PRAGNA – प्रज्ञा

ARISE AWAKE STOP NOT TILL YOUR GOAL IS REACHED

-SWAMI VIVEKANANDA

E-NEWSLETTER OF THE DEPARTMENT
OF COMPUTER SCIENCE
VOLUME II - ISSUE 1 AUGUST 2021

DEAN'S MESSAGE

I am delighted to bring greetings in this issue of the Computer science department newsletter. I want to start by acknowledging the great team of persons in the department who are making a difference in the lives of our international student population at Dept. of computer science, in the pursuit of excellence. As a team you have consistently demonstrated a keen attention to support the strategic priorities of internationalization at the department. I think it goes without saying that we are in a new era for post-higher education. As an institution, we are adopting new, innovative and creative strategies and models to guarantee a sustainable, successful future. In the next 3 – 5 years, as we focus on growth and sustainable development, my vision for international includes an enhanced enrolment framework and support system, greater and deliberate partnership development and student engagement. Among other things, this means offering students an education that is more affordable, personalized, and relevant. Institutions are not only grappling with better methods and innovations to accommodate students' needs, they are also struggling with economic pressures to define the value of a degree, increase course completion rates, and access to and provision of high-quality education. Internationalization of the department and an exceptional end-to-end student experience, in order to make Dept. of computer science the first choice for international students, remains paramount.

Our efforts are focused on being responsive to students' individual needs by providing consistent, high quality, timely guidance, services, and supports through knowledgeable, well-informed staff and engaging programs. I envision support for a community of learners connected to opportunities in our region, nation and beyond. Building relationships with our students and providing opportunities for them to build relationships with one another and with our communities is central to our work.

I am optimistically excited about the future prospects of what we will achieve together in the coming years.

THANKS WITH REGARDS

DR. PROF. T. SENGADIR
DEAN
SCHOOL OF MATHEMATICS AND COMPUTER SCIENCES
CENTRAL UNIVERSITY OF TAMIL NADU

HOD'S MESSAGE

Greetings from the Department of Computer Science.
The hard time for all of us due to Covid-19 pandemic still persists but I am delighted to present the second issue of our newsletter PRAGNA, a Sanskrit word, which means Wisdom / Understanding.

Central University of Tamil Nadu has a total of 12 schools where each school comprises related departments. The department of Computer Science, along with the departments of Mathematics, Statistics & Applied Mathematics forms the School of Mathematics and Computer Sciences. The Computer Science department has been established in 2016. We have one associate professor and four assistant professors as distinguished faculty members of the department. The department offers M.Sc. (Computer Science) and Ph.D. programmes. The major strength of the department is having expertise in data science and allied areas. The department has two general labs that cater to the needs of the students.

Despite the crisis due to Covid-19, the department continued our teaching and learning process using state-of-the-art online lecturing tools viz. Cisco Webex meeting, Google Class room etc. In order to keep the students occupied with their academics, we have used Google Forms to conduct online quizzes topic by topic.

The initiative of sponsored research projects has begun and so far one proposal has been submitted by Dr. P. Thiyagarajan for possible funding. We are going to submit quite a few more proposals for funding from various funding agencies.
The department is also looking forward in the coming years to start a Master of Computer Applications (MCA) program which has been made as a two year program by AICTE from the academic year 2020-21.

We, with the other two departments of our school, look forward to initiate some joint activities and start a joint program on Data Science and Analytics -- a dream of our former dean Prof. Ramakrishnan -- under the guidance and constant support of our beloved dean Prof. T. Sengadir.

The faculty members have published their research works in reputed SCI / Scopus journals. Despite the Pandemic period, we have organised an international seminar and two faculty development programmes sponsored by AICTE under ATAL scheme.

I wish that the department will develop as a global leader in the field of Information Technology aiming to solve the real world problems of computer science.

I thank all the faculty members, research scholars and students for contributing their articles to this newsletter.

Finally, I thank the design and editorial teams for working tirelessly the past two weeks in designing this newsletter.

THANKS WITH REGARDS

DR. CHANDRA MOULI P.V.S.S.R.
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VISION

To develop the department as a global leader in knowledge dissemination and to perform cutting edge research in computer science in compliance with international standards

MISSION

To excel in transforming graduates into software experts with high degree of technical creativity and managerial skills.
To excel in imparting quality education with dedicated and strongly motivated faculty.
To train the students to take up various challenges of latest technologies in the field of computer science.

THRUST AREAS

Artificial Intelligence, Machine Learning, Deep Learning, Digital Image Processing, Data Analytics, Big Data, Information Security, Steganography, Threshold Cryptography, AI, NLP, Text Mining, Network Security, IoT, Business Intelligence, Evolutionary Computing and other allied areas.

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IN THIS SECOND EDITION OF THE NEWSLETTER BY THE DEPARTMENT OF COMPUTER SCIENCE, WE WOULD LIKE TO PAY A TRIBUTE TO
JOHN VON NEUMANN, ORIGINAL NAME JÁNOS NEUMANN.

- John Von Neumann was a math prodigy and by the age of 8 he was studying differential and integral calculus.
- At the age of 15, he began to study advanced calculus under the renowned analyst Gábor Szegő. On their first meeting, Szegő was so astounded with the boy's mathematical talent that he was brought to tears.
- He was involved in the creation of the hydrogen bomb and, in the 1950's, headed the U.S. top secret intercontinental ballistic missile committee.
- He was very materialistic.
- John von Neumann undertook a study of computation that demonstrated that a computer could have a simple, fixed structure, yet be able to execute any kind of computation given properly programmed control without the need for hardware modification.

"Science, as well as technology, will in the near and in the farther future increasingly turn from problems of intensity, substance, and energy, to problems of structure, organization, information, and control."

-John Von Neumann

EARLY LIFE AND EDUCATION

Born in Budapest, Hungary, in 1903, Von Neumann grew up in an affluent, highly assimilated Jewish family.Von Neumann distinguished himself from his peers in childhood for having a photographic memory, being able to memorize and recite back a page out of a phone book in a few minutes. Science, history, and psychology were among his many interests; he succeeded in every academic subject in school.

Upon completion of von Neumann's secondary schooling in 1921, he initially studied chemistry and mathematics at the University of Berlin until 1923 when he went to Zurich, Switzerland where he received a degree in chemical engineering in 1926. The following year he received his doctorate in mathematics from Pázmány Peter University in Budapest at the age of just 22 with a thesis concerning axiomatization of Cantor's set theory.

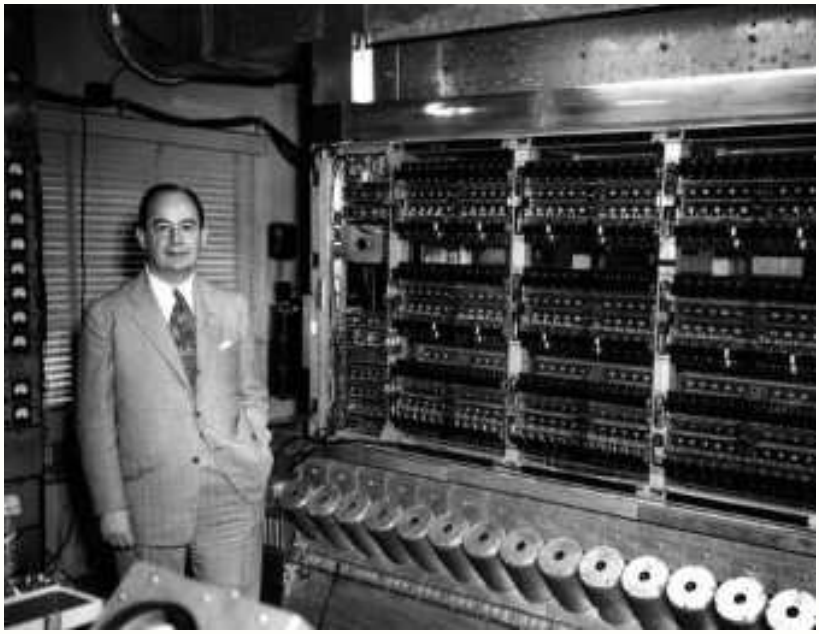
CAREER PATH

From 1926 to 1927 von Neumann did postdoctoral studies under David Hilbert at the University of Göttingen.

Neumann worked at German universities until 1930, concentrating on quantum mechanics.

In 1933 he became a mathematics professor at the Institute for Advanced Study in Princeton, New Jersey and he kept this position until his death.

In 1938, von Neumann was awarded the Bôcher Memorial Prize for his work in analysis.



- The John von Neumann Theory Prize of the Institute for Operations Research and the Management Sciences (INFORMS, previously TIMS-ORSA) is awarded annually to an individual (or group) who have made fundamental and sustained contributions to theory in operations research and the management sciences.
- The IEEE John von Neumann Medal is awarded annually by the Institute of Electrical and Electronics Engineers (IEEE) "for outstanding achievements in computer-related science and technology."
- Asteroid 22824 von Neumann was named in his honor.
- John von Neumann University (hu:Neumann János Egyetem) was established in Kecskemét, Hungary in 2016, as a successor to Kecskemét College.

CONTRIBUTION AND ACHIEVEMENTS

- In 1932 Von Neumann published his book "The Mathematical Foundations of Quantum Mechanics.
- He created the field of cellular automata without the aid of computers, constructing the first self-replicating automata with pencil and graph paper.
- Von Neumann's principal contribution to the Manhattan Project and the atomic bomb was in the concept and design of the explosive lenses needed to compress the plutonium core of the Trinity test device.
- Von Neumann's hydrogen bomb work was also played out in the realm of computing, where he and fellow physicist Stanislaw Ulam developed simulations on von Neumann's digital computers for the hydrodynamic computations.
- He contributed to the development of game theory as a mathematical discipline and together with Stanislaw Ulam devised the Monte Carlo statistical sampling method, which allowed complicated problems to be approximated using random numbers.
- John Von Neumann's significant contribution to math economics was the minimax theorem of 1928. This theorem establishes that in certain zero sum games with perfect information, there exists a strategy for each player which allows both players to minimize their maximum losses.
- John von Neumann has played an important role in post-war economic theory. He published "Theory of Games and Economic Behavior" in 1944 which detailed a groundbreaking mathematical theory of economic and social organization, based on a theory of games of strategy.
- John Newmann developed MANIAC (mathematical analyzer, numerical integrator and computer) when he worked as the director of the Electronic Computer Project from 1946 to 1955.

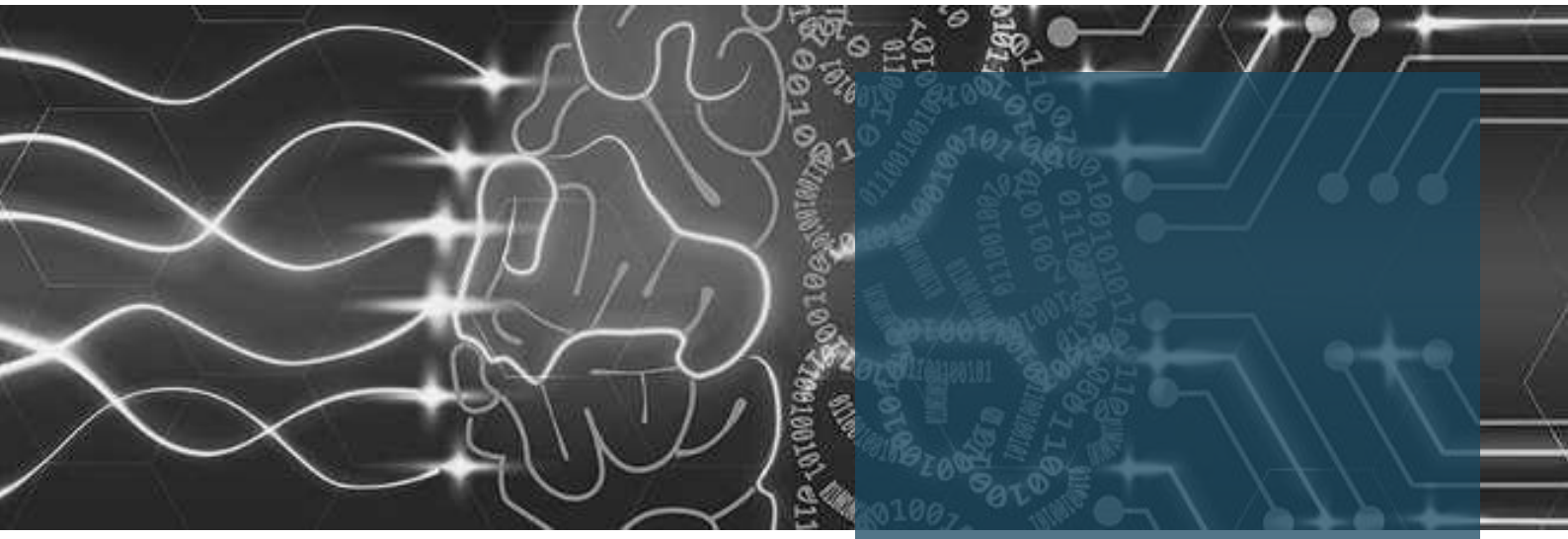
GAME THEORY

Game theory, was originally developed by John von Neumann and his Princeton University colleague Oskar Morgenstern to solve problems in economics.
It is a branch of applied mathematics that provides tools for analyzing situations in which parties, called players, make decisions that are interdependent. This interdependence causes each player to consider the other player's possible decisions, or strategies, in formulating strategy. A solution to a game describes the optimal decisions of the players, who may have similar, opposed, or mixed interests, and the outcomes that may result from these decisions.

Game theory has been applied to a wide variety of situations in which the choices of players interact to affect the outcome. In stressing the strategic aspects of decision making, or aspects controlled by the players rather than by pure chance, the theory both supplements and goes beyond the classical theory of probability. It has been used, for example, to determine what political coalitions or business conglomerates are likely to form, the optimal price at which to sell products or services in the face of competition, the power of a voter or a bloc of voters, whom to select for a jury, the best site for a manufacturing plant, and the behaviour of certain animals and plants in their struggle for survival. It has even been used to challenge the legality of certain voting systems.

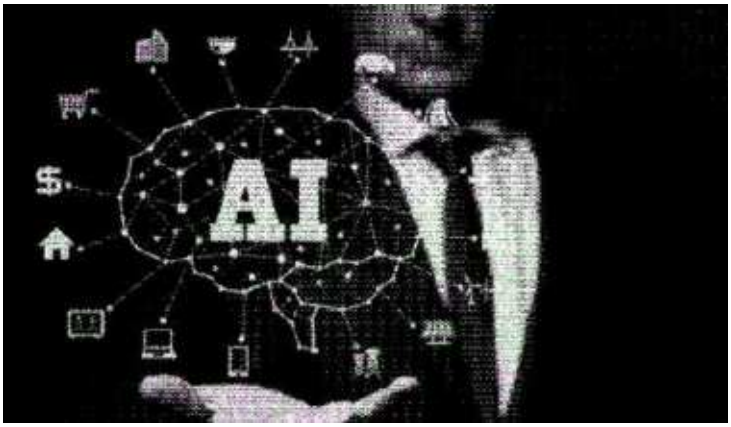
SIGNIFICANCE ROLE OF ARTIFICIAL INTELLIGENCE IN BANKINGFRAUD PREVENTION SYSTEM

Himanshu Kumar
P.hD. Scholar, Dept. Of Computer Science



INTRODUCTION

Due to the leakage of information from user data, it is key to keep the information confidential, fully protected, because criminals are looking for this data to make possible attacks on the system or simply to steal information. Artificial intelligence (AI) allows the incorporation of a second identification factor for user access which minimizes the risks of fraud for improper access or identity theft.



OVERVIEW:

- Artificial intelligence (AI) allows the incorporation of a second identification factor for user access

The application of AI within the context of securing user accounts, funds, and bank operations concept has been raised and becoming more interesting recently, in the face of cyber security threats directed at banks appearing all over the world. These Cyber threats are not directed only at retail accounts or bank funds, but also at the funds managed by the banks and funds kept by companies within the company bank accounts

The application of AI within the context of securing user accounts, funds, and bank operations concept has been raised and becoming more interesting recently, in the face of cyber security threats directed at banks appearing all over the world. These Cyber threats are not directed only at retail accounts or bank funds, but also at the funds managed by the banks and funds kept by companies within the company bank accounts. This makes the threats much more dangerous to the operations of financial institutions and their reliability. In all banking systems, Identity and Access Management (IAM), Advertising Manager, and Identity Management (ID management) are essential since they allow us to know exactly who the person trying to enter into a system is.

The solution thought up by cutting-edge developers and considered as both an asset is the application of AI technology to identify exploitable vulnerabilities and close the loopholes before they can be exploited. A similar application to bank security systems might be useful in the prevention of cybersecurity issues altogether. he approach involves using deep learning algorithms and highly functional AI to learn how the system functions. While the AI itself might take a while to identify the issues, its nature allows for near-constant exploration of the security system. This means that once a single threat has been identified, the AI does not stop the work it has been doing , but keeps looking for more, while the update to vulnerability can be designed by the banking security system developers and applied.

Such a tool would allow the utilization of several vulnerabilities at the same time, a sort of a multi-pronged attack, which would be much harder to resist than a traditional single vulnerability attack.

Even after the solution is applied the AI will keep going back to check it, just to see whether other vulnerabilities are resulting from the previous update.Tests like these would allow the system to be upgraded in real-time, over periods of years, to figure out what tactics, strategies, and tools cyber threats might be used to compromise and AI can identify certain kinds of system issues within seconds of being enabled.

This would prepare the system to resist such threats in the future, thus enabling the system to evolve with the evolution of cyber hacking technologies and the AI that is built to help protect against such threats. An ever-evolving security system is bound to be useful in the purpose of preserving the security of banking systems.

DEEP LEARNING WITH FEW REAL TIME APPLICATIONS

Dr. Chandra Mouli P.V.S.S.R.
Associate Professor & Head,
Computer Science Department

Deep Learning (DL) is a subset of Machine Learning (ML) and has its roots originated from artificial neural networks in general and feed-forward neural networks in specific. The functioning of Deep Learning is based on representation learning and learning can be Supervised, Semi-Supervised, or Unsupervised Learning.

Though Deep Learning is considered as a subset of Machine Learning however there are several differences between the two. The major difference between the two is the amount of data is fed as input. The power of deep learning can be visualized if we have a voluminous amount of data to process or to do analytics over it. Deep Learning systems are capable of handling data in abundant volumes. The usage of DL in the industries, in particular, is growing across the verticals. The other major difference between ML and DL is the type of algorithms used. Machine Learning makes use of easy algorithms that lets you understand the way the predictions are deduced. DL uses several complex algorithms which makes it impossible to understand why a certain prediction has occurred.

Deep Learning systems function better as more data is fed into them, it also thrives with specific use cases. However, it doesn't mean that you can find the solution to any problem by feeding a Deep Learning system with relevant data, it has its limitations.

The applications of Deep Learning have become crucial in many areas like Natural Language Processing (NLP), Computer Vision, Pattern Recognition, and more.

The smart digital assistants which we use in our daily life Alexa, Siri, and other voice applications are powered by Natural Language Processing. These devices are capable of converting voice commands into text. The algorithm would be then analyzing the entire dictionaries of words and creates sentiment from these words to deliver users relevant responses. With the advent of Deep Learning, advancements in NLP are happening at a rapid pace.

APPLICATIONS OF DEEP LEARNING

Sentiment Analysis

Sentiment analysis is the process of understanding/analyzing human sentiments through natural language processing (NLP). The sentiments are the text uploaded by users in different types of social media like Facebook, Twitter, Instagram, etc. They are either in a structured or unstructured format. Applying deep learning is ideal for sentiment analysis, sentiment classification, opinion/ assessment mining, analyzing emotions, and many more.

Self-driving Cars

Self-driving cars are a fascinating technology designed using deep forward neural networks and machine learning algorithms. The working mechanism is to detect objects around the car, the distance between the car and other vehicles, the footway location, identify traffic signals, determine the driver's condition, etc. Tesla is the most reliable brand that brings automated, self-driving cars to the market.

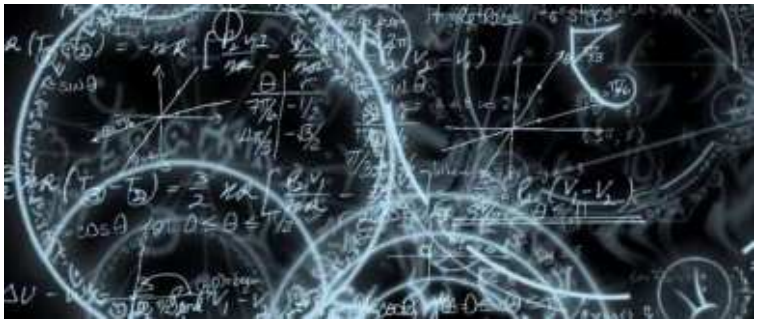
Healthcare

Deep learning finds its growth rapidly in healthcare. For example, wearable sensors and devices that use patient data for providing real-time information about patient conditions such as overall health condition, blood sugar level, blood pressure, heartbeat counts, and various other measurements use deep learning.

It helps medical experts to analyze data and recognize trends that accelerate enhanced medical diagnoses and patient care.

Besides, deep learning is also useful in pharmaceutical and medical companies for various purposes such as convenient diagnosis, image segmentation. For example, the conventional neural network (CNN) is usable for analyzing images like MRI results, X-rays, etc.

The extensive deployment of big data, computational power, and deep neural network architecture has improved the conventional statistical models to predict optimized knowledge.



"Machine intelligence is the last invention that humanity will ever need to make."

~Nick Bostrom

DEVOPS

RAMELLI ANVESH,
II year, M.Sc., Computer Science

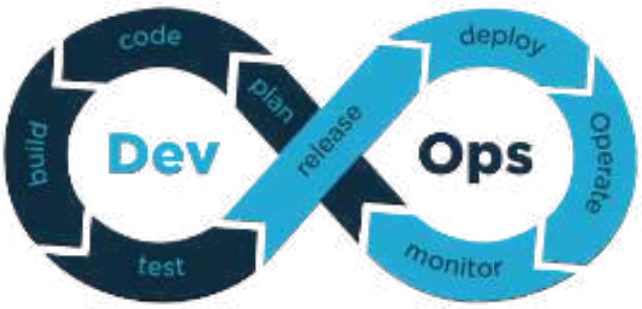
If you are a ComputerScience geek, then it's pretty sure that you might have heard the buzzword"DevOps" which was coined in 2009 by Patrick Debois who is called the Father of DevOps. DevOps is the the term comes from two different words Development and Operations.

The Immediate question in your mind could be what this DevOps is? Is it a Programming language? Is it a tool? Or Is it software? Not at all. Unfortunately, it is none of them. Then what is it? DevOps is moreover a Mindset, the way how you take your product (software or a mobile app whatever it is) whatever you are designing to the users so that millions of users can use it.

There are several ways to do that entire process and DevOps is one of those working ways to produce things from development stage to production stage.

DevOps is a concept used in the Application Life cycle Management which makes sure that the Development team and Operations team work in sync with each other so that whatever new feature you want to give to the user can be done smoothly.

Now, Let's understand what problem that DevOps trying to dissolve.Whenever an application is being developed, there are a variety of phases of its development. If you are developing a product at a small scale, be it a website or a mobile app, then it's all good and there is no problem at all because you are managing everything starting from designing the product to deploying it to make it available for users. So, the product is available on the very next day to the world to use it.But, things do change when you are developing a product at a large scale let's say Amazon, Flipkart, Swiggy, Youtube, etc.When these kinds of products are developed, we have a variety of teams that manages different parts.



Summing up all these, In a big company usually, there are two teams:

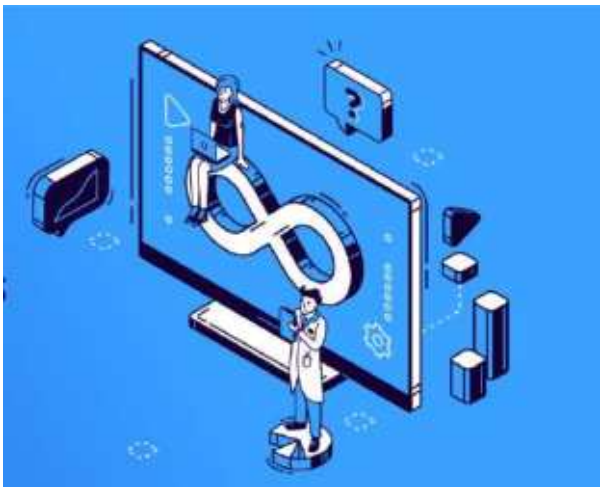
Team1 is the Development team, which usually designs and develops a product, and sometimes testing is also included.

On the other hand, Team2 is the Operations team, which is responsible for managing the servers, security, Backup, and many more.Whenever there is a new feature to be rolled out, the development team does the development work, packs it up, and gives it to the Operations team which does the deployment work.

The developer thinks, that the Operations team has no work and they deploy the feature immediately. But that's not the case, Operations team is also busy managing the servers, checking a variety of things such as scalability, what kind of traffic they are getting, and some kinds of security as well.

Usually, in these big companies, Production happens once or if it is a good feature, it happens twice a month.

Now, there might be a situation, that the development team has given an update but hasn't been put up in production.



The Developer Says that they have given the update and the blame Operations team for not putting it up in production and the Operations team may say that they have given the update after the production cycle and this feature can only be released in the next cycle/month. This creates Lag.And the user doesn't care about what's happening actually, a user just needs a new feature as soon as possible.

This exact problem is solved by using a Mindset being used in DevOps. In DevOps, the Development team and Operations team doesn't sit in a completely separate arena, they sit together, they discuss side by side and even sometimes they exchange their roles and responsibilities so that every person knows what's happening on the development side as well as in the Operations side.This Mindset, that everybody knows and understands what's happening on the Development side as well as what's happening on the Operations side is "DevOps".

The Logo of the DevOps itself exactly depicts the meaning of it.

It is an infinite cycle that consists of planning, building, and managing the product. Because application development is an infinite process.Apart from this DevOps also focuses on automation. The more things are automated, the more the person is going to be free and can interact with people.

If you have heard about DevOps, then you might have heard about the tools such as Puppet, Jenkins, Github, etc. which are all a part of the development life cycle.But, if you think DevOps is learning a tool or a framework and say I'm a DevOps engineer. No, it doesn't work like that. DevOps is all about a Mindset of understanding every stage of an application life cycle.

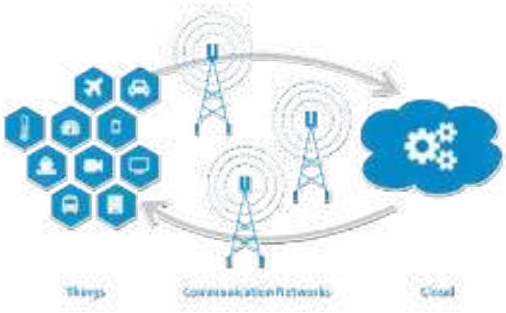
Introduction to Edge Computing

Divyasri S R
II year, M.Sc., Computer Science

A fast increase in the number of connected devices around us is likely to revolutionize the way we live, work, and interact with technology, even though this is scarcely a secret. According to estimates, there will be 75 billion smart devices on the planet by 2025, ushering in a new era of hyper-connectivity. These gadgets will not only gather data but will also produce and process data on the items that are closest to their users on the edge. The increased functionality and computing available on the edge is already transforming the way companies design and create products, from sophisticated construction site video surveillance to safer remote surgery.

Edge computing is a physical computation infrastructure that supports a variety of applications and is located between the device and the hyper-scale cloud. Edge computing provides processing capabilities closer to the end-user/device/data source, reducing latency and eliminating the need to travel to the cloud data center. Edge computing, rather than transmitting data to cloud data centers, decentralizes processing capacity to assure real-time processing with minimal latency while decreasing network bandwidth and storage requirements.

Voice assistants like Amazon Echo, Google Home, and Apple Siri, among others, are pushing AI to new heights. In 2018, 56.3 million smart voice assistant devices are expected to be deployed around the world. By 2020, Gartner expects that voice will account for 30% of all consumer interactions with technology. To enable effective interactions with end-users, the modern consumer technology industry requires powerful AI processing and low-latency reaction time. The technology requirements for use cases including AI voice aid capabilities, in particular, go beyond computing power and data transmission speed. The long-term viability of voice assistance is dependent on the technology's ability to protect user privacy and data security. Potential network vulnerabilities in voice assistance systems could pose unprecedented security and privacy risks to end-users. Sensitive personal information is a gold mine for underground cybercrime rings, and potential network vulnerabilities in voice assistance systems could pose unprecedented security and privacy risks to end-users.To address this issue, companies like Amazon are improving their AI capabilities and bringing the technology closer to the edge, eliminating the need for speech data to travel across the network.



Edge computing's distributed nature means that it improves resilience, reduces networking burden, and is easier to expand in addition to lowering latency. Data processing begins at the source. Only the data that require further analysis or other services should be delivered after the initial processing is completed. This lowers networking needs and eliminates the possibility of bottlenecks in any centralized services. We can also hide disruptions and improve the resiliency of your system by using additional nearby edge locations or the capability of caching data on the device. Because our centralized services are handling less traffic, we won't need to scale them as much. Costs, architecture complexity, and management can all be reduced as a result of the outcomes.

There is a lot of talk about edge computing replacing the cloud, and it may do so in some circumstances. In many cases, though, the two have a symbiotic relationship. When it comes to performance and initial data processing, businesses like web hosting and IoT benefit substantially from edge computing. However, for things like centralized storage and data analysis, these services still require a strong cloud backend.

The major drawback of edge computing is that it can increase attack vectors and it requires more local hardware.

TECHNOLOGY : THE INGENIOUS HUMAN INVENTION.

Kaushik Chhetri
II year, M.Sc., Computer Science

Technology : The ingenious human invention.

Human history is the history of the forward march against the brutal roughness of nature. Nature although a magnificent repository of resources also is a site of savagery, competition, and harshness which is evident in the human struggle to win over it and establish its sway. In this path of human progress, technology has been the greatest enabler. Mastering the natural laws and developing and observing the science of nature humans have made possible baffling technologies that have almost made men the ultimate sovereign of the planet.

Beginning with the invention of fire, the wheel, potteries, and other rudimentary tools till the mind-boggling inventions of sophisticated technologies related to space science, robotics, nuclear science, and so forth, the present moment in history has been an era of inventions and innovations with still the possibility galore. Moreover, life today has been intricately intertwined with the smart technologies around and thus human life today looks bleak without it.

But what has been the anthropological impact of the mushrooming of technological advancements in just a few centuries after the boom of the industrial revolution? This however needs an intellectual background to be looked at in retrospect. Technology came to the fore just after a major upheaval in the socio-cultural background of Europe during the renaissance period, that is when the medieval dark ages stunted scientific growth, technological developments were severely hurt. But when scientific temperament grew and the older feudal order collapsed, the painful human existence by performing back-breaking manual labor was slowly erased by the percolation of machines chiefly running on steam power

The progress since then has been with leaps and bounds transforming completely the ways and means of the past. All spectrum of human endeavor has been qualitatively altered by technology and thus coming with a human face, it has led to the ICT (Information and Communication Technology) revolution, changed the face of military warfare, made classes and education smart with computers and with AI, robotics, etc has thrown open new vistas of possibilities.

The birth, the development, the furtherance, and the acceptance of technology have been anchored on the philosophy of its role in human life, its utility, and its subservient role to human ingenuity. However, with tendencies of destructive tendencies of the atomic and nuclear menace, the obnoxious material culture lacking human finesse, the unethical usage of modern technologies all have posed a serious threat. By accommodating these challenges and keeping the human consideration and human determinism over and above both the prowess and progress of technology, further development must be made imperative as human challenges and human necessities can be best met materially only with technologies that bring about a paradigm change in human lives. The possibility of tomorrow should evoke all of our hearts.

"WE ARE CHANGING WORLD WITH TECHNOLOGY"

ETHICAL HACKING

Sangem Vishwa
II year, M.Sc., Computer Science

AN INTRODUCTION TO ETHICAL HACKING

What is ethical hacking?

A GLOBAL DIGITAL TREND

THE RISING NEED FOR ETHICAL HACKERS

When people first hear about hacking, they will usually see this idea as something negative. Indeed, hacking has always been about taking advantage of unprotected or weakly-guarded sites or systems for the individual's selfish interest. Because of this, others (often companies) who want to strengthen the protection of their online systems turn to professionals for help.

Gaining access to a system that you are not supposed to have access to is considered hacking. Ethical hacking is also known as White hat Hacking or Penetration Testing. Ethical hacking involves an authorized attempt to gain unauthorized access to a computer system or data. Ethical hacking is used to improve the security of the systems and networks by fixing the vulnerability found while testing. In 1960, the first known event of hacking had taken place at MIT, and at the same time, the term Hacker was organized. For example login into an email account that is not supposed to have access, gaining access to a remote computer that you are not supposed to have access to, reading information that you are not supposed to be able to read is considered hacking. There are a large number of ways to hack a system.

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CATEGORIES OF HACKING

Hackers can be classified into different categories such as white hat, black hat, and grey hat, based on their intent of hacking a system.

- Network Hacking: Network hacking means gathering information about a network with the intent to harm the network system and hamper its operations using various tools like Telnet, NS lookup, Ping, Tracert, etc.
- Website hacking: Website hacking means taking unauthorized access over a web server, database and making a change in the information.
- Computer hacking: Computer hacking means unauthorized access to the Computer and steals the information from PC like Computer ID and passwords by applying hacking methods.
- Password hacking: Password hacking is the process of recovering secret passwords from data that has been already stored in the computer systems
- Email hacking: Email hacking means unauthorized access to an Email account and using it without the owner's permission

PROTECTION FROM HACKERS

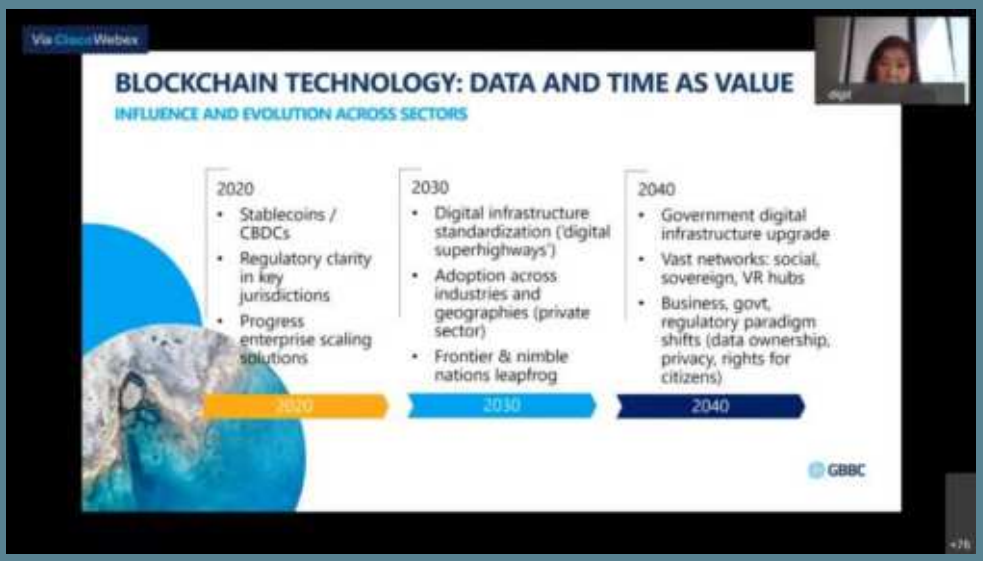
- Do not use public WiFi unless it asks for credentials: Let’s say you're in line at the bank, and while you're waiting you decide to log onto your banking app to check your balance. You log on to the WiFi to access your bank account and you see a WiFi server with the name of your bank on it. You use it because you imagine your bank server is safe. Guess what? Unless that server asked for your credentials or consent, it's likely a trap. It could be me, Frank, sitting in my car having created a fake server using your bank's name to gain entry into your account.
- Be aware of your surroundings: Hackers take advantage of places where people let their guard down. One common trap is positioning a mirror over the ATM, which allows them to see your PIN and access your account, so always look around for anything suspicious before entering your PIN. It's also common for hackers to add skimmers on gas station credit card portals that steal your information, so to protect yourself always pay by credit card instead of using a debit card, especially for gas and gas station conveniences.
- Be alert when using your credit card in public places: These days phone cameras can zoom in from 15 feet away, so be careful and don't leave your credit card laying on the table at the restaurant or at a cashier's station, where someone can snap a photo of your card and then zoom in to steal the card number.

- Change your password every 45 days: The biggest mistake people make is getting comfortable and keeping their passwords the same for long periods. You should change your password every 45 days and set passphrases instead of passwords because they are harder to hack. Also, do not use any password-saver apps because they can all be compromised. The safest way to maintain a list of your passwords is to create a password-protected Excel spreadsheet. Just remember not to print it out because you don't know whose hands it could wind up in.
- Be aware of your line of access: If you use payment apps like Venmo, PayPal, and Zelle, you must be aware of how many access points to your bank account exist. Tie those apps to your credit card rather than your bank account and then be sure to regularly monitor the cards for any fraudulent activity.
- Don't easily give up your permissions: Every app from Angry Birds to TikTok asks users to agree to permissions which in effect can waive your right to privacy on things like location, camera, and microphone. Be aware of what permissions you're granting and avoid dangerous permissions

> BE AWARE OF YOUR SURROUNDINGS: HACKERS TAKE ADVANTAGE OF PLACES WHERE PEOPLE LET THEIR GUARD DOWN

DEPARTMENT ACTIVITIES

WEBINAR ON DISRUPTIVE TECHNOLOGIES IN SMART COMPUTING
07.09.2020 – 11.09.2020
COORDINATOR: DR. A. MARTIN, ASSISTANT PROFESSOR
DEPARTMENT OF COMPUTER SCIENCE, CENTRAL UNIVERSITY OF TAMIL NADU.



A SESSION ON BLOCKCHAIN, ADVANTAGES AND ITS APPLICATIONS WAS HANDLED BY MS. SANDRA KO, CHIEF EXECUTIVE OFFICER, GOBAL BLOCKCHAIN BUSINESS COUNCIL, USA

Five Day International Webinar was conducted on 07.09.2020 to 11.09.2020 in the topic "Disruptive Technologies in Smart Computing for Today and Tomorrow" (DTS: T&T'2020). Honourable Officiating Vice Chancellor of Central University of Tamil Nadu Prof. Karapaga Kumaravel was inaugurated the International webinar and received 500 registrations from all over the world which includes academicians, students, research scholars, school teachers and people from industry.

A SESSION ON ARTIFICIAL EMOTIONAL INTELLIGENCE WAS HANDLED BY DR.V.PRASANNA VENKATESAN FROM PONDICHERRY UNIVERSITY, PUDUCHERRY.

FACULTY DEVELOPMENT PROGRAM ON DATA SCIENCE AND ITS APPLICATIONS
05.10.2020 – 09.10.2020
COORDINATOR: DR. CHANDRA MOULI P.V.S.S.R.
ASSOCIATE PROFESSOR & HEAD
DEPARTMENT OF COMPUTER SCIENCE, CENTRAL UNIVERSITY OF TAMIL NADU

The Faculty Development Programme on Data Science and its Applications was organized at the Central University of Tamil Nadu from 5th October 2020 to 10th October 2020.This Faculty Development Programme (FDP) was sponsored by AICTE Training and Learning (ATAL) Academy. ATAL academy has sponsored a sum of Rs. 93,000/- for organizing this FDP. There were a total of 200 participants from different states (19 states and 2 Union Territories) of the country actively participated in all the sessions and cleared the assessment test. 155 out of them qualified the test and got the certificate from AICTE.

The speakers of the workshop were as follows:

i. Prof. R.B.V. Subramanyam, NIT Warangal
ii. Prof. Raman Bala Subramanian, IIT Roorkee
iii. Dr. Pooja Jain, IIIT Nagpur
iv. Dr. Kumaravel, Pondicherry University
v. Dr. T. Senthil Kumar, Amrita Viswa Vidyapeetham
vi. Prof. K. Chandrasekharan, NIT Suratkal
vii. Dr. B. Surendiran, NIT Pondicherry
viii. Dr. Chandra Mani Sharma, UPES, Dehradun
ix. Dr. Chandra Mouli P.V.S.S.R., CUTN, Thiruvarur

The inaugural session was held on 5th October 2020 online at 10:00 AM. Dr. Chandra Mouli P.V.S.S.R., Co-ordinator of this FDP, formally welcomed all the participants.

Dr. B. Ramakrishnan, Dean, School of Mathematics and Computer Sciences, gave the felicitation address. Dr.S.Bhuvaneswari, Registrar CUTN, gave the keynote address. Prof. R.B.V. Subaramanyam, Professor, Dept of CSE NIT Warangal, was the chief guest of the function and gave the chief guest address followed by two sessions on introduction to data sciences and decision trees respectively.

All the sessions of the FDP were delivered over Cisco WebEx. For the benefit of the participants, all the sessions were recorded with the consent of the respective speakers.

The assessment test was conducted for 30 marks and the qualifying score for assessment was 18 marks (60% of 30 Marks).The assessment test was conducted from 2:30 PM to 4:30 PM on 9th October 2020. Participant list fulfilling the attendance requirement and clearing the assessment test was updated to the AICTE ATAL FDP portal.

ATAL SPONSORED FDP ON DATA SCIENCE AND ITS APPLICATIONS

DAY 1 REGISTRAR ADDRESSING THE PARTICIPANTS DURING THE INAUGURATION

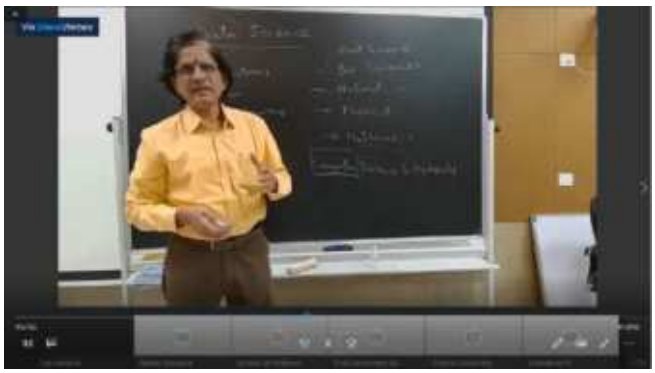
DAY 1 DEAN ADDRESSING THE PARTICIPANTS DURING THE INAUGURATION

DAY 1 DR. SARANYA DELIVERING THE VOTE OF THANKS DURING THE INAUGURATION

DAY 1 HOD ADDRESSING THE PARTICIPANTS DURING THE INAUGURATION

DAY 1 DR. THIYAGARAJAN COMPERING DURING THE INAUGURATION

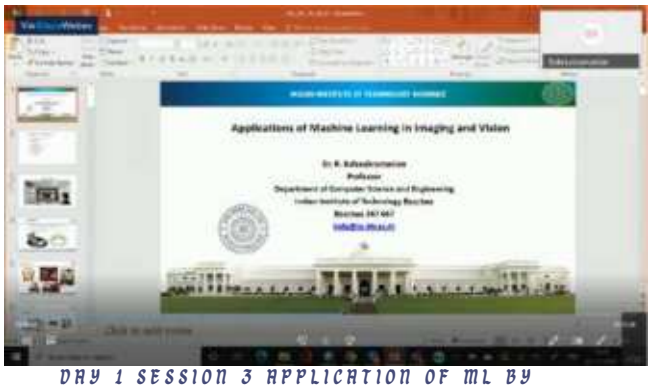
DAY 1 DR MARTIN BRIEFING ABOUT THE FDP DURING THE INAUGURATION



DAY 1 SESSION 1 INTRODUCTION TO DATA SCIENCE BY DR. RBV SUBRAMANYAM, NIT WARANGAL

DAY 1 SESSION 2 DECISION TREES BY DR RBV SUBRAMANYAM, NIT WARANGAL

ATAL SPONSORED FDP ON DATA SCIENCE AND ITS APPLICATIONS

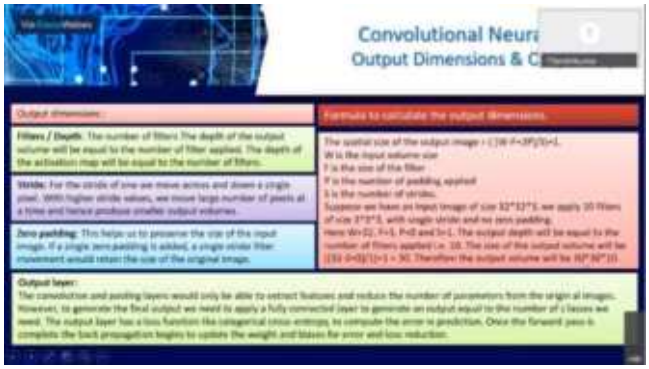


DAY 1 SESSION 3 APPLICATION OF ML BY DR R BALASUBRAMANIAN, IIT ROORKEE

DAY 2 SESSION 4 PYTHON PROGRAMMING BY POOJA JAIN, IIIT NAGPUR

DAY 2 SESSION 6 TEXT ANALYTICS BY R. KUMARAVELAN, PONDICHERRY UNIVERSITY

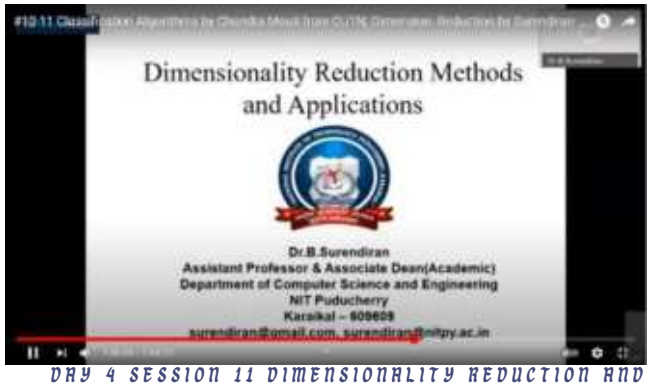
DAY 3 SESSION 7 BUILDING A DATA MODEL FROM SCRATCH BY DR. SENTHIL KUMAR, AMRITA VISHWA VIDYAPEETHAM



DAY 3 SESSION 8 CNNS AND RNNS BY DR. SENTHIL KUMAR, AMRITA VISHWA VIDYAPEETHAM

DAY 3 SESSION 9 SECURED DATA SHARING BY DR. CHANDRASEKARAN, NIT SURATHKAL

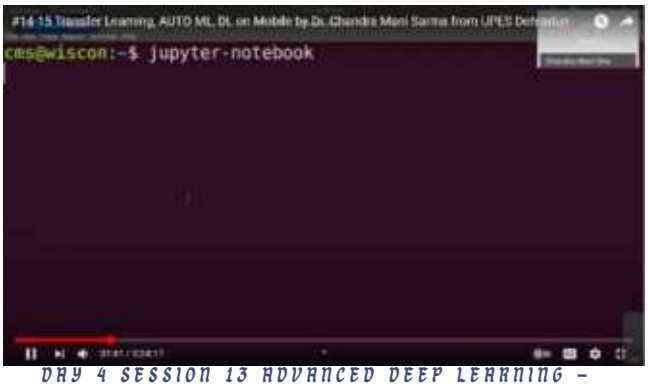
DAY 4 SESSION 10 CLASSIFICATION AND SUPERVISED LEARNING BY DR. CHANDRA MOULI PVSSR, CUTN



DAY 4 SESSION 11 DIMENSIONALITY REDUCTION AND CLUSTERING ALGORITHMS BY DR. SURENDIRAN, NIT PONDICHERRY

ATAL SPONSORED FDP ON DATA SCIENCE AND ITS APPLICATIONS

DAY 4 SESSION 12 CASE STUDIES IN DATA SCIENCE BY DR. KKR GANDHI, MDI, MURSHIDABAD



DAY 4 SESSION 13 ADVANCED DEEP LEARNING – AUTO ENCODERS BY DR. CHANDRA MANI SHARMA, UPES DEHRADUN

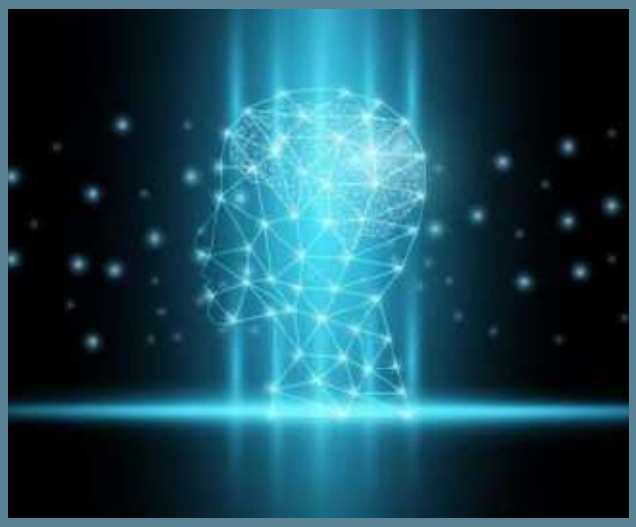
DAY 5 SESSION 15 ADVANCED DEEP LEARNING – DL ON MOBILE BY DR. CHANDRA MANI SHARMA, UPES DEHRADUN

DAY 5 VC DELIVERING THE VALEDICTORY ADDRESS

FACULTY DEVELOPMENT PROGRAM ON
ARTIFICIAL INTELLIGENCE FOR CBSE TEACHERS
02.11.2020 – 06.11.2020
COORDINATOR: DR. CHANDRA MOULI P.V.S.S.R.
ASSOCIATE PROFESSOR & HEAD
DEPARTMENT OF COMPUTER SCIENCE, CENTRAL UNIVERSITY OF TAMIL NADU.

The faculty Development Programme on Artificial Intelligence for CBSE Teachers was organized at the Central University of Tamil Nadu from 2nd November 2020 to 6th November 2020. This Faculty Development Programme (FDP) was sponsored by AICTE Training and Learning (ATAL) Academy. ATAL academy has sponsored a sum of Rs. 93,000/- for organizing this FDP.

There were a total of 228 participants from different states (19 states and 2 Union Territories) of the country actively participated in all the sessions and cleared the assessment test. 155 out of them qualified the test and got the certificate from AICTE.



The speakers of the workshop were as follows:

i. Prof. S.S.V.N. Sharma, Vagdevi Group of Institutions
ii. Prof. S. R. Balasundaram, NIT Trichy
iii. Dr. C. Pavan Kumar, IIIT Dharwad
iv. Dr. Pooja Jain, IIIT Nagpur
v. Dr. Chandra Mani Sharma, UPES, Dehradun
vi. Dr. P.P. Sarangi, Seemanta COE Mayurbhanj
vii. Dr. V. Prasanna Venkatesan, Pondicherry University
viii. Dr. Suryakant V. Gangashetty, KL University
ix. Dr. V. Duraisamy, TNPSU
x. Dr. Chandra Mouli P.V.S.S.R., CUTN, Thiruvarur

The inaugural session was held on 2nd November 2020 online at 10:00 AM. Dr.Chandra Mouli P.V.S.S.R., Co-ordinator of this FDP, formally welcomed all the participants.

Dr. B. Ramakrishnan, Dean, School of Mathematics and Computer Sciences, gave the felicitation address. Dr.S.Bhuvaneswari, Registrar CUTN, gave the keynote address.

All the sessions of the FDP were delivered over Cisco WebEx. For the benefit of the participants, all the sessions were recorded with the consent of the respective speakers.

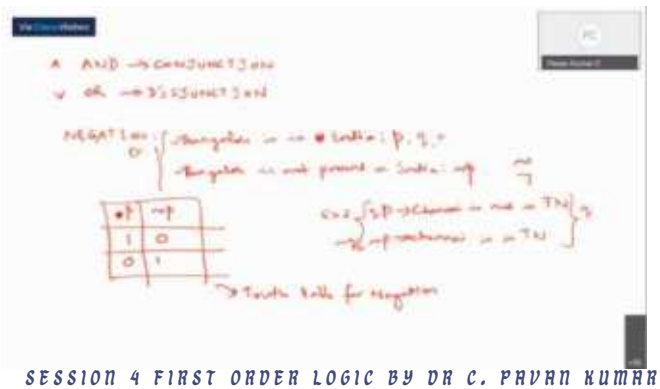
An Assessment test was conducted for 20 marks and the qualifying score for assessment was 12 marks (60% of 30 Marks). The assessment test was conducted from 3:30 PM to 4:30 PM on 6th November 2020. Participant list fulfilling the attendance requirement and clearing the assessment test was updated to the AICTE ATAL FDP portal.

ATAL SPONSORED FDP ON ARTIFICIAL INTELEGENCE

SESSION 1 OVERVIEW OF ARTIFICIAL INTELLIGENCE BY DR S.S.V.N. SHARMA, VAGDEVI GROUP OF INSTITUTIONS

SESSION 2 A.I. PROJECT CYCLE BY DR. S. R. BALASUNDARAM, NIT TRICHY

SESSION 3 SET THEORY AND MATHEMATICAL LOGIC BY DR C. PAVAN KUMAR, IIIT DHARWAD



SESSION 4 FIRST ORDER LOGIC BY DR C. PAVAN KUMAR, IIIT DHARWAD

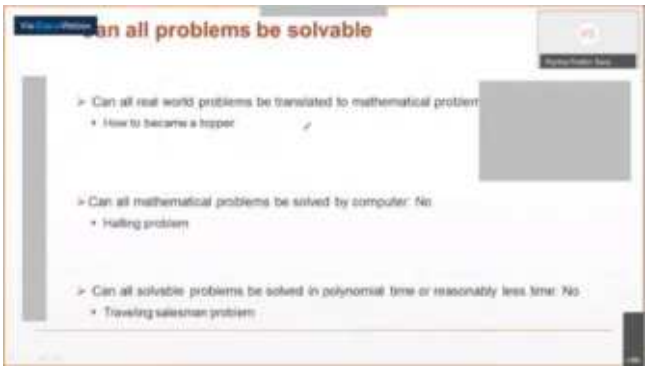
SESSION 5 EMOTIONAL ARTIFICIAL INTELLIGENCE BY DR S. PRASANNA VENKATESAN, PONDICHERRY UNIVERSITY

SESSION 6 INTEGRATION OF AI IN REGULAR SUBJECTS BY DR S.S.V.N. SHARMA, VAGDEVI GROUP OF INSTITUTIONS

SESSION 7 & 8 &10 PYTHON PROGRAMMIN BY DR POOJA JAIN, IIIT NAGPUR

SESSION 9 PYTHON PACKAGES FOR MACHINE LEARNING BY DR CHANDRA MANI SHARMA, UPES DEHRADUN

ATAL SPONSORED FDP ON ARTIFICIAL INTELEGENCE



SESSION 11 OVERVIEW OF MACHINE LEARNING BY DR P.P. SARANGI, SEEMANTA COE, MAYURBHANJ

SESSION 12 SUPERVISED VS UNSUPERVISED LEARNING BY DR SURYAKANT V GANGASHETTY, KL UNIVERSITY

SESSION 13 YOGA FOR STRESS MANAGEMENT BY DR DURAISWAMY, TNPSU

SESSION 14 & 15 NEURAL NETWORKS – BY DR. CHANDRA MOULI PVSSR, CUTN

VC ADDRESSING THE PARTICIPANTS DURING THE VALEDICTORY ADDRESS

FACULTY ACHIEVEMENTS

Dr. P. Thiyagarajan won the Young Scientist Fellowship Award from Tamil Nadu State Council for Science and Technology for the year 2019-20 for a period of two months.

Dr. P. Thiyagarajan et al. has published a paper on Font Attributes based Text Steganographic algorithm (FATS) for communicating images: A nuclear power plant perspective in the Kerntechnik Journal of Nuclear Engineering during the year 2017. (ISN Number: 0932-3902, PageNo: 98-111, Impact factor: 0.3).

Dr. Martin.A et al. has published a paper on the topic Design of simplified triangular fuzzy TOPSIS: A Case study on supplie selection in the International journal for research in Applied Science and Engineering Technology during the year 2017. (ISN Number: 2321-9653).

Dr. Martin.A et al. has published a paper on A Study on Deep Learning Techniques to Improve Bitcoin Price Prediction in the International Journal for Research in Applied Science and Engineering Technology during the year 2017. (ISN Number: 2347-2693).

Dr. R. Saranya et al. has published a paper on Integrated quantum flow and hidden Markov chain approach for resisting DDoS attack & C-Worm in the Cluster Computing - The Journal of Networks, Software Tools and Applications during the year 2019. (ISN Number: 1386-7857 (Print) 1573-7543 (Online) , PageNo: 14299–14310, Impact factor: 3.458).

Dr. K. Nandhini et al. has published a paper on Comprehensive Study on Lexicon Based Approaches for Sentiment Analysis in the Asian Journal of Computer Science and Technology during the year 2019. (PageNo: 1-6)

Dr. K. Nandhini et al. has published a paper on Wireless Sensor and Actuator Networks (WSANs): International Journal of Innovative Technology and Exploring Engineering (IJITEE) during the year 2019.

Dr. R. Saranya et al. has published a paper on Directed Acyclic Graph-based Distributed Ledger - An Evolutionary Perspective in the International Journal of Engineering and Advanced Technology (IJEAT) during the year 2019. (ISN Number: 2249 – 8958, PageNo: 6096-6103).

Dr. R. Saranya et al. has published a paper on A Pilot Research on Android Based Voice Recognition Application in the International Journal of Recent Technology and Engineering (IJRTE) during the year 2019. (ISN Number: 2277-3878, V , PageNo: 7272-7277).

Dr. Martin.A et al. has published a paper on A Study on Different Evolution in Computer Vision in the International Journal Computer Sciences and Engineering during the year 2019. (ISN Number: 2347-2693).

FACULTY ACHIEVEMENTS

Dr. Martin.A et al. has published a paper on A Study on Influence of Sensitivity Analysis on Normalization Techniques by Applying Equal and Exchange of Weight Metrics in the International Journal Computer Sciences and Engineering during the year 2019. (ISN Number: 2347-2693).

Dr. Martin.A et al. has published a paper on A Study on Influence of Rank Reversal on Weight Methods in GFTOPSIS by applying Adding an Alternative and Removing an Alternative Metric in the International journal of analytical and experimental modal analysis during the year 2019. (ISN Number:0886-9367).

Dr. Martin.A et al. has published a paper on A Study and Development of Mobile App for Fisherwomen in Nagapattinam District to Reduce Complexities for Selling of Fishes in the Adalya Journal during the year 2019. (ISN Number:1301-2746).

Dr. Chandra Mouli P.V.S.S.R. et al. has published a paper on Face Analysis using Row and Correlation based Local Directional Pattern in the Electronic Letters on Computer Vision and Image Analysis (ELCVIA) during the year 2020. (ISN Number:1577-5097, PageNo: 55-70).

Dr. P. Thiyagarajan et al. has published a paper on Developing and Investigating the Effectiveness of E-Learning in Data Analytics using Python in the Aegaeum Journal during the year 2020. (ISN Number: 0776-3808, PageNo: 1538-1547).

Dr. P. Thiyagarajan et al. has published a paper on Feature selection using efficient fusion of Fisher Score and greedy searching for Alzheimer's classification in the Journal of King Saud University - Computer and Information Sciences during the year 2021. (ISN Number: 1319-1578, Impact factor: 13.473).

Dr. Martin.A et al. has published a paper on A Study on generic object detection with emphasis on future research directions in the Journal of King Saud University -Computer and Information Sciences during the year 2021. (ISN Number: 1319-1578, Impact factor: 13.473).

Dr. P. Thiyagarajan et al. has published a paper on Alzheimer's classification using dynamic ensemble of classifiers selection algorithms: A performance analysis in the Biomedical Signal Processing and Control during the year 2021. (ISN Number: 1746-8094, Impact factor: 3.889).

Dr. Chandra Mouli P.V.S.S.R. et al. has published a paper on A comprehensive survey on image enhancement techniques with special emphasis on infrared images in the Multimedia Tools and Applications during the year 2021. (ISN Number:2191-4281, Impact factor: 2.757).

RESEARCH SCHOLARS 2021

02/08/2021 - M.Phil Viva-Voce Examination - Mr. Gokul K S (Reg. No. M191302)

18/08/2021 - M.Phil Viva-Voce Examination - Ms. Deekshitha (Reg. No. M191301)

04/11/2021 - Ph.D. Public Viva-Voce Examination - Mr. Muhammed Niyas K P (R171303)

STUDENT ACHIEVEMENTS & PLACEMENTS 2021

K. Ahalya, Gangapatla Mounika, V. S. Arjun Raj, and P. Pasupathi
Developed a Mobile App for to ease difficulties faced by fisherwomen in selling the fresh catch in the streets of Nagapattinam.

Chanukya Reddy
Placed in Infosys Consultancy Services Pvt. Ltd, Banglore.

Beulah Evanjalin, Vessesh Krishna Hebbar P R & M Vignesh
Placed in Dvara Kshetriya Gramin Financial Services Pvt. Ltd, Chennai.

M Vignesh & Arunkumar S
Placed in EHash Software Solution, Chennai.

Vessesh Krishna Hebbar P R
Cleared UGC NET Examination

MSC GRADUATES 2019-21

AFARI JESSE

ALEENA PRAKASH

BEULAH EVANJALIN A

BHARATHI B

BOKKA MOUNIKA

MSC GRADUATES 2019-21

CHIRANJEEVI S

DHAVAKUMAR

EZHILARASI A

GUNDETI VEENA

KAMIL KHAN A

MSC GRADUATES 2019-21

KAPILRAJ S

KAYALVIZHI S

LINET M SHAJI

MADHUMITHA K

MANDA AMULYA M

MSC GRADUATES 2019-21

NIVETHA R S

SRIDURGA S

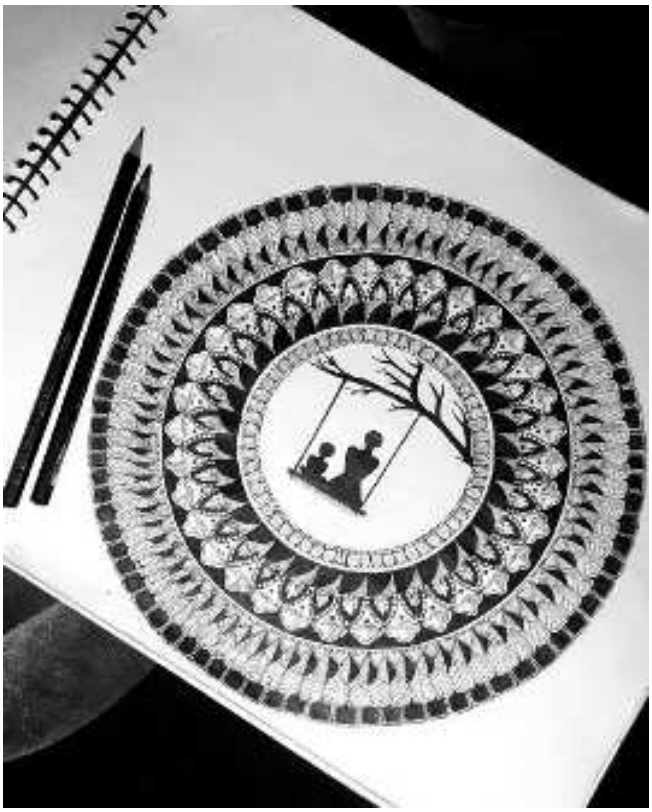
THENMOZHI K

VESSESH KRISHNA HEBBAR P R

YARRAPPAGARI DAYANAND KUMAR

CREATIVE CORNER

ART



KAUSHIK CHHETRI

"On Writing Poetry: Take everyday words beyond everyday talent and write them alive."

WRITINGS

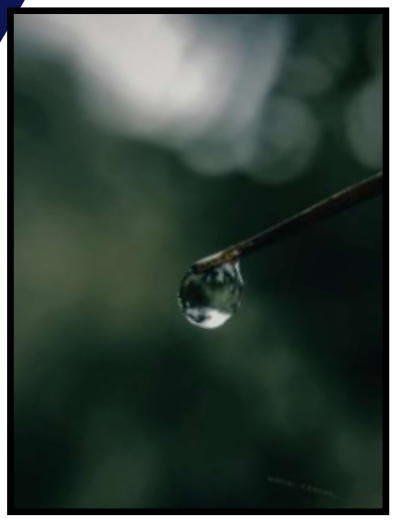
IM THE TECHNOLOGY,I BRING THE CHANGE

I grew through the wisdom of human
I grew with the passing of time,
I saw the making of forts
I saw the building of temples and shrines,
When it was darkness all-over
I bring forth the light,
When someone lost their vision
I became their sight,
Through lakhs of trials and errors, I kept evolving
And all along this evolution,thousands of baffling problems,I kept solving
Things which were meant to be impossible
I made them look like a child's play
Not just by doing through one method
But rather solving them in thousands of ways
It all comes down to the growth I had
It all sums up to the adaptations I went through
And even now at the pinnacle of my rise,
I keep giving something different,I keep providing something new
for me nothing is impossible, nothing seems weird or strange
Because no matter what the situation is
I'm the technology,I bring the change

AJANYA TK

"Art speaks where words are unable to explain"

PHOTOGRAPHY



ANSHID K A

"In all things of the nature there is something marvelous"

WRITINGS

CHA CHNONG PARA

Cha chnong para sah u chong
Yei burom chi rynien to ri syndong
Ham sniaw ha nga kat wa dang im
Yei snein kiwa heh to ksoh to chim
Boonsien pisa mynsien wa langam iung
Tangwa iei stad u thuh hap pdiang hap hun
Yow ioh u wanrah i burom in nam
Iong ka chnong ka thaw ka iung ka sem
Ki kyntien wa snien ka bei u pa
Em salon mo khon cha chnong para
Cha jngai na i ym ioh de u yoo
Yei wa thrang phi khon ham ieh du hei ymphoo
Burom mo khon ia kiwa heh ia phi
Wei minot ha ka kot hei purae puthi
Iow man phi kiwa em nam em burom
Sumar mo khon iei akor salon
Bun ki jingeh wa wan poi ha i
To pdiang to im chisur donhi
Neibhah i sih da iang chwa ha khmat
Ham pynhiar dor yei jingim kordor wa sy'ad.

IBAKORDOR L PHAWA

"A word after a word after a word is power."

ANDUGULA SHIVALEELA

"Do anything, let it produce joy."

ART

DEEPANSH DHIMAN

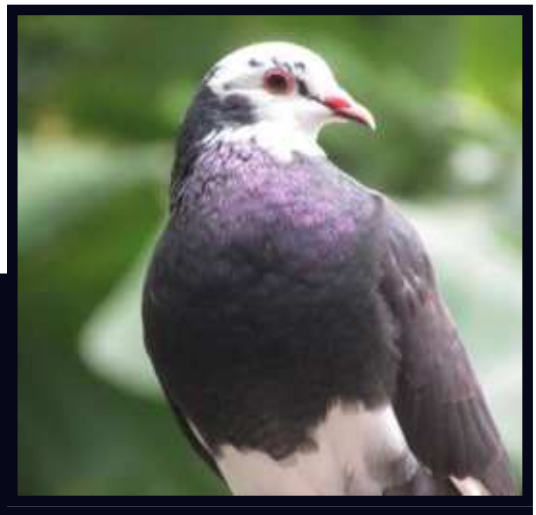
"Photography is an austere and blazing poetry of the real."

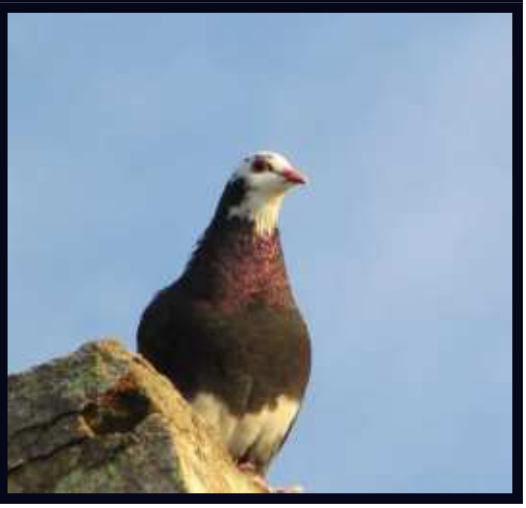
PHOTOGRAPHY

PHOTOGRAPHY

RAM KUMAR

"When we focus on what we can do instead of what we can't, A world of possibilities opens to us."





WRITINGS

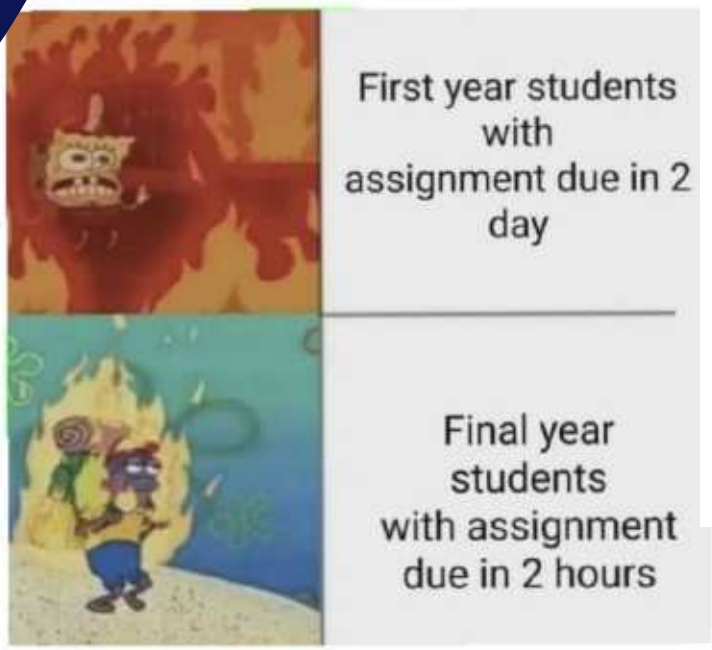
DIVYASRI S R

"Success is not final, failure is not fatal
It is the courage to continue that counts."

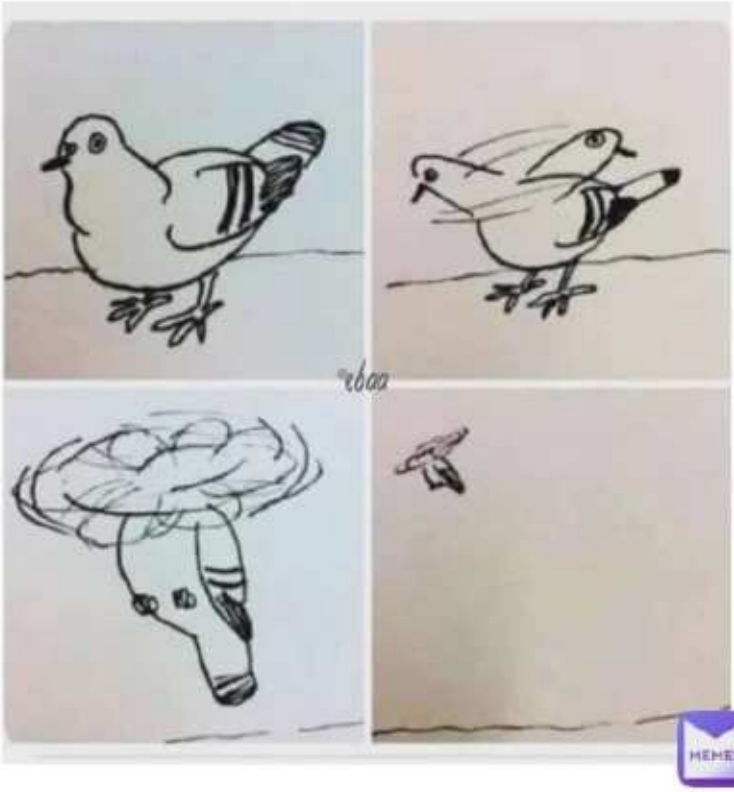
SUCCESS

The road to success is not straight.
There is a curve called failure;
A loop called confusion;
Speed bump called friends;
Red light called enemies;
Cautions called family;
but,
If you have a key called determination;
An engine called perseverance;
Insurance called faith;
A driver called god;
You can go to all places called success.

MEMES



when the code is a complete mess but it still works and does the job



When you forget to break out of the while loop