जैवप्रौद्योगिकी विभाग
DEPARTMENT OF
BIOTECHNOLOGY
सत्यमेव जयते

VOLUME 6, ISSUE 2
MARCH 2024

DBT STAR COLLEGE
(Under Strengthening Components)

Mail to: csc@sfc.ac.in

SFC-BYTES
VOLUME 6, ISSUE 2

NEWS LETTER

DEPARTMENT OF COMPUTER SCIENCE
ST. FRANCIS COLLEGE FOR WOMEN, HYD—16

PRINCIPAL- DR. UMA JOSEPH

CSC DEPT.

Ms. Padmasree
Ms. B. Kavitha
Dr Sr.Sujatha Yeruva
Ms. Rekha
Ms. D. Sowjenya
Ms. B. Jyothi
Ms. Prabhmeet
Ms. Shobana
Ms. Savitri
Ms. Afeefa
Ms. Khalida Tabassum
Ms. Renuka
Ms. Rajeshwari
Ms. Preethi
Ms. Ummiya
Ms. Divya
Ms. Priyanka
Ms. Jenifer
Ms. Persis
Mr. Krishna Murthy
Mr. Kiran
Ms. Maria
Ms. Kameshwari
Mr. Nihal
Mr.Murali
Ms.Leena

PRINCIPAL'S ADDRESS

Tech innovations have the potential to create new markets and industries. The trends in the field of computer science, be it AI or Quantum or Edge Computing or Robotics or Human-Computer Interaction (HCI) has taken the world of learning by storm.

The new Machines can never replace humans but it rather augments their capabilities. Machines are evolving to be increasingly autonomous and sophisticated. However, their functionality still depends on human creativity and design. Consequently, the future will demand a skilled workforce of software developers ready to meet these challenges I wish the department of Computer Science the very best as they strive to create the new breed of learners who will take on the task of achieving the functionality of the new innovations.

Regards,

Principal, St. Francis College for women

Dr Uma Joseph

UNDER GRADUATION COURSES OFFERED

POST GRADUATION COURSES OFFERED

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College for Women
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INDEX

EVENTS HELD UNDER STAR DBT

Hands – on Training on "Building Smart IoT Solutions"

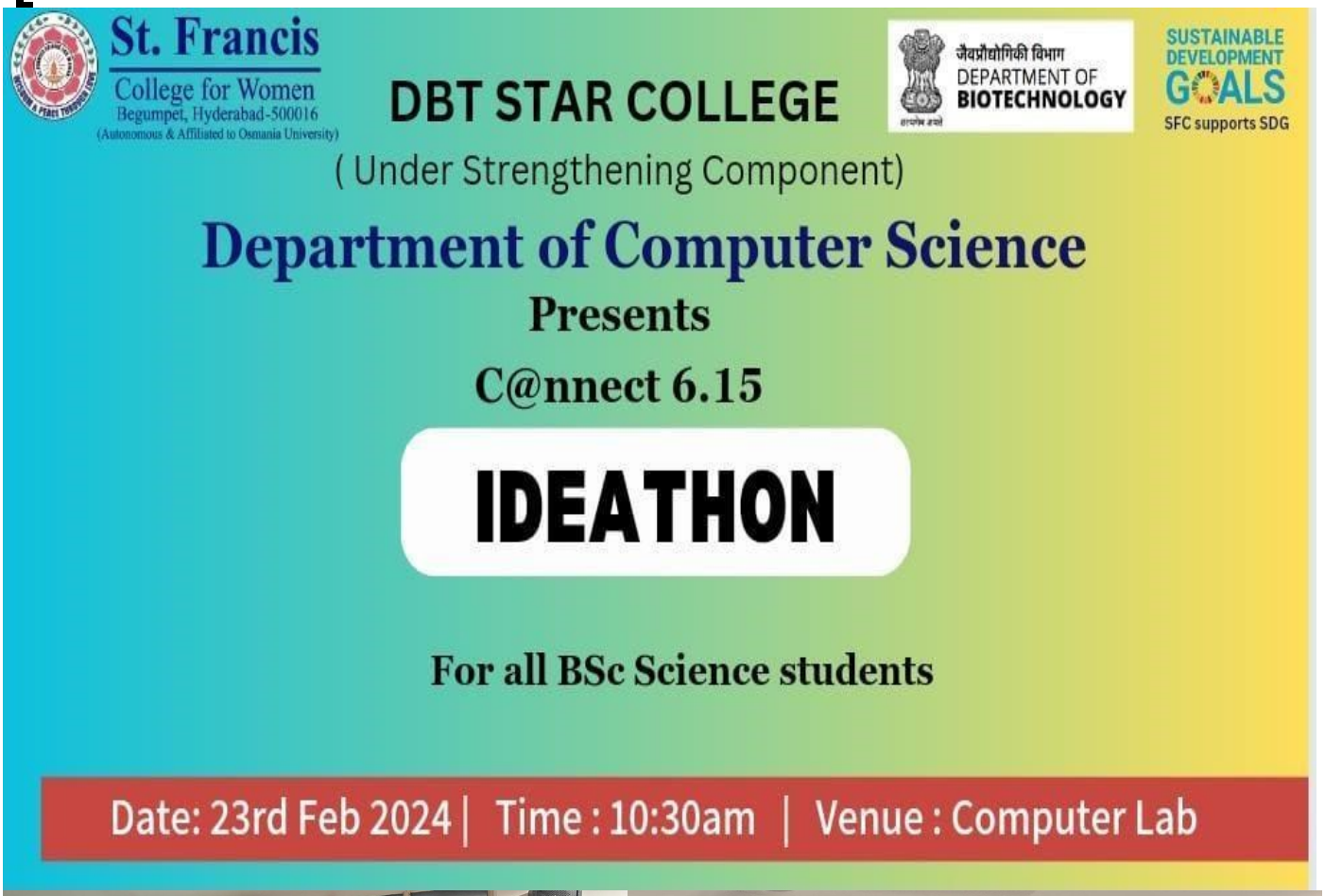
The Department of Computer Science organized a Hands- on Training on "Building Smart IoT Solutions" under DBT STAR COLLEGE for the B.Sc. II Year students in St. Francis College- CS Lab 7 from Jan-Feb 2024. Around 65 students participated. The resource person was Mr. G.N.L. Ravi Teja, Founder & Manager Tejasya Innovative Solutions and Pvt LTD. During the training, the students got to Familiarize with various electrical instruments, sensor technologies, data analytics, and real-world examples, providing insights into the transformative potential of technology and communication. Updated knowledge on how to run a code through node MCU and light a LED through Arduino software through various time stamps was given.

Students were introduced to the concept of sensors and their types. Students learnt how to measure the distance using an ultrasonic sensor. Students were taught about how to control devices using another device like a phone, laptop and were able to create a console to control the IoT devices.

Department of Computer Science has organised a Field Trip to Backstage Pass Institute of Gaming Technology Kavuri Hills , Madhapur, Hyderabad for the students of B.Sc. II H and selected IH under Star DBT on February 21 2024. Ms. Prabhmeet and Ms. Afeefa accompanied the students.

The Department of Computer Science organized a Blaze Hacks (Hackathon) under DBT STAR COLLEGE for the B. Sc Computer Science students of St. Francis and other college computer science students. 17 students from our college and 17 students from outside colleges participated in the event. First Prize and Second Prize was a tie and each team was given Rs 4000/- . Consolation prize of Rs. 2000/- was given to the 3rd team.

3 Faculty Coordinators: Ms. Prabhmeet, Ms. Rajeshwari and Ms. Preethi for this.

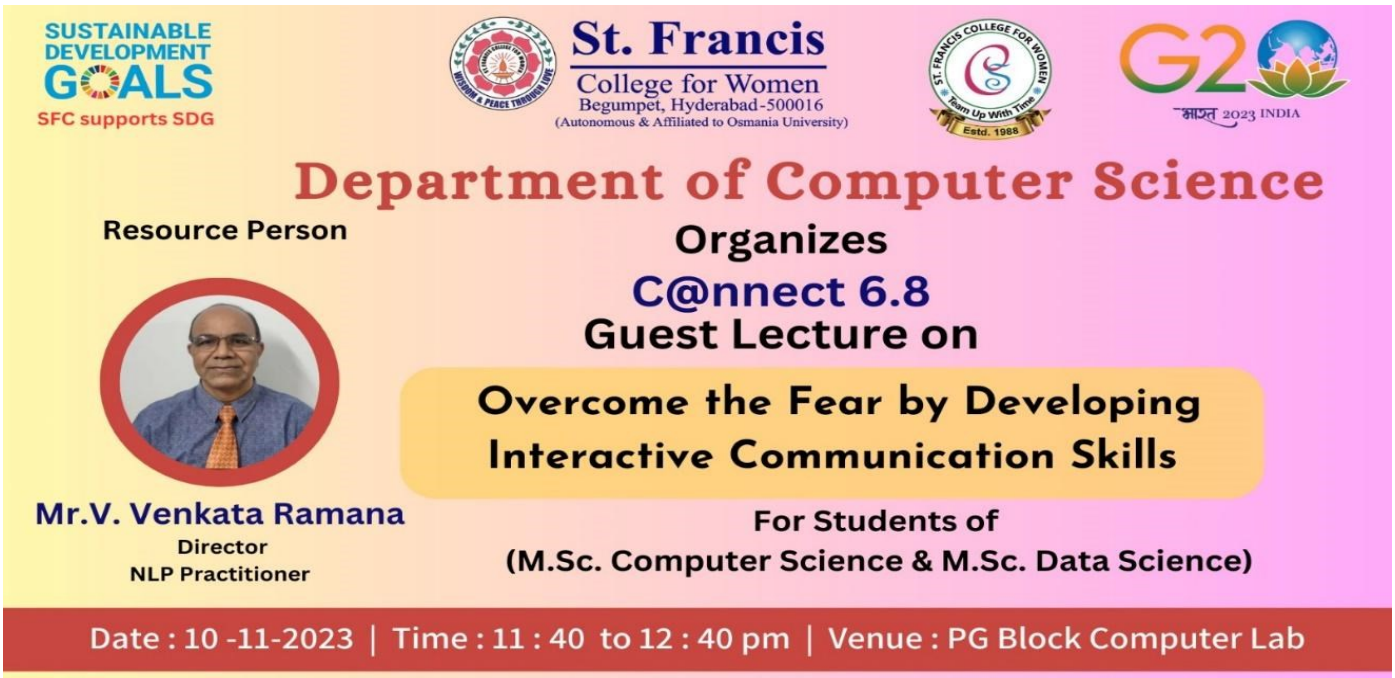


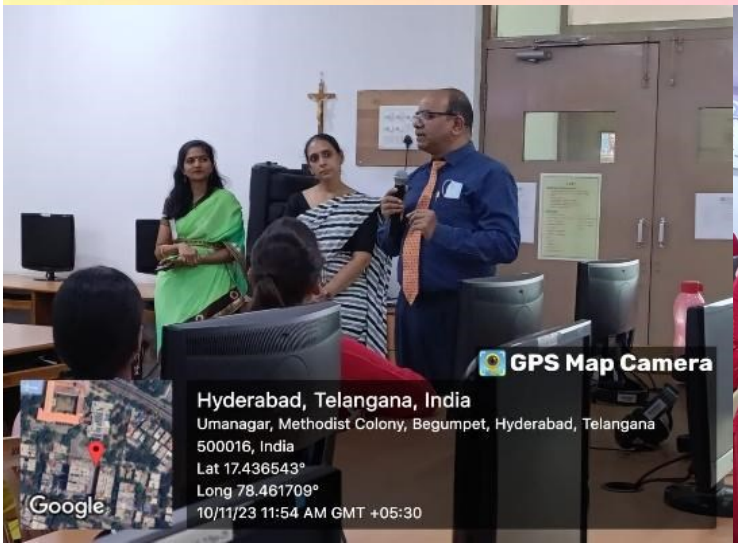
The Department of Computer Science organized a **Quiz (Ideathon)** under DBT STAR COLLEGE for the B.Sc computer science students of St Francis and other college computer science students. Around 50 students from our college and 6 students from outside colleges participated and 2 faculties, Ms.Rajeshwari and Ms.Preethi were coordinators for this .

Objective:

- To show cast the talent of students in programming and debugging .
- To show cast their talent in developing wireframe given problem specifications.

EVENTS HELD





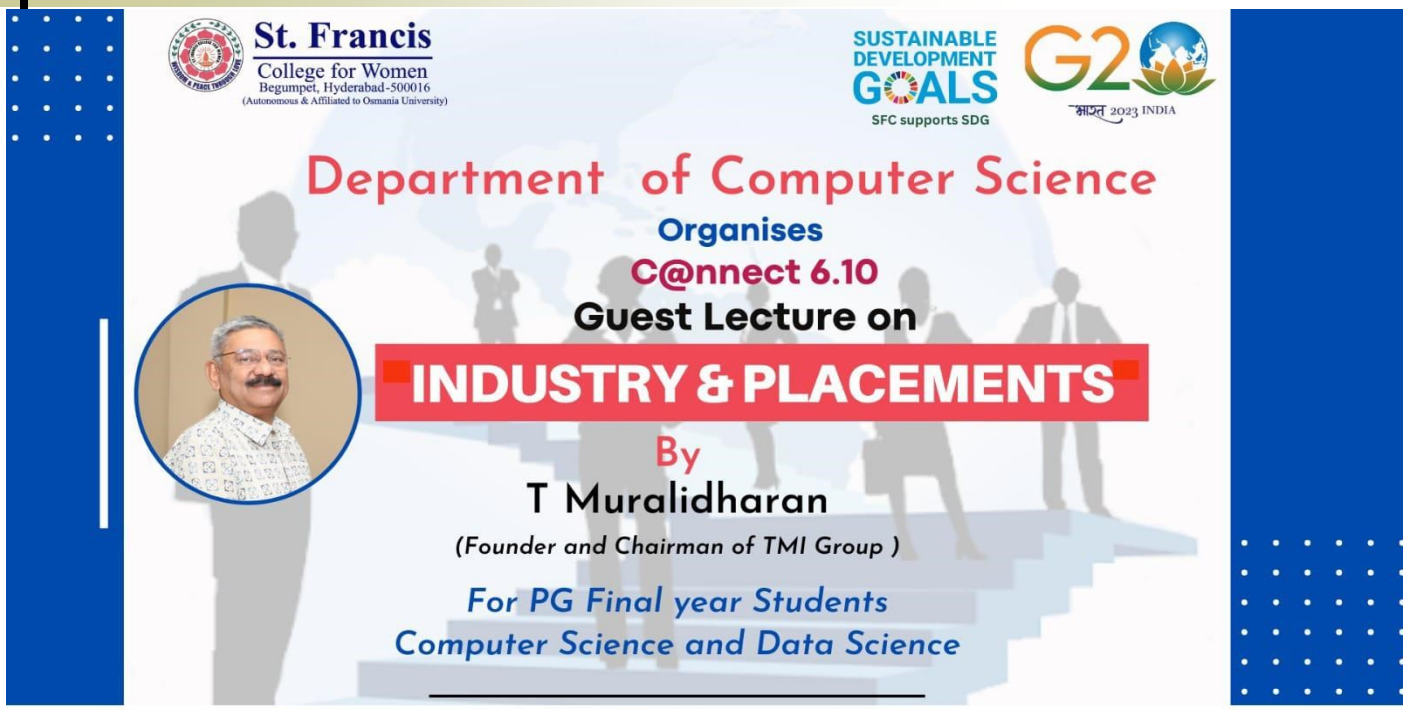
A Guest Lecture on "Overcome the Fear by Developing Interactive Communication Skills"

Department of Computer Science had organized a Guest Lecture on "Overcome the Fear by Developing Interactive Communication Skills" on 10-11-2023 from 11:30am to 12:30pm for PG MSc Computer Science and Data Science,1st and 2nd year students.

Resource person of the Guest Lecture, Mr. V Venkata Ramana interacted and discussed the importance of communication skills, asking questions and had given us a practical example and conducted a few activities like sharing student's most memorable experience. Sir started session with Topic -Hindrance to listening, interactive listening in which he discussed about how to overcome fear and talk confidently. He suggested students to speak -

- When they are fearful
- When they are angry

Finally, by taking an Oath to come out of the fear, communicating and not to brain drain, and to strive towards the development of oneself which leads to
development of nation, signed off session.



Date: 24th November, 2023 | Venue: PG Block Computer Lab | Time : 11.30AM to 12.30PM

A Guest Lecture on"Industry and Placements"

Department of Computer Science, C@nnect 6.10 has organized a Guest Lecture on "Industry And Placements" on 24-11- 2023 from 11:30.am to 1:30 pm for PG MSc Computer Science and Data Science, 1st and 2nd year students by distinguished speaker, Mr. T. Muralidharan, Founder and Chairman of TMI Group. Session Started with introduction about Resource person by Chintal Deepti from MSC Data Science 2nd year.

Speaker has given an insightful lecture on the importance of landing the right first job and the myriad applications of Data Analytics in various sectors. Mr. Muralidharan elucidated the diverse applications of Data Analytics in real-world scenarios. Drawing from his vast experience, he shared examples of how Data Analytics is utilized in elections, sports, healthcare, digital marketing, aviation, and more.Mr. Muralidharan introduced CLAN, a revolutionary platform designed exclusively for the frontline workforce.

This event served as a platform for knowledge exchange and provided attendees with a comprehensive understanding of the evolving landscape of Data Analytics and its applications across industries.

The Department of Computer Science students exhibited different models for the school children under Spectrum Club event – Glee on 12th Dec 2023.

A Guest Lecture on "Talent Management in the Age of AI and Career Guidance"

Department of Computer Science had organized a Guest Lecture on "Talent Management in the Age of AI and Career Guidance" on 13-12-2023 from 1:30am to 2:30pm for BSc Computer Science final year students in Gerosa Hall.

The speaker Satya Narayana sir, an industry expert, provided valuable insights into the evolving landscape of talent management in the era of artificial intelligence. The lecture began with a comprehensive overview of how AI is re-shaping the workforce. Satya Narayana sir shared real-world examples and personal experiences, offering practical tips on crafting effective resumes, preparing for interviews, and navigating career transitions. The audience gained valuable insights into the skills and attributes sought by employers in today's competitive job market.

In conclusion, the guest lecture provided a holistic perspective on talent management in the age of AI, coupled with practical guidance for individuals navigating their careers.

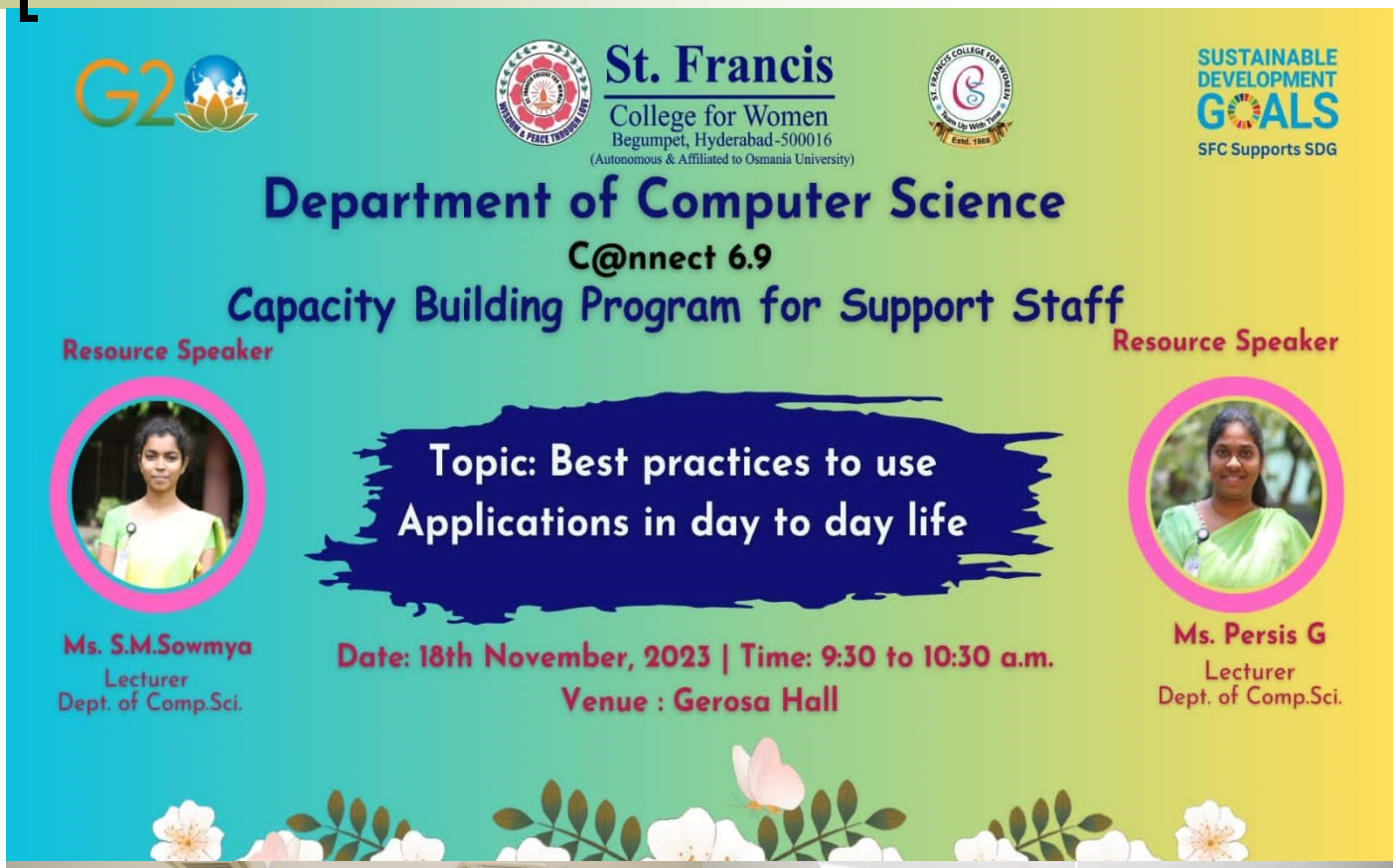
DATA WAREHOUSING AND DATA MINING - Guest Lecture Report

On February 15 2024, The Department of Computer Science organized Connect 6.12, A guest lecture on "Data Warehousing and Data Mining" for all the physical science students . The resource person Ms. Padma Leela, Assistant Professor of St. Mary's College provided valuable insights into the topics of data management systems, i.e. data warehousing, and Data Mining. The lecture was attended by students from 1B, 1D, 1E, and 1H sections and faculty members.

Capacity Building Program "Digital Empowerment Cyber Security Awareness & Best Practices"

The Department of Computer Science had organized a session on "Digital Empowerment Cyber Security Awareness & Best Practices' 'on 18-11-2023 from 9:30am to 11:00am in Capitanio Hall. Speakers of the seminar were Ms. Jyothi Reddy and Ms. Preethi Geetla attended by 53 Non-teaching Staff.

Ms Jyothi gave awareness on Do's & Don'ts while browsing or accessing web content. Also discussed the importance of Mobile Privacy & Security Concerns with examples. Later Ms. Preethi demonstrated the G-Pay & Metro e-ticket App usage and suggested to avoid huge amounts using G pay and be careful with the payment by QR codes as it's a 3rd party server.



Capacity Building Program for the Support Staff on "Best Practices to use Applications in Day-to-Day life"

Capacity Building Program for the Support Staff on "Best Practices to use Applications in Day-to-Day life" at Gerosa Hall on November 18, 2023. The session witnessed enthusiastic participation from 20 active attendees. The session commenced with Ms. Sowmya providing, a demonstration of the hands-on usage of sfc.winnou.net login. Participants were guided on how to effectively apply leaves and check their check-in and check-out status using the platform. In the second half of the session, Ms. Persis took the lead, offering practical insights into the updated features of WhatsApp. A highlight of the event was a small but engaging activity towards the end, where participants were challenged to guess logos of widely used applications

FACULTY ACHIEVEMENTS

FACULTY ACHIEVEMENTS

Ms.B. Jyothi Reddy

Appreciation from JEC publication for "PROCEEDINGS OF NATIOAL SEMINAR ON MULTIDISCIPLINARY RESEARCH AND PRACTICE VOLUME 1 "

Ms. B. Jyothi Reddy

Patent

(12) PATENT APPLICATION PUBLICATION
(19) INDIA
(22) Date of filing of Application :11/10/2023

(21) Application No.202341068189 A
(43) Publication Date : 20/10/2023

(54) Title of the invention : A NOVEL FACE DETECTION AND DEGENERATION SYSTEM BASED ON DEEP NEURAL NETWORKS

(51) International classification :G06N0003040000, G06N0003080000, G06K0009620000, G06N0003020000, G06F0021640000
(86) International Application No :NA
Filing Date :NA
(87) International Publication No : NA
(61) Patent of Addition to Application Number :NA
Filing Date :NA
(62) Divisional to Application Number :NA
Filing Date :NA

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2)Dr. Valli Madhavi Koti
3)Dr. R.Bullibabu
4)Dr. Karthikeyan Palaniappan
5)Dr. K.Jagan Mohan
6)Mrs. Jyothi Balreddygari
7)Mr. Deevi Hari Krishna
8)Mrs. P.Poonkodi
9)Dr. Urlam Devee Prasan
10)Dr. Rizwana
Name of Applicant : NA
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9)Dr. Urlam Devee Prasan
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10)Dr. Rizwana
Address of Applicant :Associate Professor, Department of Physics, Institute of Aeronautical Engineering, Dundigal, Hyderabad, Telangana, India. Pin Code: 500043 ---------- ----------

(57) Abstract :
[027] This invention presents a Novel Face detection and degeneration system based on Deep Neural Networks. The present invention comprising of a first network designed for precise facial recognition, trained to effectively identify faces within images or video frames. A second network engineered for facial feature alteration, with the ability to adjust facial attributes while maintaining the overall image's integrity. Further, the first network for face detection utilizes a convolutional neural network (CNN) architecture, incorporating techniques such as Single Shot MultiBox Detector (SSD) or You Only Look Once (YOLO) for efficient and real-time face detection. The second network for face degeneration is based on Generative Adversarial Networks (GANs) or Variational Autoencoders (VAEs) to enable the modification, blurring, or obfuscation of facial features. Accompanied Drawing [FIG. 1-2]

No. of Pages : 18 No. of Claims : 6

Ms. B. Jyothi Reddy

Best Women's Empowerment Award, Educational and Empowerment Research Award

ACUMEN FOUNDATION

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CERTIFICATE OF PARTICIPATION

This is to certify that

Ms. Jyothi Balreddygari
Research Scholar, Asst. Professor
BESTIU, St. Francis College for Women

has Participated and Presented a paper on

Technology and Innovation: Harnessing Technology for Women's Empowerment

and in recognition of their exceptional contribution to the event, they have been bestowed with the **prestigious Award**

Best Women's Empowerment Award, Educational and Empowerment Research Award

in the International Virtual Colloquium on **Women and the Society** *Convened by* **Acumen Foundation, Seva Academy** *and* **Literary Findings** *along with* **University Women Association**, *Chidambaram Chapter,* **IFUWA** *and* **Kuruthu Educational and Social Renaissance Trust (KESORT)** *as Knowledge Partners on* 21.10.2023 & 22.10.2023.

Dr. K. Saileela
Assistant Professor,
Annamalai University,
(On Deputation to GCE, Pudukkottai)

Dr. S. Poongothai
President, UWA, Chidambaram Chapter,IFUWA
Professor & Head, Civil Engineering,
Annamalai University,

Dr.A S Arullawrence
President, KESORT
&Assistant Professor,
School of Education
Tamil Nadu Open University

Ms. B. Jyothi Reddy

Gold Medal for Maximum Research Contribution- St Francis College for Women

Ms. D.B. Rekha

Won the Best Presentation under Faculty category for a paper entitled “Study on machine learning algorithms in detection of diabetes, in International Conference on Futuristic Trends in Science, Engineering and Management (ICFTSEM) 2024, St. Xavier’s College of Management & Technology

STUDENT ACHIEVEMENTS

STUDENT ACHIEVEMENTS

Students from B.Sc. 3H, Faria, Lakshmi, Sophia and Sahasrini participated in a Hackathon organized by Anurag University and won first prize- 12000/- cash prize on 11 Feb 2024.

Akshitha from B.Sc. 2E won third prize in the Bute Fiesta event conducted by Loyola College.

FACULTY ARTICLES

DIGITAL TWINS

Digital Twins refer to virtual representations of physical objects or systems in the digital world. These virtual counterparts are created and updated in real-time, mirroring the changes and status of their physical counterparts. Digital twins are used across various industries and applications, offering benefits in design, monitoring, maintenance, and optimization of physical assets and processes. Here are some key aspects of digital twins:

Definition and Concept: A digital twin is a computerized model that replicates the characteristics, behavior, and dynamics of a physical object, system, or process. The concept involves creating a virtual counterpart that exists alongside its physical counterpart, allowing for real-time monitoring and analysis.

Creation and Data Integration: Digital twins are created using a combination of 3D modeling, sensor data, and other relevant information. Data from sensors, IoT devices, and other sources are integrated to ensure that the digital twin accurately reflects the current state and behavior of the physical object or system.

Applications:

Manufacturing: Digital twins are used in manufacturing for product design, simulation, and quality control. They help optimize production processes and detect potential issues before they occur.

Healthcare: In healthcare, digital twins of organs or even entire patients can be created for personalized medicine, treatment planning, and simulations.

Smart Cities: Digital twins can represent entire urban areas, helping city planners and authorities optimize infrastructure, manage resources, and enhance overall efficiency.

IoT and Industry 4.0: The Internet of Things (IoT) is often integrated with digital twins to enable real-time monitoring and control of physical assets, leading to predictive maintenance and improved operational efficiency.

Aerospace and Automotive: Digital twins are used in the design and testing of aircraft and vehicles, optimizing performance and safety.

Real-Time Monitoring and Analysis: The strength of digital twins lies in their ability to provide real-time insights into the status and performance of physical assets. This allows for proactive decision-making and timely interventions.

Lifecycle Management: Digital twins cover the entire lifecycle of a physical object, from design and manufacturing to operation, maintenance, and eventual decommissioning.

Advancements in Technology: Technologies such as cloud computing, edge computing, artificial intelligence, and machine learning play crucial roles in the development and utilization of digital twins.

Interconnected Systems: Digital twins can be interconnected, creating a network of digital representations that interact with each other. This can be particularly beneficial in complex systems or environments.

The concept of digital twins continues to evolve, with increasing integration into various industries and domains. It holds the potential to revolutionize how we design, manage, and optimize physical assets and processes in the digital age.

Dr. Sr. Sujatha Yeruva
M.Sc., Ph.D.
Vice-Principal
(Administration)

Behind every click, there's a universe of possibilities waiting to unfold.

- Sheryl Sandberg

EXPLORING 10 TRANSFORMATIVE TECHNOLOGIES SHAPING THE FUTURE

A digital twin is an electronic replica of a real-world item, individual, or procedure, placed within a virtualized replica of its surroundings.

Organizations employ digital twins to simulate real-world scenarios and their results, which ultimately leads to better decision-making. By fusing virtual reality, augmented reality, and other technologies, it facilitates the replication of digital representations of physical systems. As a result, it generates digital twins of the actual systems, processes, or things. A virtual model of the object or system is created by gathering data from sensors and other sources.

This technology serves a variety of functions across numerous sectors. This technology enhances industrial and healthcare industries' production processes. Hospitals might utilize it to simulate surgical procedures. Because digital twins are always in sync with their real-world counterparts, they provide insights regarding behavior, performance, and conditions. Monitoring, optimization, and predictive analytics are made possible as a result.

With more timely data and faster, more efficient production, digital twins are employed to increase operational efficiency. With more precise knowledge of a product's age and contents, they help to enhance end-of-life procedures like recycling and refurbishing.

Ms. D. Sowjenya

Head Department of Computer Science

The only way to achieve the impossible is to believe it is possible.

- Charles Kingsleigh

EXPLORING 10 TRANSFORMATIVE TECHNOLOGIES SHAPING THE FUTURE

In the ever-evolving landscape of technology, certain advancements stand out for their transformative impact. Let's delve into 10 key topics from the extensive Table of Contents, highlighting the innovations that are shaping the future.

Ms. B. Jyothi Reddy,
Asst. Professor,
Department of Computer Science.

1. Generative AI: Unleashing Creativity

Generative AI, an emerging field in artificial intelligence, is revolutionizing creative processes. This technology can autonomously produce content, from art to music. The ability of machines to generate innovative and unique outputs challenges traditional notions of creativity.

2. Computing Power: The Engine of Progress

The relentless pursuit of enhanced computing power is propelling technological advancements. From powerful processors to the frontier of quantum computing, the race to improve computational capabilities is driving innovation in diverse fields, from scientific research to everyday computing tasks.

3. Smart(er) Devices: Infusing Intelligence into Everyday Life

The integration of artificial intelligence into devices is transforming them into smart, responsive entities. From smartphones to home appliances, these devices can now learn user preferences and adapt, creating a more personalized and efficient user experience.

4. Datafication: Quantifying Life's Aspects

The process of turning various aspects of life into quantifiable data, known as datafication, is a key trend. This approach is influencing decision-making in various fields, from healthcare to business operations, as data becomes a crucial driver of insights and innovation.

5. AI and Machine Learning: Navigating the Intelligent Frontier

Artificial intelligence and machine learning continue to redefine possibilities. From natural language processing to deep learning algorithms, this technology is reshaping industries, enhancing efficiency, and opening up new realms of innovation.

6. Extended Reality: Beyond Virtual and Augmented

Extended Reality (XR), encompassing virtual and augmented reality, is transforming how we interact with digital content. This technology goes beyond entertainment, finding applications in education, healthcare, and various industries, offering immersive experiences.

7. Digital Trust: Safeguarding the Virtual Realm

With the increasing digitization of our lives, establishing and maintaining digital trust is crucial. This involves securing online interactions, protecting personal data, and ensuring the integrity of digital platforms and transactions.

8. 3D Printing: Shaping the Future of Manufacturing

3D printing technology is evolving rapidly, enabling the creation of intricate designs and revolutionizing manufacturing processes. From healthcare to aerospace, industries are embracing 3D printing for its efficiency and versatility.

9. Genomics: Decoding the Blueprint of Life

Advancements in genomics are unlocking the secrets of our DNA. This has far-reaching implications for personalized medicine, disease prevention, and our understanding of the genetic factors influencing health.

10. New Energy Solutions: Powering a Sustainable Future

The quest for sustainable energy solutions is a driving force in technological innovation. From renewable energy sources to advanced storage systems, developments in the energy sector are crucial for addressing global environmental challenges.

Each of these 10 topics represents a facet of the dynamic technological landscape, showcasing the profound impact of innovation on our present and future. As these advancements continue to unfold, they will undoubtedly shape the way we live, work, and interact in the years to come.

You are never too old to set another goal or to dream a new dream.

- C.S. Lewis

QUANTUM COMPUTING: A PEEK INTO THE FUTURE

Ms. P.RENUKA
(COMPUTER SCIENCE DEPARTMENT)

The realm of computation is about to witness a revolution which would redefine the limits of data and information processing. This article aims at providing a small insight (a small peek, if you will) into this field of quantum computing.

Unlike classical computing, which relies on bits to process information in binary code, quantum computing harnesses the peculiar principles of quantum mechanics.

This is how it works: classical computing is built on bits, which can be in one of two possible states, either a zero or a one. On the other hand, quantum computing is built on quantum bits, or qubits, which can store zeros *'and' ones. Unlike a classical bit, qubits exist in a quantum superposition of states, meaning it can be in any given combination of the zero and one states at the same time. This phenomenon is called Superposition.*

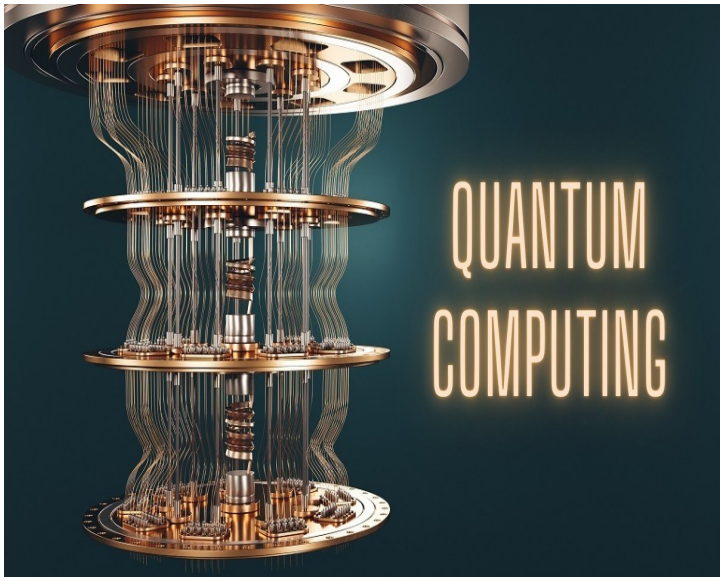
Superposition allows quantum computers to perform parallel computations, promising solutions to problems that were once deemed insurmountable. Imagine a computer that doesn't just crunch numbers but explores countless possibilities simultaneously, revolutionizing fields from cryptography to artificial intelligence.

The potential applications of quantum computing are huge. From revolutionizing drug discovery and optimizing supply chains to enhancing machine learning algorithms and cryptography, the impacts are far-reaching.

While there have been notable advancements, the technology is still in the early stages of development, and several challenges need to be addressed before quantum computers become more broadly useful. Limited Qubit count being one of them. Developing computers with higher number of qubits while maintaining coherence remains a significant hurdle.

IBM's 'Condor' is currently the largest and most powerful quantum processor out there, working with 1,121 qubits.

In this article, we've only scratched the surface of the quantum computing phenomenon. The journey into the quantum realm is not just for scientists and researchers; it's a collective exploration that invites us all to envision and shape the future of computing. Quantum computing is not just a technological leap, it's the dawn of a new era.

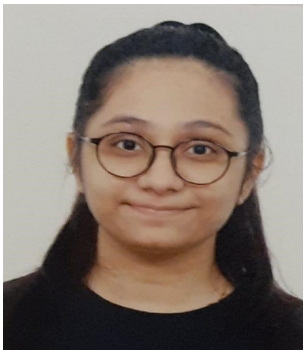


What lies behind us and what lies before us are tiny matters compared to what lies within us.

- Ralph Waldo Emerson

STUDENT ARTICLES

QUANTUM COMPUTERS: AN IDEA



Anushka shastri
121323052002
Bsc 1H

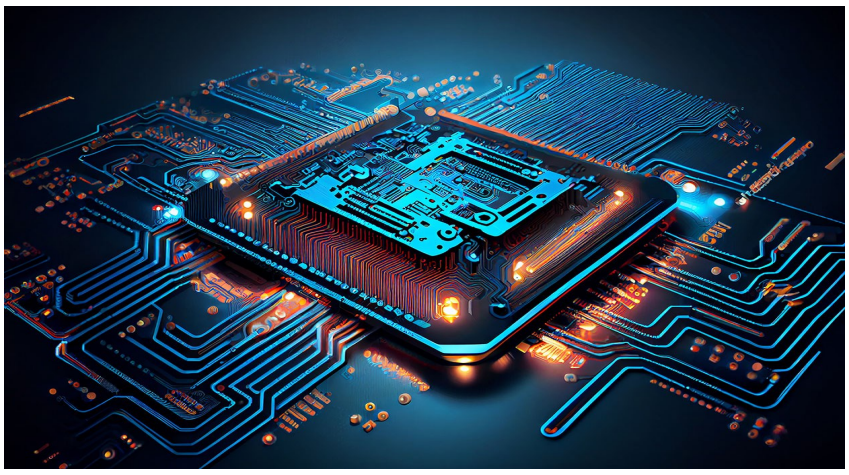
Quantum computers aren't simply supercomputers, rather they're something entirely different. The difference is the key to understanding the importance given to this idea. These computers aren't the faster, more efficient versions of the currently existing computers but instead, they're meant for completely different fields of calculations. These are intended to discover an entirely new terrain of using quantum mechanics as computer programs.

What exactly is a quantum computer? We know classical computers perform a series of simple tasks quickly. Quantum computers work on the principles of quantum mechanics and derive the required formulae from the same.They skirt around the laws of quantum physics to overcome the limitation of classical computers. The common misconception is that they calculate all possibilities, rather they observe all the possibilities and find the most likely answer.

Quantum computers work using the fundamental unit of 'qubit'. A qubit is the quantum analog of the ordinary 'bit' used by classical computers. We know that a 'bit' can take the value of either 1 or 0. Whereas qubit's quantum nature allows it to exist in the jargon of both states at once. A lot like Schrödinger's cat.

Researchers have been working on perfecting quantum computers since the 1980s. Currently, there are three distinct types of quantum computers: quantum annealing, quantum stimulation, and universal quantum. The largest quantum computer is currently at IBM. The researchers at IBM have said," The main purpose of a quantum computer is to accelerate things that are hard for classical computers. Where the classical computer requires writing out giant equations to stimulate, say modeling the atomic bonding, they try and mimic the system directly on a quantum computer."

Quantum computing is still in the early phases and the future use of the same might take time to bring to fruition. But there is a definite usefulness of the use of quantum calculations in the future. They will contribute immensely to society and provide undeniable influence on upcoming problems.



The only way to do great work is to love what you do.

- Steve Jobs

CRYPTOGRAPHY-A PART AND PARCEL OF OUR LIVES

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Cryptography or cryptology is a process of securing communication and information from third parties or adversaries. It is implemented by using computer algorithms and mathematical techniques.

Cryptography has been used for thousand of years and is still in use today. Some of the concepts of cryptography are:

- Encryption/decryption-

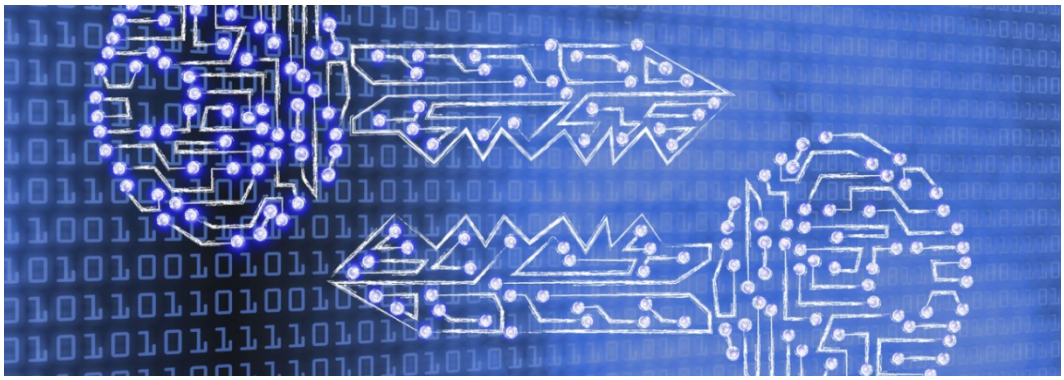
  Encryption is the process of converting plaintext (readable data) into ciphertext (unreadable data) using an algorithm and a key.
  Decryption is the reverse of encryption.It is used to convert cipher text back to plain text.
- End-to-end encryption –

  End to end encryption is a security method where the data is secured with a lock and only the sender and the receiver have access to read and update the data. This method provides a high level of privacy and security.
- Quantum cryptography

  Quantum cryptography is a method of encryption that uses the laws of quantum mechanics to protect and transmit data.
- Digital signatures-

  Digital signatures are like electronic "fingerprints" and are a cryptographically bound. The sender signs the message with their private key, and the recipient can verify it using the sender's public key.

Cryptography plays a vital role in various aspects of our daily life, ensuring the security sensitive information in different contexts.



Computers where logic meets imagination, creating a symphony of Innovation.

- Tim Cook

QUANTUM COMPUTING

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Artificial Neural Networks (ANNs) have gained immense popularity in recent years, revolutionizing various fields including machine learning, computer vision, natural language processing, and more. ANNs, inspired by the human brain's neural structure, have proven to be powerful tools for solving complex problems. In this blog, we will explore the fundamentals of artificial neural networks, their structure, and their applications.

What is an Artificial Neural Network? -An Artificial Neural Network, often referred to as a neural network or simply "ANN," is a computational model that attempts to mimic the way a human brain processes information. Just as the brain consists of interconnected neurons, an ANN comprises interconnected artificial neurons or nodes. These nodes work together to process and learn from data, making ANNs capable of solving a wide range of tasks, from image recognition to language translation.

Key Components of an ANN

Neurons (Nodes), Weights and Biases

Layers: typically divided into three types: a. Input Layer b. Hidden Layers c. Output Layer

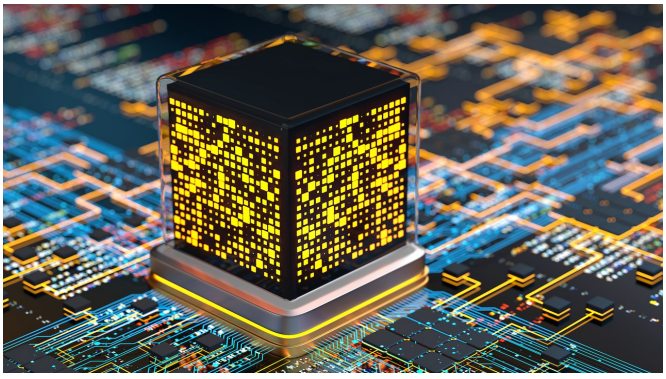
The Learning Process, Forward Propagation, Backpropagation
Applications of ANNs-Artificial Neural Networks have made significant contributions to various fields, including:

Image Recognition: Convolutional Neural Networks (CNNs) are a specific type of ANN designed for tasks like object detection, facial recognition, and image classification.

Natural Language Processing: Recurrent Neural Networks (RNNs) and Long Short Term Memory networks (LSTMs) are used for tasks such as language translation, sentiment analysis, and text generation. Autonomous Vehicles: ANNs play a crucial role in the development of self-driving cars, helping with tasks like object detection, path planning, and decision-making.

Healthcare: ANNs assist in medical image analysis, disease diagnosis, and drug discovery.

Conclusion-Artificial Neural Networks have become indispensable in the world of machine learning and artificial intelligence. With their ability to learn from data and adapt to complex tasks, they continue to shape our technological landscape. As you delve deeper into this exciting field, you'll discover the incredible potential and endless possibilities of ANNs. Whether you're a student, researcher, or industry professional, ANNs offer an exciting journey into the world of intelligent computing.



QUANTUM COMPUTERS: THE TECHNOLOGICAL REVOLUTION

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The ever-changing world of technology and trends the future is in the aid of *Quantum Computers.*

Quantum Computers are computers that use quantum mechanical phenomena to solve certain types of problems faster than classical computers. They use the principles of quantum physics to solve complex statistical problems that today's computers can't.

Quantum computers use the qubit as the basic unit of information, rather than the conventional bit. This allows for the coherent superposition of ones and zeros, the digits of the binary system. Quantum computers represent a new approach to computing, and won't replace today's computers. Even though quantum computers are yet to be developed completely, some say that a fully fault-tolerant quantum computer could be available by 2035. But yes, functional quantum computers exist and are capable of doing some work. However, they are not yet fully operational models. In 2019, Google AI and NASA announced that they had achieved quantum supremacy with a 54-qubit machine and very recently in the year of 2023, IBM unveiled its latest quantum computer, Osprey, a new 433 qubit processor that is three times more powerful than its predecessor. Google's new quantum computer stands as a testament to this incredible advancement. It is a staggering 241 million times faster than the quantum computer Google released in 2019. In practical terms, this means that it can complete 47 years of computing tasks in just 6 seconds.

Quantum computing is still in the early stages of development. According to Forbes, quantum computing could enter the mainstream in the next 5–10 years, similar to how classical computers moved from labs to businesses in the 1970s and 1980s. According to EY (Ernst & Young), Google, IBM, and others believe 1,000 qubit systems are only a few years away. IBM has set its sights on building a 100,000-qubit machine within 10 years, and Google is targeting a million qubits by the end of the decade.

The greener side of quantum computing is it has many sustainability opportunities. It could help with: Carbon emissions, Climate change, Power generation, Material discovery.

To learn quantum computing, one will need a background in physics, mathematics, and computer science. This includes knowledge of: Exponents, Vectors, Sine waves, Linear algebra, Probability and stochastic processes.

You also need to understand the two main phenomena applied in quantum computers: superposition and entanglement.

Hence, we can quite surely conclude that quantum computing is the next big thing after artificial intelligence and in the near future the next technological revolution, and I would like to end this article with the quote:

"We couldn't build quantum computers unless the universe were quantum and computing".

Success usually comes to those who are too busy to be looking for it.

- Henry David Thoreau

DATA SCIENCE

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Storing data and analyzing it is no new concept. You may be surprised to know that the earliest example of humans using data goes back to 18,000 BCE. Back then, humans used tally sticks to track their activity. And while, over the centuries, the way of recording data and analyzing it has undergone substantial changes, one thing has remained the same. Our world thrives on data. With today's technology, large volumes of data are collected every day.

However, the more data we collect, the more challenging it is to analyze. The time required to find meaningful insights from it also becomes longer. This is where data mining comes in. It provides a solution to this problem and allows businesses to make data-driven decisions. When you hear the word mining, you may think of people looking for valuable resources underground. Data mining is somewhat like that. Instead of looking in a mine, you look into colossal amounts of data. And instead of finding natural resources, you look for valuable information to help you achieve your goals. Examples of Data Mining: Fraud Detection Traditional techniques of fraud detection are time-consuming and difficult due to the amount of data. Data mining aids in the discovery of relevant patterns and the transformation of data into information. What Kinds of Data Mining Tools Are Out There: Artificial Intelligence, Data Analytics, Data Warehousing, Clustering.

DO U KNOW WHY DATA MINING IS IMPORTANT IN COMPUTER SCIENCE:

Data mining is important part of computer science because it enables organizations to extract useful information from large and complex datasets. It is a branch of computer science that uses machine learning, statistics, and other techniques to uncover trends that would be difficult.

Coding is today's literacy. It is the alphabet of the 21st century.

- Nellie McKay

MARKTING

Marketing is an essential tool for businesses to reach their target audience, build brand awareness, and drive sales. It is the process of promoting and selling products or services through various channels, such as advertising, public relations, and social media. In today's competitive business world, a strong marketing strategy is crucial for a company's success.

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One of the key aspects of marketing is understanding the needs and preferences of the target audience. By conducting market research and analyzing consumer behavior, businesses can tailor their marketing efforts to resonate with their potential customers. This includes identifying the right channels to reach them, creating compelling messaging, and developing a unique selling proposition that sets the brand apart from its competitors.

Another important element of marketing is building brand awareness. This involves creating a strong, recognizable brand identity that speaks to the values and aspirations of the target audience. Through consistent messaging and visually appealing branding, businesses can build a loyal customer base and differentiate themselves in the marketplace.

Marketing also plays a crucial role in driving sales and revenue. By implementing effective advertising and promotional campaigns, businesses can attract new customers and encourage repeat purchases. This can be achieved through various tactics, such as offering discounts, launching new products, or leveraging social proof through customer testimonials and reviews.

What lies behind us and what lies before us are tiny matters compared to what lies within us.

- Ralph Waldo Emerson

EVOLUTION OF TECHNOLOGY

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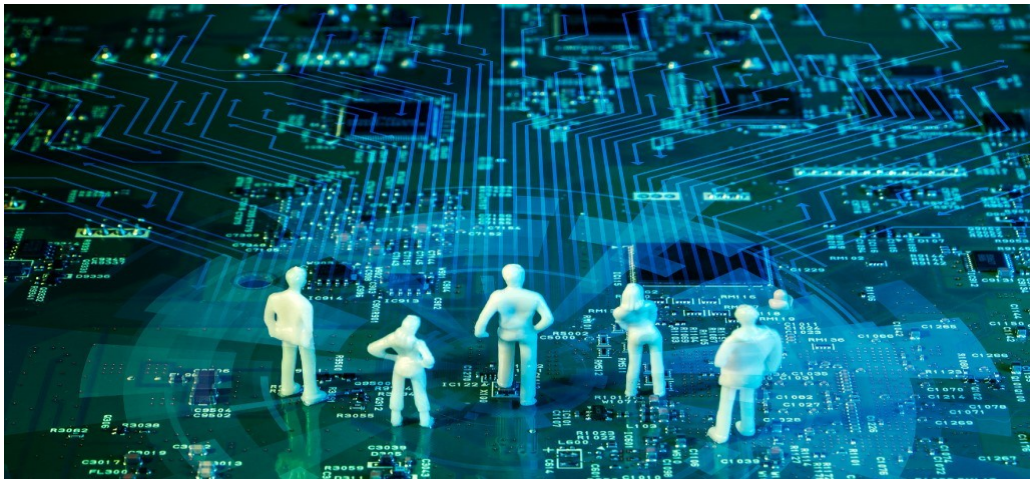
Technology has been advancing in various industries such as science, automobile, textile, education, finance, and more. This growth has been particularly rapid in recent years compared to previous ones. However, the question of when technology first emerged is still a topic of curiosity for many. The use of sharp stones as knives and hammers dates back approximately 3.3 million years ago, while today we use metal and wood to create these tools. The invention of fire also began with the use of stones for ignition, which eventually evolved into the use of LPG and electric stoves. Similarly, irrigation, electricity, transportation, and textiles have all undergone significant transformations over time, now relying on large machines for production.

Technology has played a significant role in our daily life basis. Technology is not limited only to the I.T. it applies to art and craft as well. Coming to digital technology can be traced back to 1943-1946 during this period we can say that the revolution for the I.T. industry started with the invention of a computing system called ENIAC (Electronic Numerical Integrator And Calculator). Over time electronic devices, such as computers, cell phones, laptops and tablets, were invented with them came the computer and programming languages such as JAVA, C++, Python, HTML and so on. These languages have become a backbone for many inventions such as creating and designing apps and developing software. Even in the healthcare sector, we use programming languages to maintain records, diagnoses and development. Similarly, the agricultural sector, textile industry and so on, rely on programming languages to maintain their apps and development.

We can truly see the technology growing rapidly even and with the help of AI, many are or can be created like detecting the emotions of a person and interpreting dreams, shopping, controlling electric devices, etc.. For example, a recent study made by Japanese scientists says that we can read dreams and visualize the persons in the initial sleep phase using MRI scans. This study shows that it can accurately decipher up to 60%. We can conclude that technology will evolve and continue to grow even more so in the future in all sectors. We are now in the Fourth Industrial Revolution, which means the evolution of automation and data exchange in manufacturing technologies and processes, and the next Industrial Revolution isn't so far away where it involves humans working alongside AI.



Believe you can and you're halfway there.

- Theodore Roosevelt

CRYPTOGRAPHY

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Cryptography is the process of hiding or coding information so that only the person a message was intended for can read it. The art of cryptography has been used to code messages for thousands of years and continues to be used in bank cards, computer passwords, and ecommerce. A common cryptography definition is the practice of coding information to ensure only the person that a message was written for can read and process the information. This cybersecurity practice, also known as cryptology, combines various disciplines like computer science, engineering, and mathematics to create complex codes that hide the true meaning of a message.

Cryptography remains important to protecting data and users, ensuring confidentiality, and preventing cyber criminals from intercepting sensitive corporate information. Common uses and examples of cryptography include: Individuals and organizations use cryptography on a daily basis to protect their privacy and keep their conversations and data confidential. Cryptography ensures confidentiality by encrypting sent messages using an algorithm with a key only known to the sender and recipient. A common example of this is the messaging tool WhatsApp, which encrypts conversations between people to ensure they cannot be hacked or intercepted. Similar to how cryptography can confirm the authenticity of a message, it can also prove the integrity of the information being sent and received. Cryptography ensures information is not altered while in storage or during transit between the sender and the intended recipient. For example, digital signatures can detect forgery or tampering in software distribution and financial transactions.. Cryptography confirms accountability and responsibility from the sender of a message, which means they cannot later deny their intentions when they created or transmitted information. Digital signatures are a good example of this, as they ensure a sender cannot claim a message, contract, or document they created to be fraudulent. There are many types of cryptographic algorithms available. They vary in complexity and security, depending on the type of communication and the sensitivity of the information being shared. Some of them are Secret Key Cryptography also known as symmetric encryption, uses a single key to encrypt and decrypt a message. Public key cryptography (PKC), or asymmetric cryptography, uses mathematical functions to create codes that are exceptionally difficult to crack. It enables people to communicate securely over a nonsecure communications channel without the need for a secret key. Hash function cryptography ensure that data integrity is maintained in the encryption and decryption phases of cryptography. It is also used in databases so that items can be retrieved more quickly.

In Conclusion , Cryptography can leads to many career possibilities like in banking and financial sectors , tech firms and in military and defence projects. So if you really love cryptography , a career choice in that field will bring you sure success and wealth.

The only limit to our realization of tomorrow will be our doubts of today.

Franklin D. Roosevelt

NANOBOTS

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"Nanobots," the word itself tells us,are miniature robots designed to operate at the nanoscale, typically ranging from 1 to 100 nanometers. They are used across different fields. In medicine, they promise targeted drug delivery, minimising side effects,and enhancing treatment efficacy. In surgery, their microscopic precision could redefine medical procedures. Nanobots have the capability to detect and identify molecular markers associated with diseases, enabling early and accurate diagnosis. Beyond healthcare, nanobots may play a crucial role in environmental applications, contributing to pollution remediation and sustainable practices in agriculture. Nanobots are also used during surgical procedures at a microscopic level, providing the doctors with the ability to view small molecules.Nanobots could be utilized for environmental cleanup, targeting pollutants and contaminants in water, air, or soil. In agriculture, nanobots can optimise resource use, monitor crop health, and deliver nutrients precisely where needed, contributing to increased crop yield and sustainability. The small size of nanobots allows them to access confined spaces and target specific areas, enhancing their efficiency in various applications. Because of their small size, it also allows them to access confined spaces and target specific areas,enhancing their efficiency in various applications. The best part about nanobots is that they are self-replicatory,allowing them to reproduce and multiply,potentially increasing their impact and

If you want to lift yourself up, lift up someone else.

Booker T. Washington

GOOGLE GEMINI VS CHATGPT

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On 6th of December, 2023 google launched something called Gemini pro. And this is a very big step in Tech world because, last December google was facing an existential crisis and we all know reason -'ChatGPT'.

Until now google has been a monopoly in search market with 91% market share and 4.2 billion users. But suddenly OpenAI came in and disrupted entire search engine market. ChatGPT is the fastest growing app in the history it barely took 60days to hit 100 million users Now the question here is what is the story of this AI war between google and Microsoft? What is so special about Gemini pro, nano and ultra that they have been called as the ChatGPT killers in the market? What is technical difference between google and ChatGPT? Why is this AI war so crucial for both google and Microsoft.

During 2014 google made a big move in the AI world when they bought a company called DeepMind. And google made this purchase for $500 million. On top of it, Google has the maximum number of research paper on AI in 2021. But in 2019 Microsoft put in $1 billion budget to strike a genius deal with the AI company called OpenAI.

Google's engineers did create a chatbot very similar to ChatGPT. They did it two years before ChatGPT. But google decided not to launch it because they were worried about safety issues. But now in the business world this decision seems to be a big mistake.

When ChatGPT started raising in popularity google started working on AI because their $160 billion search engine business was in danger. This is why google rushed to launch their own AI called Google Bard. Surprisingly Bard was terrible that in just one day google lost $100 billion in share value and its stock went down by 11%.

The super power that Gemini has is that it is a Natively Multi Modal system which is designed from the very start to process the image, sound and text. Whereas ChatGPT is a Multi-Modal system which is originally built only for text and then it got added up with features like image and sound. This is the reason why that Gemini out performs ChatGPT in the long run.

The second super power of Gemini Ai is its versatility. Gemini AI comes in three versions
1.Gemini Nano – lightweight version that runs on android phones even without internet.

2. Gemini Pro – Heavy duty version, brain behind Google's AI services including bard.

3. Gemini Ultra – Most powerful version designed for business and data centers.

The third super power that Gemini has is the extraordinary computing power of google. By the end of this year Google's computing capabilities are expected to be five times more than the OpenAI and they are projected to be 20 times more by the next year. As a result, Google's AI models including Gemini can learn and evolve much quicker and better as compared to ChatGPT.The fourth super power that Gemini has is a ton of data from google. So, unlike startups like OpenAI reliant on public data sources which may have legal complexities google has its own data search from YouTube, Google books and Google scholar. Gemini's training isn't just limited to text but also includes a variety of languages. So, this broad range of training in data gives Gemini a unique advantage in terms of diversity and depth of knowledge as compared to OpenAI.These are the reasons why Gemini AI is considered to be better than ChatGPT at the moment. In fact, in a series of 32 benchmarks Gemini out performed ChatGPT in 30 out of the 32 tests. Does this mean that OpenAI has lost the battle? Absolutely not. Because google is beating OpenAI only by a small margin and very soon OpenAI is coming out with ChatGPT5. Even if Microsoft doesn't succeed in capturing the search market it is still ok , but if they win this war Microsoft will end up eating up a monopoly market to become the most powerful tech company in internet history.

The future belongs to those who believe in the beauty of their dreams.

- Eleanor Roosevelt

HIGH PERFORMANCE COMPUTING

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The High Performance Computing (HPC) applications benefit from the new paradigms for computers, capacity, and adaptable responses provided by cloud computing. For instance, the Hardware as a Service (Haas) paradigm enables individuals to provide several Virtual Machines (VMs) for applications that need a lot of computing. Any execution error would require re-running applications, which would waste time, money, and energy since the HPC system on the cloud uses a lot of VMs and electrical components. In this research, the execution time on the clock and the cost when mistakes occur, we provided a Proactive Fault Tolerance (PFT) strategy to High Performance Computing systems in the cloud

HPC in the cloud

The compute resources needed to analyse big data and solve complex problems are expanding beyond the on-premise compute clusters in the datacentre that are typically associated with HPC and into the resources available from public cloud services.

Cloud adoption for HPC is central to the transition of workloads from an on-premise-only approach to one that is decoupled from specific infrastructure or location.

Cloud computing allows resources to be available on demand, which can be cost-effective and allow for greater flexibility to run HPC workloads.

Distributed Computing In recent times, other solutions for HPC, such as grid computing, cloud computing and volunteer computing, have become very popular. These three more modern ways of computing are said to be ways of distributed computing. Distributed computing is based on the concept of doing high performance calculations using geographically distant machines, which has been enabled with the advent of the internet and high-speed networks. Computers participating in a given problem can lie thousands of kilometres away from each other, but they can share information through the internet. Grid computing [22] uses geographically distant nodes to solve a given problem simultaneously in a cooperative way. grid computing capabilities are usually managed by a given organization, and the computational resources (mediated by physical machinery) which support the calculations are provided by different supporting institutions and organizations, which can be companies, research groups, laboratories, universities, etc. A management committee distributes the computational capabilities at every moment among the requests of different groups of users. The groups of people taking part in grid computing projects for solving problems are usually called virtual organizations since these groups are frequently heterogeneous, being formed by many people from different organizations which are geographically distributed

In conclusion Many of these barriers exist due to the on-premises deployment of HPC systems. Cloud technologies that are specifically architected for HPC workloads -- and offer extensive capacity and a "pay as you go" option -- could be a feasible solution to these challenges.

Opportunities don't happen. You create them.

- Chris Grosser

EXTENDING THE BOUNDARIES: EXTENDED REALITY

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Extended reality (XR) is a term which is an amalgamation of all real and virtual related environments which helps us conduct human machine interactions via special devices.It blends physical and digital elements to create immersive user experiences by including Virtual reality (VR), Augmented reality (AR), and Mixed reality (MR). It leverages a combination of technologies to enhance mortal comprehensions of reality, blurring the boundaries between the real and digital surroundings by bridging a gap between them. Technologies of extended reality can be used for a range of gests, from recreation to training simulations, online meetings, healthcare, and architectural design. In its colorful forms, extended reality has the implicit ability to disrupt the digital geography, and transfigure how we communicate and engage with information.In the realm of XR, Virtual Reality lets users immerse in a fully computer- generated terrain. By using VR headsets, they can witness a high position of absorption, which has notable operations in gaming, simulations, and training. On the other hand, stoked Reality overlays digital information, similar as textbook, images, or 3D models, onto the user's view of the real world. This can be achieved by either using smartphones, AR spectacles, or headset. Mixed Reality brings the stylishness of both VR and AR by combining the components of virtual and real-world. This technology allows people to interact with digital content that putatively co-exists with the physical world. In MR, digital objects can be anchored to a specific position in the real world, allowing users to view them through a device similar as a headset or spectacles.Some of the applications of extended reality in real-life include,

- VR gaming: Putting on a VR headset and immersing ourself in a virtual world where we play games and interact with virtual objects.
- AR navigation: Using our smartphone to overlay digital information, like directions or points of interest, onto the real world as you navigate through a city.
- MR training: In industries like medicine and aviation, MR can be used to provide realistic simulations for training purposes, allowing learners to practice in a safe environment.
- VR therapy: VR can be used as a tool for therapy, helping individuals overcome fears, manage stress, or even treat post-traumatic stress disorder (PTSD).
- AR shopping: Try on virtual clothes or visualize furniture in your home before making a purchase using AR technology. Swatching lipsticks on the faces and trying out clothes online

Thus, as technology continues to evolve, XR is becoming increasingly accessible and is poised to revolutionize how people perceive and interact with the world.

Simplicity is the soul of efficiency.

- Austin Freeman

SOFTWARE ENGINEER: EVERYTHING YOU NEED TO KNOW

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Software engineers design and create computer systems and applications to solve real-world problems.

*What do software engineers do?

Successful engineers know how to use the right programming languages, platforms, and architectures to develop everything from computer games to network control systems.

Day-to-day tasks might include:

- Designing and maintaining software systems
- Evaluating and testing new software programs
- Optimizing software for speed and scalability
- Writing and testing code
- Consulting with clients, engineers, security specialists, and other stakeholders
- Presenting new features to stakeholders and internal customers

*What skills are valuable for a software engineer?

Some of the most important skills for a software engineer are:

Attention to detail: When working with computer code, attention to detail allows you to identify mistakes, even when they're small. This is important because minimizing errors and effectively identifying sources when errors occur can help software engineers create more effective products.

Communication: Many software engineers work in teams and interact with clients to understand their needs and preferences.

Computer programming and coding: Knowing one or more of the most popular programming languages is important for a software engineer. Some of the most in-demand languages include Python, Java, C++, JavaScript and Ruby.

Multitasking: The ability to manage several projects or responsibilities simultaneously may benefit you as a software engineer.

Problem-solving: Strong problem-solving skills allow a software engineer to assess an error to identify its cause and develop a solution.

Software testing and debugging: Software engineers often take part in the development and implementation of software applications.

Software development: Software engineers have the skills to design, develop and test various software applications based on user preferences.

Teamwork: Software engineers often work in teams on projects, and strong teamwork skills facilitate this.

ARTIFICIAL INTELLIGENCE

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What Is Artificial Intelligence (AI)?

Artificial intelligence, or AI, refers to the simulation of human intelligence by software-coded heuristics. Nowadays this code is prevalent in everything from cloud-based, enterprise applications to consumer apps and even embedded firmware.

The year 2022 brought AI into the mainstream through widespread familiarity with applications of Generative Pre-Training Transformer. The most popular applications are OpenAI's DALL-E text-to-image tool and ChatGPT. The widespread fascination with ChatGPT made it synonymous with AI in the minds of most consumers. However, it represents only a small portion of the ways that AI technology is being used today.

The ideal characteristic of artificial intelligence is its ability to rationalize and take actions that have the best chance of achieving a specific goal. A subset of artificial intelligence is machine learning (ML), which refers to the concept that computer programs can automatically learn from and adapt to new data without being assisted by humans. Deep learning techniques enable this automatic learning through the absorption of huge amounts of unstructured data such as text, images, or video.

KEY TAKEAWAYS

Artificial intelligence (AI) refers to the simulation or approximation of human intelligence in machines.

The goals of artificial intelligence include computer-enhanced learning, reasoning, and perception.

AI is being used today across different industries from finance to healthcare.

Weak AI tends to be simple and single-task oriented, while strong AI carries on tasks that are more complex and human-like.

Some critics fear that the extensive use of advanced AI can have a negative effect on society.

EVOLUTION OF TECHNOLOGY

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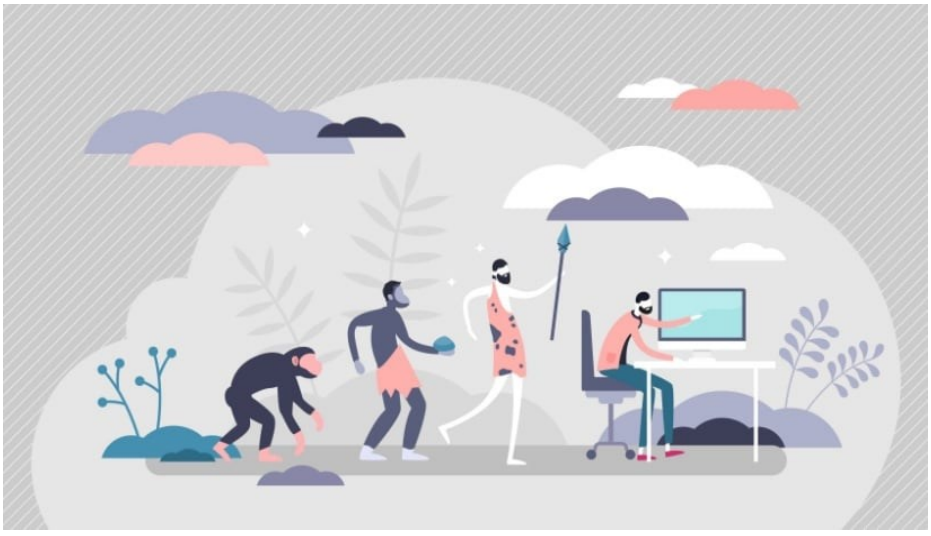
Technology has been advancing in various industries such as science, automobile, textile, education, finance, and more. This growth has been particularly rapid in recent years compared to previous ones. However, the question of when technology first emerged is still a topic of curiosity for many. The use of sharp stones as knives and hammers dates back approximately 3.3 million years ago, while today we use metal and wood to create these tools. The invention of fire also began with the use of stones for ignition, which eventually evolved into the use of LPG and electric stoves. Similarly, irrigation, electricity, transportation, and textiles have all undergone significant transformations over time, now relying on large machines for production.

Technology has played a significant role in our daily life basis. Technology is not limited only to the I.T. it applies to art and craft as well. Coming to digital technology can be traced back to 1943-1946 during this period we can say that the revolution for the I.T. industry started with the invention of a computing system called ENIAC (Electronic Numerical Integrator And Calculator). Over time electronic devices, such as computers, cell phones, laptops and tablets, were invented with them came the computer and programming languages such as JAVA, C++, Python, HTML and so on. These languages have become a backbone for many inventions such as creating and designing apps and developing software. Even in the healthcare sector, we use programming languages to maintain records, diagnoses and development. Similarly, the agricultural sector, textile industry and so on, rely on programming languages to maintain their apps and development.

We can truly see the technology growing rapidly even and with the help of AI, many are or can be created like detecting the emotions of a person and interpreting dreams, shopping, controlling electric devices, etc.. For example, a recent study made by Japanese scientists says that we can read dreams and visualize the persons in the initial sleep phase using MRI scans. This study shows that it can accurately decipher up to 60%. We can conclude that technology will evolve and continue to grow even more so in the future in all sectors. We are now in the Fourth Industrial Revolution, which means the evolution of automation and data exchange in manufacturing technologies and processes, and the next Industrial Revolution isn't so far away where it involves humans working alongside AI.



The function of good software is to make the complex appear to be simple.

- Grady Booch

ETHICAL IMPLICATIONS OF AI

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Can AI be ethical and moral? Or is it a chance to humanity as Elon Musk as soon as stated in an interview approximately AI. The speedy adoption of synthetic Intelligence (AI) in our day by day lives has sparked a wave of enthusiasm amongst the majority. From growing art in minutes, to writing poetry, to passing the Bar examination, the strength of AI bots has reached an all-time excessive. Many humans love the era but, there are also concerns regarding the ethical factors of AI . Lets take a look at every of these components of AI ethics and spot how they are able to impact our international nowadays that AI is so pervasive.

Task displacement and socio-economic impact: Automation pushed by AI can cause job displacement in precise industries. this will result in unemployment and profits inequality. This increases moral questions on the obligation of governments and companies to deal with these issues.

Threat of ethical reasoning: while algorithms and AI are trusted to make choices that have historically been made with the aid of human beings, there's a threat that the human capacity for moral reasoning can be compromised. which means relying entirely on artificial intelligence may additionally lessen the human capacity to interact in considerate ethical wondering.

Mission of codifying ethics: The mission of codifying ethics is highlighted as a hard one. Human morals are extremely complex, and it's far hard to translate those complex ideas into laptop commands.

Lack of responsibility and transparency: whilst some thing goes wrong with an AI system, it is able to be hard to assign responsibility, mainly while complex algorithms and choice-making processes are concerned. The inner workings of many AI systems are regularly opaque, making it difficult to apprehend how decisions are made. This lack of transparency can result in distrust and skepticism among customers.

knowledgeable Consent: AI structures may be used to accumulate and examine non-public information without the expertise or consent of those worried.This raises concerns approximately knowledgeable consent and privateness rights.

Implicit ethical Agent: those machines have safety or moral rules built into them, like the autopilot in an airplane.They comply with set up regulations without actively deciding what is ethical.

Specific moral active elements: these pass past fixed guidelines.They use unique strategies to locate the ethical cost of a selection.for instance, a device that balances monetary funding with social duty.

Absolutely moral dealers: those machines can make and provide an explanation for moral judgments.adult, advanced AIs with a terrific understanding of ethics fall into this class.

conclusion these are some of the hard questions the sector will face while enforcing ethics in machines as its difficult and everybody desires to be cautious for the duration of improvement.

Software is a great combination of artistry and engineering.

- Bill Gates

REACT JS

A. VISHNU PRIYA
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React.js is an open-source JavaScript library, crafted with precision by Facebook, that aims to simplify the intricate process of building interactive user interfaces. Imagine a user interface built with React as a collection of components, each responsible for outputting a small, reusable piece of HTML code.

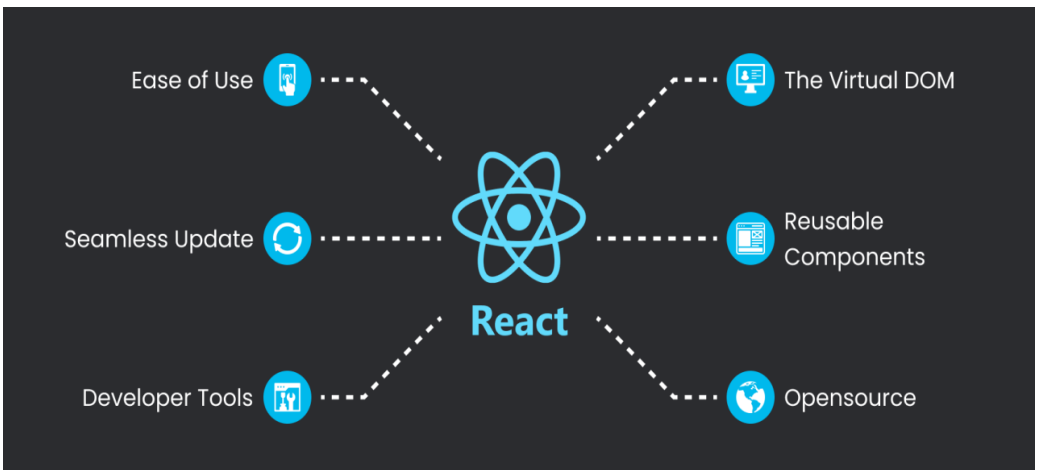
In React, you develop your applications by creating reusable components that you can think of as independent Lego blocks. These components are individual pieces of a final interface, which, when assembled, form the application's entire user interface. React's primary role in an application is to handle the view layer of that application just like the V in a model-view-controller (MVC) pattern by providing the best and most efficient rendering execution. Rather than dealing with the whole user interface as a single unit, React.js encourages developers to separate these complex UIs into individual reusable components that form the building blocks of the whole UI. In doing so, the ReactJS framework combines the speed and efficiency of JavaScript with a more efficient method of manipulating the DOM to render web pages faster and create highly dynamic and responsive web applications.

A Brief History of React.js

Back in 2011, Facebook had a massive user base and faced a challenging task. It wanted to offer users a richer user experience by building a more dynamic and more responsive user interface that was fast and highly performant. Jordan Walke, one of Facebook's software engineers, created React to do just that. React simplified the development process by providing a more organized and structured way of building dynamic and interactive user interfaces with reusable components. Facebook's newsfeed used it first. Due to its revolutionary approach to DOM manipulation and user interfaces, React dramatically changed Facebook's approach to web development and quickly became popular in JavaScript's ecosystem after its release to the open-source community.

What does React.js do?

Typically, you request a webpage by typing its URL into your web browser. Your browser then sends a request for that webpage, which your browser renders. If you click a link on that webpage to go to another page on the website, a new request is sent to the server to get that new page. This back-and-forth loading pattern between your browser (the client) and the server continues for every new page or resource you try to access on a website.



The best way to predict the future is to implement it.

- David Heinemeier Hansson

EMBRACING THE UNSEEN PATH: TRUST YOUR JOURNEY

Poornima Chowdary
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Msc cs II

Life is an unpredictable journey, often leading us down winding paths we never imagined. In the midst of uncertainty, there lies a profound truth: the importance of trusting your journey. The concept of "Trust Your Journey" serves as a guiding principle, encouraging individuals to believe in their choices, navigate challenges, and embrace the unknown with unwavering confidence.

Each person's journey is uniquely their own, shaped by experiences, setbacks, triumphs, and self-discovery. Trusting your journey means acknowledging that detours and obstacles are integral parts of the adventure. It's about finding strength in vulnerability, resilience in adversity, and wisdom in the unexpected twists.

In a world fixated on immediate results and predefined success, the essence of trusting your journey lies in the understanding that progress is a process, not an overnight achievement. It's a call to have faith in your abilities, even when the destination seems distant or obscured.

Amidst the uncertainties, trusting your journey provides a sense of liberation. It allows individuals to shed the burden of comparison and external expectations, paving the way for authentic self-expression and growth. It's a reminder that the journey, with all its highs and lows, is a teacher, offering lessons that shape character and build resilience.

In conclusion, the mantra "Trust Your Journey" invites us to surrender to the flow of life, appreciating the beauty in the detours and finding purpose in the uncharted territories. It empowers us to embrace the unknown, confident that every step, no matter how uncertain, is a vital part of our unique and extraordinary journey.

Success is stumbling from failure to failure with no loss of enthusiasm.

- Winston Churchill

"NEVER TRUST, ALWAYS VERIFY"

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BSc. 3D MSCs

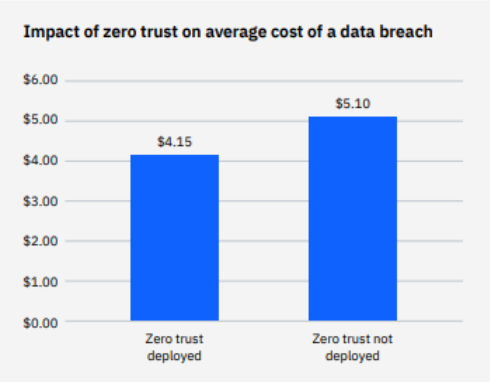
The world is changing at a fast pace with new technology being found each day. The firms are moving from a traditional network setup to more complex setup involving cloud services, multiple zones, remote accessing,etc. making it the need of the hour to have a strong security systems to prevent data breach.

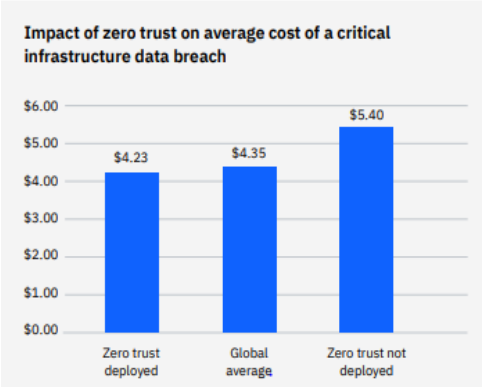
The recent IBM Security-Cost of Data Breach Report 2022 revealed some shocking and useful information related to data breach. The average total cost of data breach is at USD 4.35 million for normal business and 4.82 for infrastructural business. It also showed that 19% is the breach were due to compromised or stolen credentials. The time elapsed between the first detection of the breach and its containment is referred to as the data breach lifecycle presently it is at 277 days on average. It is found that only 41% of the companies and only 21% of the infrastructure organizations employed zero trust. The companies that employed zero trust architecture saved almost 1 million compared to the ones who didn't employ.

What is zero trust architecture?

ZT is a security solution that trusts no user inside or outside the organization to be authenticated, authorized and give just enough access and continuously validate while checking the device compliance. The three main principles of Zero Trust Architecture are:
1. Verify Explicitly means no trusted zones, credentials, or devices at any time.
2.Least Access Principle mean giving only access to those areas that are required to perform the task requested by using just-in-time and just-enough-access(JIT/JEA)
3. Assume Breach implies that incase a breach occurs it is critical to minimize the impact it can be done by minimizing the blast radius and segment access.
This term has been around since the it's first use by Stephen Paul Marsh in his doctoral thesis on computer security at the University of Stirling in April 1994.It has been discussed since then but rose to prominence and became prevalent from 2018.

Top companies involved in the zero trust security market include Broadcom, Okta, Cloudflare Inc., Forcepoint, Sophos Ltd, Centrify Corporation, Cisco, IBM, Akamai Technologies, Check Point Software Technologies Ltd, Pulse Secure LLC, Cyxtera Technologies Inc., FireEye Inc., Illumio, and Microsoft.

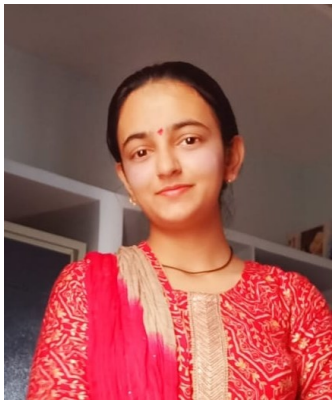




The best way to predict the future is to create it.

- Peter Drucker

IS IT REAL OR... VIRTUAL?



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Data means raw facts & figures and science means studying something systematically to conclude a result.

So collectively data science means that something new is discovered using the data collected in various research work by studying it in a systematic way. For example space exploration in which different types of data is being collected using telescopes and different space probes. Let's take an example of Aditya L1 space probe sent by India. Its main purpose is to study the Solar upper atmospheric (chromosphere and corona) dynamics. So basically Aditya L1 will collect the data with the help of various instruments in it and send it to ISRO data scientists. These data +scientists will use this data to find out the characteristics of solar atmosphere.

Data science is actually multidisciplinary field. It includes Statistics, mathematics and computer science combinely to analyze and interpret complex data. Data scientists use different tools and programming languages such as Python and C, and analyze the data ultimately deriving a result out of it. The process of result making includes data collection, preprocessing, exploring data analysis, modeling and communication of results with data scientists. Data science is like a filter which collects valuable data from complex large data sets. It plays crucial role in decision-making, problem-solving and innovation in various industries. Data science is used in various other fields such as healthcare, industries, marketing, technology, environmental science, education etc.

THE IMPACT OF ARTIFICIAL INTELLIGENCE IN HEALTHCARE

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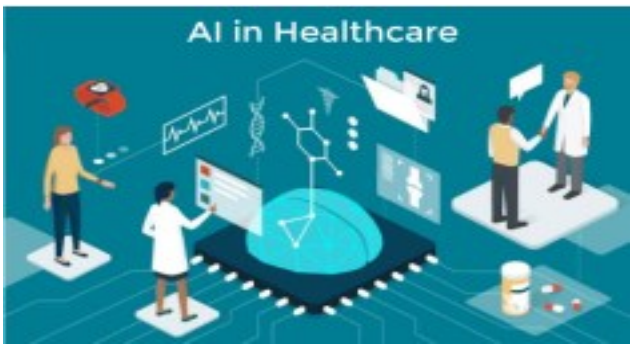
Artificial Intelligence (AI) has emerged as a disruptive force in the healthcare industry, redefining the way medical professionals diagnose, treat, and manage patient care. By leveraging the power of advanced algorithms, machine learning, and data analysis, AI has the potential to revolutionize healthcare delivery, improve patient outcomes, and drive significant advancements in medical research. From enhancing diagnostics and enabling personalized treatments to optimizing healthcare operations and accelerating medical discoveries, the role of AI in healthcare is transforming the future of medicine.

AI in Diagnostics and Medical Imaging:
AI algorithms, particularly deep learning models, enhance diagnostics by analysing medical images such as X-rays and CT scans. They assist radiologists in detecting abnormalities and early signs of diseases, leading to more accurate diagnoses and timely interventions.

Personalized Medicine and Treatment:
AI utilizes patient data to deliver personalized treatment plans. Machine learning algorithms analyse genomic information, electronic health records, and clinical trials to tailor treatments based on individual characteristics, predict responses, and optimize medication regimens. **Drug Discovery and Development:**
AI expedites the drug discovery process by analysing molecular structures, genetic information, and medical literature. It identifies potential drug candidates, predicts efficacy, and facilitates repurposing of existing drugs, leading to faster development of innovative treatments.

Remote Patient Monitoring and Telemedicine:
AI-powered technologies enable remote patient monitoring through wearable devices. Real time data collection and analysis aid in early detection of health anomalies, proactive interventions, and personalized care delivery. Telemedicine platforms leverage AI to provide virtual consultations, expanding access to healthcare services.

Predictive Analytics and Early Disease Detection:
AI leverages predictive analytics to identify high-risk individuals based on electronic health records, genetic profiles, and lifestyle factors. Early disease detection enables timely interventions, preventive measures, and optimized healthcare management.



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

- Winston Churchill

SERVICE ORIENTED COMPUTING AND STRUCTURE

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Service orientated computing is a brand new pattern of computing which makes use of services as the basic constructs to assist the improvement of fast , low-fee and clean composition of dispensed programs even in heterogeneous environment. The principle motto of it is to create a international of cooperating services wherein software components are assembled with little effort into a network of offerings that may be loosely coupled to create bendy dynamic commercial enterprise processes and agile packages that may span companies and computing platforms. The situation of SOC (Service Oriented Computing) is extensive and relatively complicated, spanning many concepts and technologies that find their origins in numerous disciplines which are woven together in an complicated manner. To construct the provider version, SOC is based at the service orientated architecture (SOA), that is a manner of reorganizing software packages and infrastructure into a hard and fast of interacting services. Service-Orientated Architecture (SOA) is a technique of software program development that uses software program additives known as services to create commercial enterprise applications. Each provider offers a business functionality, and also can speak with each other across platforms and languages. Builders use SOA to reuse services in distinct structures or combine several unbiased services to carry out complicated tasks. However for imposing SOA we want to follow a few suggestions and standards a number of which are interoperability, unfastened coupling, abstraction, and granularity.Interoperability-this specifies that every carrier in SOA consists of description files that designate the capability of the provider and the associated terms and situations. Loose coupling-offerings in SOA have to be loosely coupled, having as little dependency as feasible on outside sources along with records fashions or records systems. They must also be stateless without retaining any information from past sessions or transactions.Abstraction-customers or service users in SOA need not understand the carrier's code good judgment or implementation info.Granularity- services in SOA ought to have the correct size and scope, ideally packing one discrete commercial enterprise function in line with service.A number of the benefits of SOA are faster time to market, green upkeep and more adaptability. As there are benefits of SOA there also are disadvantages of it along with constrained scalability, increasing interdependencies and unmarried point disasters. Consequently service computing and architecture plays an critical function in enhancing new approaches of computing.

THE METAVERSE: A DIGITAL UNIVERSE OF BOUNDLESS POSSIBILITIES

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In a significant milestone for the AI industry, Odisha TV, an Odia-based news station, has unveiled “Lisa,” India’s first regional AI news anchor. Lisa’s introduction marks a groundbreaking moment in TV broadcasting and journalism, with the potential to revolutionize the industry. In a video shared by OTV on Twitter, Lisa confidently introduces herself, expressing her excitement for this historic occasion. The news station revealed that she would soon be hosting news updates, showcasing her capabilities as an AI news anchor. Lisa possesses the remarkable ability to speak multiple languages, including Odia, English, and others. OTV acknowledged the challenge of training Lisa in the Odia language and disclosed that efforts are underway to further enhance her proficiency. The ultimate goal is to develop her interactive skills, enabling seamless communication with others. The news station also encouraged viewers to connect with Lisa on various social media platforms such as Instagram and Facebook. This unveiling follows a similar development earlier in March, when the India Today Group introduced their own AI news anchor named Sana. Described as “bright, gorgeous, ageless, and tireless,” Sana boasted multilingual proficiency and the ability to be controlled effortlessly. With Lisa’s emergence as India’s first regional AI news anchor, the boundaries of AI in the media industry continue to be pushed, opening up new possibilities for engaging and dynamic news presentations in different languages and regional contexts.

STORY OUTLINE

- The news station said she would soon be hosting news updates.
- Lisa can speak multiple languages, Odia, English, and others.
- It said that the ultimate goal is to develop her interactive skills.

The news station also encouraged viewers to connect with Lisa on various social media platforms like Instagram and Facebook.

In the world of bits and bytes, every keystroke is a brushstroke shaping the future.

- Steve Jobs

DISCOVERING KNOWLEDGE OF SELF

NAGMA PRAMIN
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121322033009

Within this melting pot of violence and hatred
Moments of happiness I embrace and illuminate my days with
Like street kids with smiles on their faces
Playing kiss chase on desecrated pavements
One child fell down, grazed his knee, cried his way home
His mother bandaged it and kissed him on his cheek
It's deep. Her love is limitless like possibilities parameters
Skipping school, egging houses
Laughing at alcoholics sleeping outside on decrepit couches
Riding our bikes through council houses
Inventing obstacle courses as we rode
The imagination is more precious than gold
Glimpses of innocence I hold in my soul
Because this child's heart, is a heart that will never grow old
Couples loved up and cuddling,
even though they can't pay their bills and they're struggling,
Its humbling:
to see a family pulling together when a love one lost,
we're just concrete flowers that blossomed from slum blocks,
the future is ours, white doves flock to a shrine box,
inscribed with the words:- 'Love is all I've got'.
Feeling re-born
discovering knowledge of self,
Self...Is..Knowledge..
We exist on the sub-atomic.
Reading Druidic parchments
My divine release:- like an angel's catharsis
I've paid off every debt: that's karmic.
The human spirit is insurmountable: - Overcoming any hardship.

In the language of code, innovation speaks its own eloquent truth.

- Mark Zuckerberg

MILITARY SIMULATION

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121322033017

Military simulations, also known informally as war games, are simulations in which theories of warfare can be tested and refined without the need for actual hostilities. Military simulations are seen as a useful way to develop tactical, strategical and doctrinal solutions, but critics argue that the conclusions drawn from such models are inherently flawed, due to the approximate nature of the models used. Military simulation is able to recreate scenarios that would be complex and costly to set up in a physical real-world context, but it still faces challenges in an uneven operational training landscape where some nations invest more in simulation than others. Operation simulation training refers to simulating the operation process of weapons and equipment by means of simulation technology, which saves time and effort, can reduce the technical wear of weapons and equipment, and is widely used in various types of military equipment training. Military simulation as a general term can cover a wide gamut of different approaches and activities. Simulations can be purely analytical, data-driven processes used in research and development (R&D) and test and evaluation (T&E). Conversely, military training simulators can involve aspects of virtual and augmented reality (VR and AR) with computer generated models and environments for immersive, interactive scenarios that prepare end users for the real thing. The latter type is being developed to meet all kinds of training demands, from warfighting skills to logistics and fire discipline. By converting the essential components of training to simulated experiences built around the trainees, you can greatly reduce the demands of time and cost involved with traditional defence training. Simulators are used to increase team cooperation and learn combat skills. Other uses include basic handling and training, and emergencies.

Why use simulations in defence training?

To some degree, simulations have long been used by military forces when planning and strategising. Long before the use of technology and computer models, battles were 'simulated' on maps and battle psychology was applied to potential outcomes and manoeuvres. Early German war board games such as Königs-Spiel—similar to chess but played with a more complex point-to-point movement system—and Kriegsspiel are arguably the first accessible systems available to military forces for planning and measuring the potential outcomes of different battle scenarios. The training that takes place in a military simulation must be as realistic as possible. It is important to make military simulations as realistic as possible, because it will be the most useful way of learning a new skill. In addition, it will also help the trainees learn to develop their leadership skills. A military simulation can be more effective in a training situation than a drill without it. You can learn a lot from a military simulation if you've never tried it. The use of military simulations is a great way to improve military operations. Training soldiers in simulated combat is much more effective than if they are exposed to the dangers and hazards of real combat. While this type of training can provide a realistic training environment, it is also essential for a training canter to develop effective strategies. In some cases, the military can even test the capabilities of aircraft in the simulator to ensure that they are ready to carry out a mission. A computerized environment that simulates war or battle is called "military simulacrum". There are two types of military simulation: computer-assisted or manual. Graf Helmuth von Moltke is the person who gave rise to modern military simulation. Although he wasn't the original inventor of the concept, he popularized it as a military training tool. Simulators can be used to train soldiers for various purposes. Simulators are used to increase team cooperation and learn combat skills. Other uses include basic handling and training, and emergencies. The latter is more likely to be used to train soldiers before they face real-world opponents. Some soldiers even play military simulation games for fun. But, not all exercises are created equal. This can cause confusion and can lead to poor results. As computer chips, graphics processors, networking, and digital displays become smaller and more affordable, military is shipping simulation and training devices to deployed war fighters

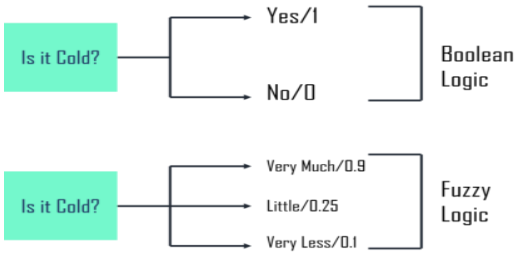
You are the author of your own story.

- Dan Zadra

FUZZY LOGIC

KATA SARVANI
121321043023

In our day to day life, we might face situations where we are unable to determine whether the state is true or false. Fuzzy refers to something which is unclear or vague. Fuzzy Logic in AI provides valuable flexibility for reasoning. Fuzzy logic is an approach to computing based on "degrees of truth" rather than the usual "true or false" (1 or 0) Boolean logic on which the modern computer is based. **Fuzzy Logic** resembles **human reasoning**. This approach is similar to how humans perform decision making. And it involves all intermediate possibilities between **YES** and **NO**.



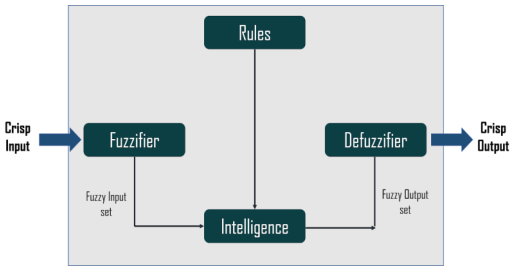
Fuzzy Logic is an effective and convenient way for representing the situation where the results are partially true or partially false instead of being completely true or completely false.

The Fuzzy logic works on the levels of possibilities of input to achieve a definite output. Now, talking about the implementation of this logic:

- It can be implemented in systems with different sizes and capabilities such as **micro-controllers, large networked** or **workstation-based systems.**
- Also, it can be implemented in **hardware, software** or a combination of **both**.

Fuzzy Logic Architecture

The fuzzy logic architecture consists of four main parts:



Applications of Fuzzy Logic

The Fuzzy logic is used in various fields such as automotive systems, domestic goods, environment control, etc. Some of the common applications are:

- It is used in the **aerospace field** for **altitude control** of spacecraft and satellite.
- Fuzzy logic is used in **Natural language processing** and various intensive applications in Artificial Intelligence.
- In dishwashers, fuzzy logic is used to determine the washing strategy and power needed, which is based on factors such as the number of dishes and the level of food residue on the dishes.

Be the change you wish to see in the world.

-Mahatma Gandhi

ARTICLES FROM OTHER COLLEGE

FLUTTER

Guduru Manasa
Anurag University

Flutter is an open source front-end software development toolkit created by Google. It is used to develop applications for mobile, web and desktop platforms from a single code base. Released in 2017, Flutter quickly gained popularity among developers due to its efficiency, flexibility and effectiveness.

One of Flutter's most important features is the "hot reload" functionality that allows developers to make changes to the code and see the results immediately without restarting the application. This feature significantly speeds up the development process and increases productivity.

Flutter uses a reactive programming framework that allows developers to create visually rich and interactive user interfaces. It comes with a large selection of customizable widgets that can be easily adapted to the design requirements of different platforms.

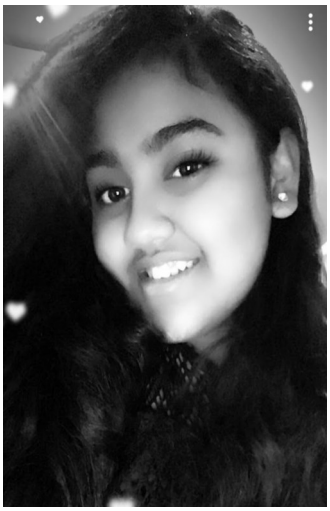
In addition, Flutter provides native performance by translating code directly into native machine code, resulting in smooth and responsive applications. It also provides many development tools such as debugging and profilers to help developers identify and fix problems efficiently.

Flutter enables developers to build applications that work seamlessly on iOS, Android, browsers and desktop platforms such as Windows, macOS and Linux. Its cross-platform capabilities and extensive community support make it the first choice for businesses and developers who want to efficiently build high-quality, visually appealing apps. As Flutter continues to evolve, it should play an important role in developing cross-platform applications in the future.

Gratitude turns what we have into enough.

- Melody Beattie

TABLEAU – DATA VISUALIZATION TOOL



S.Meenakshi Varma
BTech 1st year
AI& DS
KLUniversity

Oh dear,

The love you show , the beauty you hold , the warm you give, the aura you own, the

patience you carry , the anger you hide, the royal you live, the calmer you make can ever

be seen,heard or felt by any other.

The sea glow they say,

The trees dance

The wind race

The water shines

The clouds fly...

Beautiful isn't?

I wanna see you mother earth

I wanna see the real you

Not bushes that have been planted shaped or cut in cities by selfish people

I wanna see how you make your way in life in every inch of space.

I wanna see you crawling on earth, hugging trees and branches tight.

Not the pretty beaches with coconut and rides aside

But the one with tides, sound and ntg else

I'm too scared will I ever see the other beauty or will it all be too late ?

Coz you're dying aren't you?

We killed you dint we?

Stuffed with plastic

Drained all your water

Taking away your fruits and vegetables

Digging every where on your skin, poking holes for apartments to hold

Satellites around

Harmful gasses spread released into u...

Your air,water,soil...

Asking for more and more and more ...

I'm scared will I ever see the beautiful phase ever?

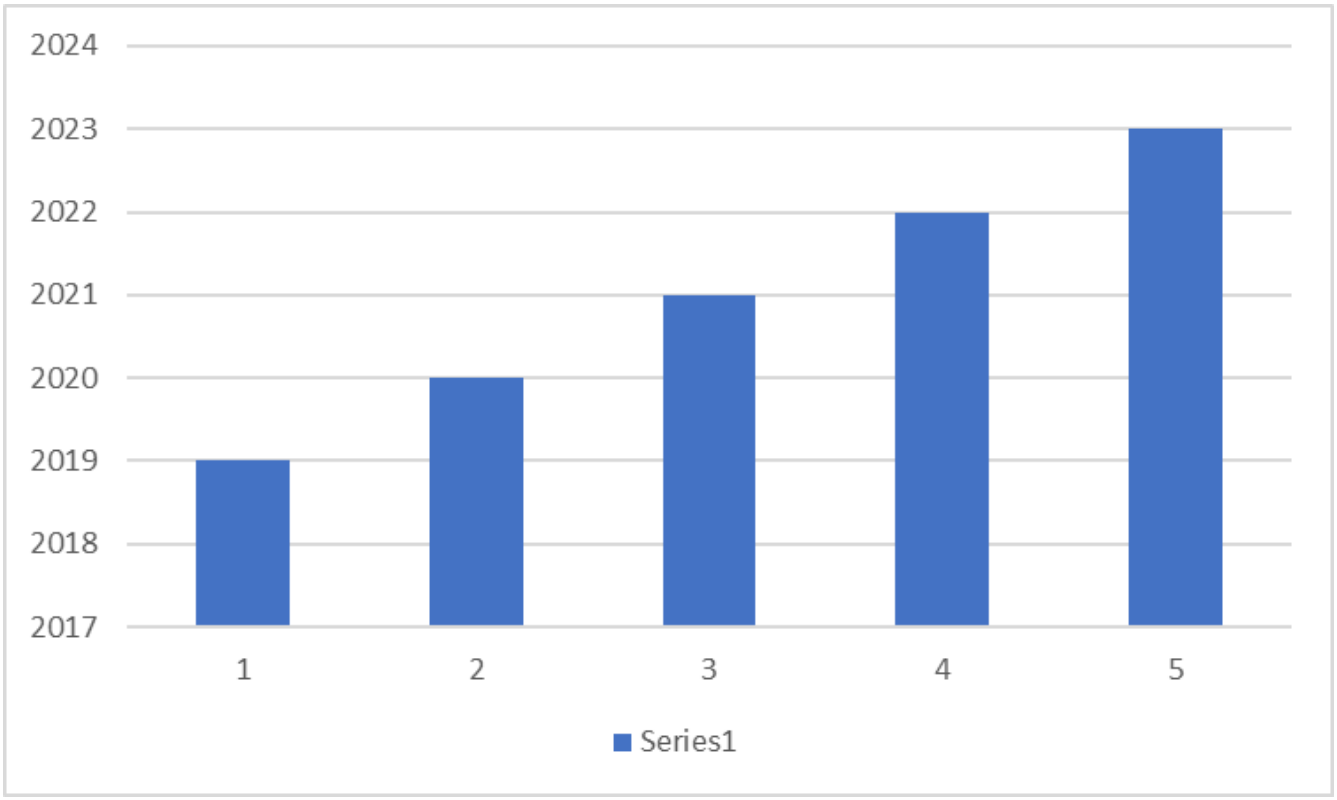
Every set back is a setup for a comeback.

.- Joel Osteen

PLACEMENT INFORMATION

St. Francis college placement cell provides a launch pad for students to make it to the best organizations in the fields of software, core industries, management, etc. The biggest names in the corporate world visit the campus on a regular basis, with enviable recruitment offers.

Our students have lived up to the expectations of organizations that visit the campus, looking for bright candidates to take up important and challenging responsibilities at their workplace. Over the years, students have maintained good and strong placement record with placements with Industries across the country such as **Cognizant Technology Solutions, Tata Consultancy Services, Deloitte, Capgemini , Verizon, Providence Global centre etc.**



DEPARTMENT OF COMPUTER SCIENCE

The department was established in 1988, an iconic year in the lifeline of St. Francis College as it marks the grant of autonomy to the college. Computer Science is an interdisciplinary field and it is as much about teaching and learning of computer science as it is about the areas that impact on computer science – mathematics, linguistics, natural sciences, psychology, philosophy and how they interrelate with the theory and practice of education. Highly qualified and dedicated teaching faculty supported by equally able and competent lab faculty are the strength of the department. The college has hi-tech state of the art computer labs with over 400 high end computer terminals facilitated with high-speed internet access and connected to Linux and Windows servers equipped with all the required licensed software.

The department offers an assortment of programs at the undergraduate level, M.Sc. Computer Science at the postgraduate level and CCNA certification course. While we believe man is still the most extraordinary computer of all, we endeavour to provide the best possible exposure and training to the students, making them strong to face the IT challenges of the world.