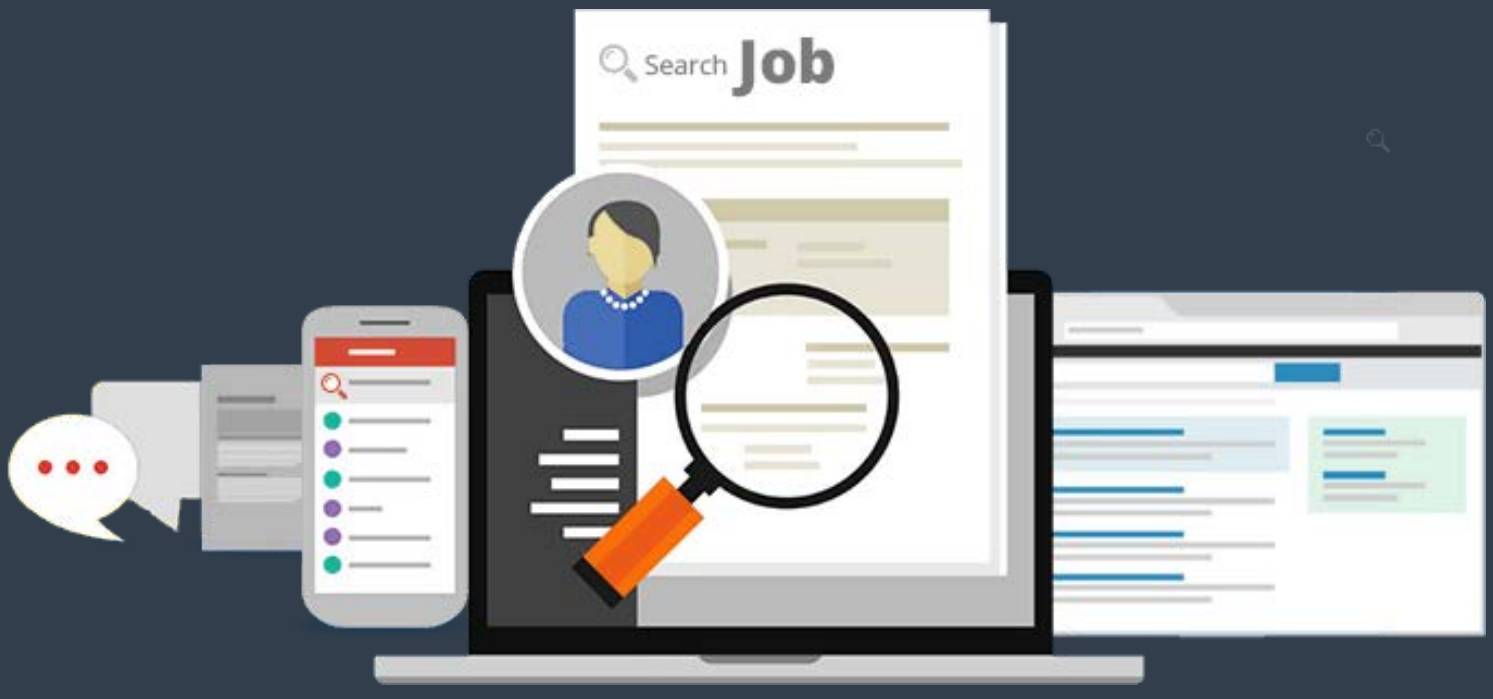
An Easier Definition: Well, Job Portal can be termed as a bridge between potential job aspirants and Companies which are interested in hiring them.

WHAT ARE SOME OF THE FAMOUS JOB PORTALS IN INDIA?

There are many job portals spread across various parts of the country, but the more renowned ones could be Naukri.com, Shine.com, Monster India, LinkedIn etc.

WHAT IS THE IMPORTANCE OF A JOB PORTAL?

In any sector, goodjobs are generated



generated does not complement the huge growth in the amount of potential candidates. This creates a huge mess within the traditional system of recruitment where companies visit colleges or experienced candidates appear for interviews hoping for a change in their job.

With the amount of pressure and competition around candidates, they opt for jobs which are not preferred by them or in which the growth they can achieve is stagnated. This is where Online Job Portals come into picture.

Using such an application a candidate can apply to a specific type of job in which he/she can apply their knowledge, acquire new skills and grow as a professional.

On the other hand, recruiters try to fill their job openings with the right candidate who has the perfect aptitude and qualification to handle the responsibilities efficiently. Job portals are like a market place where the demand meets the supply.

WHAT ARE SOME OF THE ADVANTAGES OF A JOB PORTAL?

Wide Reach

The main advantage of a Job Portal could be the reach it gives to its users. A candidate sitting in his cubicle could get access to various jobs around the globe to which he/she can apply. The companies would also get the liberty of choosing candidates from around the world.

Multiple Options

Unlike the traditional system, either side has plenty of options to choose from when it comes to candidates/job.

Candidates need not worry if they get rejected from one job as there would always be new openings. Companies would also get the option of filtering candidates according to their requirements for the job.

Easy to Search

Job portals make it very easy to search for jobs. It filters out irrelevant jobs. When the user enters his qualification and job preferences the system would automatically filter out the right kind of jobs for him.

On the other side the portal would match the requirements of the job openings and sends the information of specific candidates based on that.

Cheap

Hunting for a job on the internet is much more convenient and cheaper as compared to the traditional system.

Candidates can upload their resume for free and get access to jobs across the globe without having to pay for it.

Secure

All the data uploaded by the user and the searching done for jobs is kept confidential. These portals do not share user information anywhere which is why they are secure.

WHAT IS THE FUTURE SCOPE OF JOB PORTALS IN INDIA?

As we all know unemployment is a huge problem in our country. This is where in the future job portals will capture the markets. Companies are more interested in hiring talented individuals and also not spend a lot during the recruitment process. A well established Job portal thus makes it very easy for a company to achieve this. In turn this also helps individuals who might not have physical access to better companies but have the talent to get into those companies and excel.

Rohan Kuckian

INTERVIEW

Vikas Jalan
Product Delivery Expert

Q1) WHAT PROFESSION ARE YOU INTO AND WHAT IS IT ALL ABOUT?

ANS:-So, What I work into is a Payment Hub which is installed into any bank. It may be a Normal general bank like a core bank or an investment bank but, it's a payment hub which is responsible for payment processing which we deal with. So, there are two types of payment the first category is low value payments. Low value payments are for example who's value is like within hundred dollars. A fine example can be paying your telephone bills, electricity bills, etc. And there's another category of payment which is higher value payments which is into millions of dollars.

Overall, the PaymentProcessing Hubs have various entities/channels from which they receive payments after the processing they send the payments we call it Distribution so they distribute the payments for settlements. One thing is initiation and the other is settlement so, when we are doing this distribution it means we are sending it to another party. Every transaction has a Debitor and Creditor. Initiation might be done from Debitor's side but unless it reaches to the creditor it won't be settled therefore this Distribution has tohappen which is done by these hubs. So this is where Payment Processing Hub does the Validation and is able to distribute its payment to agency banks or RTGS or ACH or to bilateral partners and do the Validation.

So,this is all about payment processing hub that it is whole one hub which is located in every bank and which has to be there as it looks after the payments from whichever channel it is coming and where its gonna appear.

Q2) SO, IF I AM HAVING AN ACCOUNT IN AN AGENCY BANK AND I WANT TO SEND SOME MONEY TO IT SO, WILL IT ROUTE THROUGH THE TIE UP BANK AND THEN GO THERE?

ANS:- Yeah. So, basically you are tying up to this bank and I don't have the facility to directly transfer to outside country because of the rules and regulations and that I need to take some special approvals. So, I'll become your agency bank and whatever transaction will happen that will happen on your name. But my customers should get benefited from them. So, they are kind of agencies. And these big banks will charge something from those agency banks obviously, right. So, I'll give you a simple example like for example Citibank or Deutsche Bank and Standard Chartered Bank so now they have alliance with Swift and it is one of the international messaging platform for transfer of messages. And especially banking messages these financial institutions which use swift platform for exchanging international banking messages.

But If you want to get registered with Swift and transact over it then it takes a lot of money as they charge on per transaction basis and they provide some unique number to every bank which is called BIC. Only those Banks which are registered with them will get a BIC and it means then they will be able to transfer payment messages or whatever type of messages they want with other banks throughout the world because they are registered and they've got a BIC which is unique in the world.

Q3) SIR, YOU SAID YOU WERE IN THE BFSI DOMAIN. SO, BASICALLY WHAT IS THE DOMAIN OF BFSI AND HOW DOES THE PAYMENT HUB HELPS IN INSURANCE IN HERE?

ANS:- See, when I say that payment hub is in banking domain it does not mean particularly it has to interact to insurance too. BFSI this term stands for Banking, Finance, Services &Insurance i.e all these 3 domains comes in here. Normally, every software company categorize this domain as one horizontal and that's why this concept they call it BFSI. Now, In BFSI I am in banking. Banking also has further subdivisions that it may be retail banking or core banking or it can be investment banking or it can be payments or Trade or Collections. Well, I am into Payments. Now, in payments as I previously mentioned there are High value and Low value. So, BFSI is just a term used for putting together these three domains and there is no relationship as such between insurance and this as they are just categorized. So it's easy to say that if I am from insurance background or banking or financial then I'm working In BFSI domain.

Q4) WHAT ROLE AT YOUR ORGANIZATION OF DELIVERY MANAGER CONSULTING ENTAILS? WHAT ROLE DO YOU PLAY?

ANS:- Well, since we deal in product i.e we have our product and it's global. It's a multinational company. So, what it does is it is having clients across the world and clients means banks as banks are the ones who require our payment processing hubs. So a delivery manager what it entails is that whatever the clients which are already having our products should be met with their changing demand. Our payment processing hub was there in the bank in the last seven years. So then, Bank will come to us that now they want that our payment processing hub should be able to cater to their mobile payments also the messages which it receives through mobiles should also be handled and then distributed.

So, Distribution will happen to a new system. Therefore, we have to change our systems according to their requirements. Once we get the requirements, we look after its size, the impact of it, changes to be done so that it fits into the architecture of the product, that it does not affect the other functionality of the product. After that we have to basically do the estimation of cost, the people who will be working on that like it requires some business analysts, testers, developers, system admins or some others. So, I do the costing. Then that has to go to the approval process and then it goes to the bank. Once they agree, we start working on it. So, right from the starting till end of the delivery it's my responsibility that delivery has to happen perfectly, on time, within budget, with all the requirements or I would say with the quality.

Q5) SO WE HAVE LOTS OF DETAILS REGARDING ONLINE PAYMENT. CAN YOU TELL THAT WHY AND DO WE REALLY NEED THIS CHANGE IN PAYMENT METHODS?

ANS:- Change in the payments that is a need. As the economy is growing and the world is shrinking when I say shrinking that means it's easy to transact within the world. Earlier, apart from the cash the most prevalent method for payment within the

country was Cheque. Later, we started having online internet banking where we can transfer online. Now we are having so many payment wallets which are connected to your bank account and you have this facility on your mobile phones and you can pay to anyone, anywhere with benefits that you don't have to be in front of the system or you don't have to issue a cheque. So, the main reason why the change has come is to ease the payment process in first and that is one of the biggest reasons. Secondly, now no one wants to wait for multiple days to have payment as for cheques it takes Two days for its clearance. Then, came NEFT but they did take two three hours. Now we have real time settlement where it happens instantly. So, what I think why the payment things are evolved is due to ease of payment, faster payment and secure payments. Thirdly, Security is a very important part. You can transfer the money through some other means too but if that is not secured You will not use it. So, security is also a very important means. That apart from being fast and easy. It should be secure. Okay.

Q6) SO, HOW IS THE SECURITY IN THE PAYMENT TRANSACTIONS MAINTAINED? CAN YOU ELABORATE IT PLEASE.

ANS:- There are various mechanisms through which security is maintained in the payment transactions right from the user interface to the bank-to-bank transfers. When you talk about the user interface there is Encryption which is a very common. So when you have, for example a website through which a payment is done. Then, it has to send out the account information, the amount, date of transactions and more related stuff. That will all go in the encrypted format to the bank. But, from bank to bank transfer they too have security mechanisms. For example, bilateral key. It's one of the mechanisms used in Swift that when one bank exchanges messages with the other; they have keys and if they match then only the transaction occurs. So, if the other party does not have the key or hacker who is coming in between trying to steal that message will not have that key so won't be able to open that message.

Messaging frameworks like Swift they do not use internet. They have their own network throughout the world. They are not on the public internet and That's the reason banks prefer those messaging frameworks as they have their own networks. So, that is also one of the reasons how they maintain the security by not using internet where anyone can access it or may edit the message. Yeah, so factors like separate lines, bilateral keys, private keys, encryptions, etc are the security providers.

Q7) TALKING ABOUT SECURITY IT SEEMS THAT DEPLOYMENT OF NEXT GENERATION OF PAYMENT GATEWAYS ARE AMONG THE LEADING PRACTICES IN THE CURRENT ONLINE BANKING INDUSTRY. DO YOU AGREE? IF YES PLEASE COMMENT.

ANS:- Yes, Security is the main aspect that is to be accomplished for the payment gateways. Talking about the real world example if you see in Nirav Modi's case what happened was one of the local branch of PNB issued a loan to him and then with some of his tie-ups with the international officials, the India PNB branch they transferred via Swift to their branch located outside but, the internal approvals happens locally that was one part and once the approval is received then someone can manually go into the other

system/application and enter the Swift payment that has to be transferred and the money will go there. So, overall there were two systems this one and the Swift one and there was a person in between where the manual intervention was there and that's the reason this fraud took place. Now, In payment processing engines which we deal with the international banks has; it also has the capability to manually enter payment but normally what happens is once the Core bank makes any approval then it sends the approval online as a message to the payment processing hubs then it creates a payment and is submitted to swift so there comes no manual. So, I would say one of the reasons for this lack of things is that if your banking system is not fully integrated I'm not talking from the outside but internally they should have good connectivity and if that doesn't happen then there are more lapses like this which may occur. So, security is not only from hacking and all that this is also one of the security aspect i.e end-to-end connectivity and also that others should not be able to modify internal things.

Q8) NOW YOU SEE ONE OF THE NEW TECHNOLOGIES WE ARE SEEING EMERGING IS THE BLOCKCHAIN TECHNOLOGY. SO, HOW CAN THIS TECHNOLOGY BE IMPLEMENTED IN THE PAYMENT GATEWAYS OR IS IT ALREADY IN USE?

ANS:- Blockchain is a pretty new concept. As, traditionally the banking industry is always little cautious of using any new technology unless it is well proven and that it is really safe. So, right now the acceptance of blockchain for payment is not great. But it will take some time. Like for example there is a Shared Company called Ripple which has started with the concept of a Shared general ledger. Otherwise generally what happens is that if one bank is transferring money to another bank then this information will be there only with three entities i.e the source bank, the destination bank and the intermediate or centralized agency and no one else will come to know what I'm transferring to you because it is just between You, Me and that government agency. So, General Ledger is centralized and is not distributed. In Blockchain it has to be shared General Ledger. So basically, if I am transferring the fund to you then all the people on the network will come to know; though the funds are been transferred to you only but everyone else will have a copy of that general ledger; which is the concept of blockchain here. And that's how they maintain the sanity of that transaction that it cannot be modified because everyone has a copy. As, I am aware of there is Ripple which is trying to use this but not many banks have come forward to this concept for payments as one of the reasons is Security. But, the benefit of this thing is that it's very fast, it's real-time. In Blockchain there is no chain as anyone who is registered can figure out its way and reach the destination. So, it is transparent, it is faster and it cannot be affected by the down time. But, just like any other new things it is currently having its acceptability low.

Q9) WHAT ARE THE CHALLENGES WE CAN LIKELY FACE IN THE FUTURE REGARDING THE ONLINE PAYMENTS IF SECURITY AND BLOCKCHAIN IS TAKEN INTO CONSIDERATION?

ANS:- See one of the biggest challenges is the volume of transactions. If you see the volume of transactions is increasing exponentially. Nowadays you can make payments from mobiles, through your bank transfer, you make it through e-wallets and all, so volume

is increasing. So now Banks are moving to the cloud for payment processing. So, Hardware scalability & performance is turning out to be a challenge. But, now with banks also accepting good to go to cloud that's because the cloud providers have gone extra mile and giving assurance and having extra features to have private cloud. But security, performance is still a big challenge which they need to get better at. Next, Flexibility is a very big thing.So, the payment processing hub should be configurable enough to meet the demands and the changing demands of the bank. So, system should be configurable and performance oriented. So, tomorrow if my volume increases the architecture of the payment processing hub should be scalable. The other big challenge is that the Banks also have to upgrade their software versions accordingly. So, having a right technological update is a very challenging thing because you invest millions of dollars in creating a product to a particular technology and say if 7 to 8 years down the line it completely changes that means you have to rewrite the product into a new technology. It's a big challenge for the service provider and then it becomes a big challenge for the banks as the banks cannot continue with the same. Yeah so overall, keeping pace with the market in terms of technology, having a scalable architecture, having a highly configurable system these are some of the challenges and the need of the hour.

Q10) WHAT ADVICE WOULD YOU GIVE TO THE BUDDING ENGINEERS AT TCET AND OTHER STUDENTS WHO WOULD LIKE TO WORK IN THIS INDUSTRY?

ANS:- First, I would say is keeping pace with the market is very important. The things which you are learning in your Engineering course so four years back by the time you come out it is quite possible that they may be outdated. If, you see java there are so many frameworks on top of that. If you just know core java you may not be good enough so, you have to do extra things apart from your curriculum. Yes but, whatever you are doing in curriculum is very important as well and there is no doubt that you should have a great percentile and scores because when the company's come to the campus the first thing they see is that on what criteria they should filter out the candidates and it is their scores. It has to be the best. So, once you do this, the second thing is that the market is more selective. This is a fact that they are not going to work in the same as they are going to have much more than that. For, someone like who is in the final year or maybe in the third year should see the options of kind of jobs, what other kind of skill sets, frameworks are required and are on trend and they should be familiar with those. And if there is a particular line they have selected then preferably they should do certifications on a good course on that. For instance, if you think that you want to go into the database technology and you want to go to Oracle RDBMS then do a basic certification in Oracle. It's always good to be in touch with the market. And if you already know that in which field you want to go, then better do some certifications by your last year so by the time you land up in a company you are better equipped with tools and skills which helps you to grow rather than after landing up in the company and then you trying to figure out things and stuff. Learning will always be there and in this industry you should always be ready as changes will always be there. Always keep on upgrading yourselves that is the need of the hour. Keep on knowing, growing & updating yourself is what I say to everyone.

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DEPARTMENT OF INFORMATION TECHNOLOGY

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.