Department of
COMPUTER SCIENCE & ENGINEERING

TECH-EXPLORER
Technical Magazine

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NARAYANA
ENGINEERING COLLEGE
NELLORE (AUTONOMOUS)

ACCREDITED WITH GRADE
A+
NAAC

Vision of the institute

To be one of the nation's premier Institutions for Technical and Management Education and a key contributor for Technological and Socio-economic Development of the Nation.

Mission of the institute

To produce technically competent Engineers and Managers by maintaining high academic standards, world class infrastructure and core instructions.

To enhance innovative skills and multi disciplinary approach of students through well experienced faculty and industry interactions.

To inculcate global perspective and attitude of students to face real world challenges by developing leadership qualities, lifelong learning abilities and ethical values.

Vision of the Department

To be a choice for education in the area of Computer Science and Engineering, serve as a valuable resource for IT industry & society and exhibit creativity, innovation and ethics to cater the global challenges.

Mission of the Department

M1: To educate learners by adapting innovative pedagogies for enhancing their cognitive skills, technical competence and lifelong learning.

M2: To provide training programs and guidance to learners through industry institute partnerships, social awareness programs, internships, competitions and project works to inculcate research skills toaddress the global challenges.

M3: To provide opportunities for students to practice professional, social and ethical responsibilities using IT expertise with a blend of leadership and entrepreneurial skills.

PEOS

PEO-1 : Procure employment/progress towards higher degree and practice successfully in the CS/IT profession. (Successful Career Goals).

PEO-2 : Address complex problems by adapting to rapidly changing IT technologies. (Professional Competency).

PEO-3 : Gain respect and trust of others as effective and ethical team member by demonstrating professionalism and functioning effectively in team-oriented and open-ended activities in industry and society. (Leadership, Ethics and Contribution to Society).

(PROGRAM SPECIFIC OUTCOMES) PSOs

Domain Specific Knowledge: Apply the relevant techniques to develop solutions in the domains of algorithms, system software, computer programming, multimedia, web, data and networking.

Software Product Development: Apply the design and deployment principles to deliver a quality software product for the success of business of varying complexity.

(PROGRAM OUTCOMES) POs

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

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

7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

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

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multi disciplinary settings.

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

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

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

BLOCKCHAIN MINING

Blockchain mining is a process to validate every step in the transactions while operating bitcoins or other cryptocurrencies. The people involved here are known as blockchain miners, and these miners' function in a labyrinth of computational hardware and software their primary aim to authenticate the transfer of currency from a computer network to another. The mining process can be undertaken either individually, in a group or, by cloud mining.

In **Individual Mining**, the user has to register itself as a miner. Another type of mining is **Pool Mining**, where several users operate together to approve the transaction. Eliminating the use of multiple computer hardware and software, another way in which you can mine blockchain is through **Cloud mining**. Some of uses of blockchain mining are:

1.Validating Transactions : With each transaction, new blocks are added to the blockchainin the network and the validation lies in the mining results from the blockchain miners.

2.ConfirmingTransactions: Miners work the blockining process to confirm whether the transaction is authentic or not. All confirmed transactions are then included in the blockchain.

3. Securing Network: Network security ensures that there are no fraudulent activities in cryptocurrencies.

C. SWETHA
19711A0512 (III CSE)

DARK WEB

The dark web refers to content that isn't indexed by search engines and that requires special software or authorization to access.

How to access Dark Web:
The safest way to get on the dark web is through the Tor network. For added safety, first connect to a VPN, then use Tor in a practice known as Tor-over-VPN. Many internet service providers (ISPs) and governments may be suspicious of Tor use, and a VPN will hide your internet activity and prevent anyone from knowing that you're using Tor.

Accessing the dark web requires the use of an anonymizing browser called Tor. The Tor browser routes your web page requests through a series of proxy servers operated by thousands of volunteers around the globe, rendering your IP address unidentifiable and untraceable. Tor works like magic, but the result is an experience that's like the dark web itself: unpredictable, unreliable and maddeningly slow. Before that , Make sure that you install security software to make sure your computer and personal information are ketp safe.

Advantages :
Freedom to search and gain knowledge
Helps to maintain privacy
Open banned websites
Can publish and do anything required
We can use VPN'S
Suspicious activity alerts

Disadvantages :
Drug Trafficking
Access credit/debit card data
Cyber terrorism
Hacking
Illegal Activities
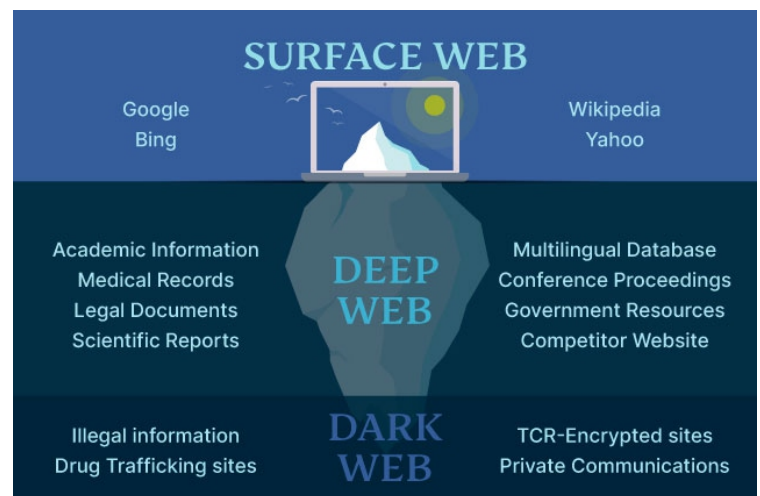
G. HEMA ASRITHA
19711A0526 (III CSE)

QUANTUM COMPUTING

Quantum computing is a rapidly-emerging technology that harnesses the laws of quantum mechanics to solve problems too complex for classical computers.

Today, IBM Quantum makes real quantum hardware -- a tool scientists only began to imagine three decades ago -- available to thousands of developers. Our engineers deliver ever-more-powerful superconducting quantum processors at regular intervals, building toward the quantum computing speed and capacity necessary to change the world.

These machines are very different from the classical computers that have been around for more than half a century. Here's a primer on this transformative technology.

Quantum computers can be used in taking large manufacturing data sets on operational failures and translating them to combinatoric challenges that, when paired with a quantum-inspired algorithm, can identify which part of a complex manufacturing process contributed to incidents of product failure.

Top Applications Of Quantum Computing Everyone Should Know About

Artificial Intelligence & Machine Learning. .

Computational Chemistry

Drug Design & Development.

Cybersecurity & Cryptography.

Financial Modelling

Logistics Optimization.

Weather Forecasting

K. BHOOMIKA
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5G TECHNOLOGY

what is 5G Technology?

5G is the 5th generation mobile network. It is a new global wireless standard after 1G, 2G, 3G, and 4G networks. 5G enables a new kind of network that is designed to connect virtually everyone and everything together including machines, objects, and devices.

Who invented 5G technology?

The first nation to adopt on a large scale was South Korea, in April 2019, at which point there were some 224 operators in 88 countries around the world investing in the technology.

How will 5G impact our lives?

The tech that will be able to support the remote control of critical services. It will advance autonomous driving etc.

Why do we need 5G technology?

5G is not only important because it has the potential to support millions of devices at ultrafast speeds, but also because it has the potential to transform the lives of people around the world. Improvements in 5G technology can help make life better.

Advantages of 5G technology?

Higher Download Speed: The 5G network will have the capacity to increase download speeds by up to 20 times (from 200 Mbps (4G) to 10 Gbps (5G)) and decreasing latency (response time between devices).

Hyper connectivity: The 5G network promises the possibility of having a -interconnected environment to reach the point of having the much desired smart cities.

Disadvantages of 5G technology?

Battery drain on devices: When it comes to cellular devices connected to 5G, it seems the batteries are not able to operate for a significant period of time.

Limitations of rural area: While 5G might bring about real connectivity for the predominantly urban areas, those living in the rural settings will not necessarily benefit from the connection.

MD. AZEEFA ANJUM
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EDGE COMPUTING

Edge computing is a distributed information technology (IT) architecture in which client data is processed at the periphery of the network, as close to the originating source as possible.

How does edge computing work?

Edge computing is all a matter of location. In traditional enterprise computing, data is produced at a client endpoint, such as a user's computer. That data is moved across a WAN such as the internet, through the corporate LAN, where the data is stored and worked upon by an enterprise application. Results of that work are then conveyed back to the client endpoint. This remains a proven and time-tested approach to client-server computing for most typical business applications.

IT architects have shifted focus from the central data center to the logical *edge* of the infrastructure -- taking storage and computing resources from the data center and moving those resources to the point where the data is generated.
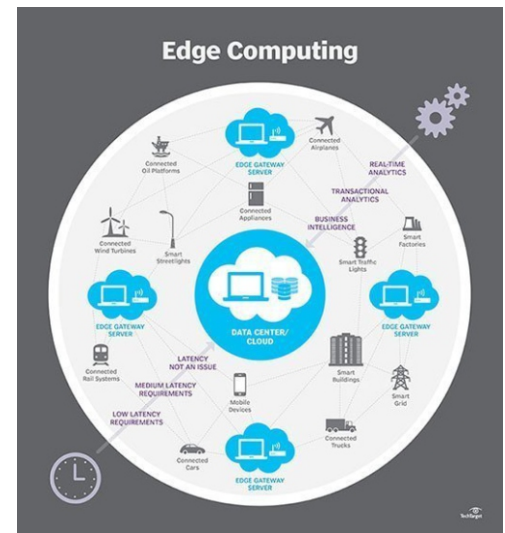
S. BHARATHI
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4D PRINTING

4D printing is the process through which a 3D printed object transforms itself into another structure over the influence of external energy input as temperature, light or other environmental stimuli.This technology is part of the project of MIT Self-assembly Lab. The purpose of this project is to combine technology and design to invent self-assembly and programmable material technologies aiming at reimagining construction, manufacturing, product assembly, and performance.
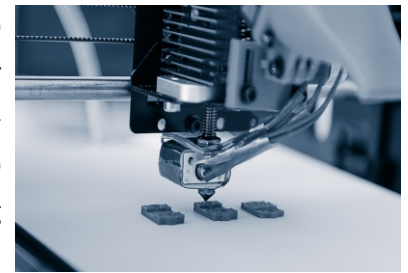
Difference between 3D Printing and 4D Printing

3D Printing is about repeating a 2D structure, layer by layer in a print path, from the bottom to the top, layer by layer until a 3D volume is created. 4D Printing is referred to as 3D printing transforming over time. Thus, a fourth dimension is added: time. So, the big breakthrough about 4D Printing over 3D Printing technology is its ability to change shape over time.
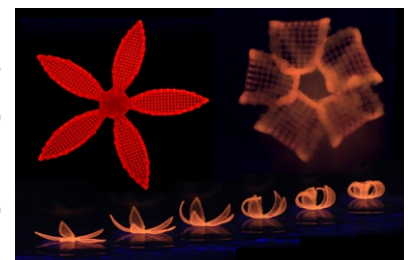
How does 4D printing work

4D printing technology uses commercial 3D printers, such as Polyjet 3D printers. The input is a smart material, that can be either a hydrogen or a shape memory polymer. Thanks to their thermomechanical properties and other material properties, smart materials are given the attributes of shape change and are differentiated from the common 3D printing materials.

On the other hand, objects printed with 3D Printing technology, are characterized by rigidity. That means that the 3D printed objects are going to keep their 3D shape once printed. advantage of 4D Printing technology is the usage of possible applied materials. 4D printing has a vast potential to revolutionize the world of materials as we know it today. Imagine 4D printing being applied to a variety of smart materials that today we cannot even imagine!

V. AASHISH KUMAR
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ARTIFICIAL INTELLIGENCE

What is Artificial Intelligence?

In today's world, technology is growing very fast, and we are getting in touch with different new technologies day by day. Here, one of the booming technologies of computer science is Artificial Intelligence which is ready to create a new revolution in the world by making intelligent machines. AI words Artificial and Intelligence, where Artificial defines man-made, and intelligence defines thinking power, hence AI means a man-made thinking power.

Why Artificial Intelligence?

1. With the help of AI, you can create such software or devices which can solve real-, traffic issues, etc.
2. With the world problems very easily and with accuracy such as health issues, marketing help of AI, you can create your personal virtual Assistant, such as Cortana, Google Assistant, Siri, etc

What Comprises to Artificial Intelligence?

To create the AI first we should know that how intelligence is composed, so the Intelligence is an intangible part of our brain which is a combination of Reasoning, learning, problem-solving perception, language understanding, etc.

Advantages of Artificial Intelligence

1. High Accuracy with less error: AI machines or systems are prone to less errors and high accuracy as it takes decisions as per pre-experience or information Useful as a public utility: AI can be very useful for public utilities such as a self-driving car which can make our journey safer and hassle.

2. free, facial recognition for security purpose, Natural language processing to communicate with the human in human-language, etc.

Disadvantages of Artificial Intelligence

Following are the disadvantages of AI:
1. No feelings and emotions: AI machines can be an outstanding performer, but still it does not have the feeling so it cannot make any kind of emotional attachment with human, and may sometime be harmful for users if the proper care is not taken.
2. Increase dependency on machines: With the increment of technology, people are getting more dependent on devices and hence they are losing their mental capabilities.

Prerequisite

Before learning about Artificial Intelligence, you must have the fundamental knowledge of following so that you can understand the concepts easily: Any computer language such as C, C++, Java, Python, etc. (knowledge of Python will be an advantage)

V. NIKHILA CHANDRIKA
19711A05B4, III CSE

Computer Anatomy
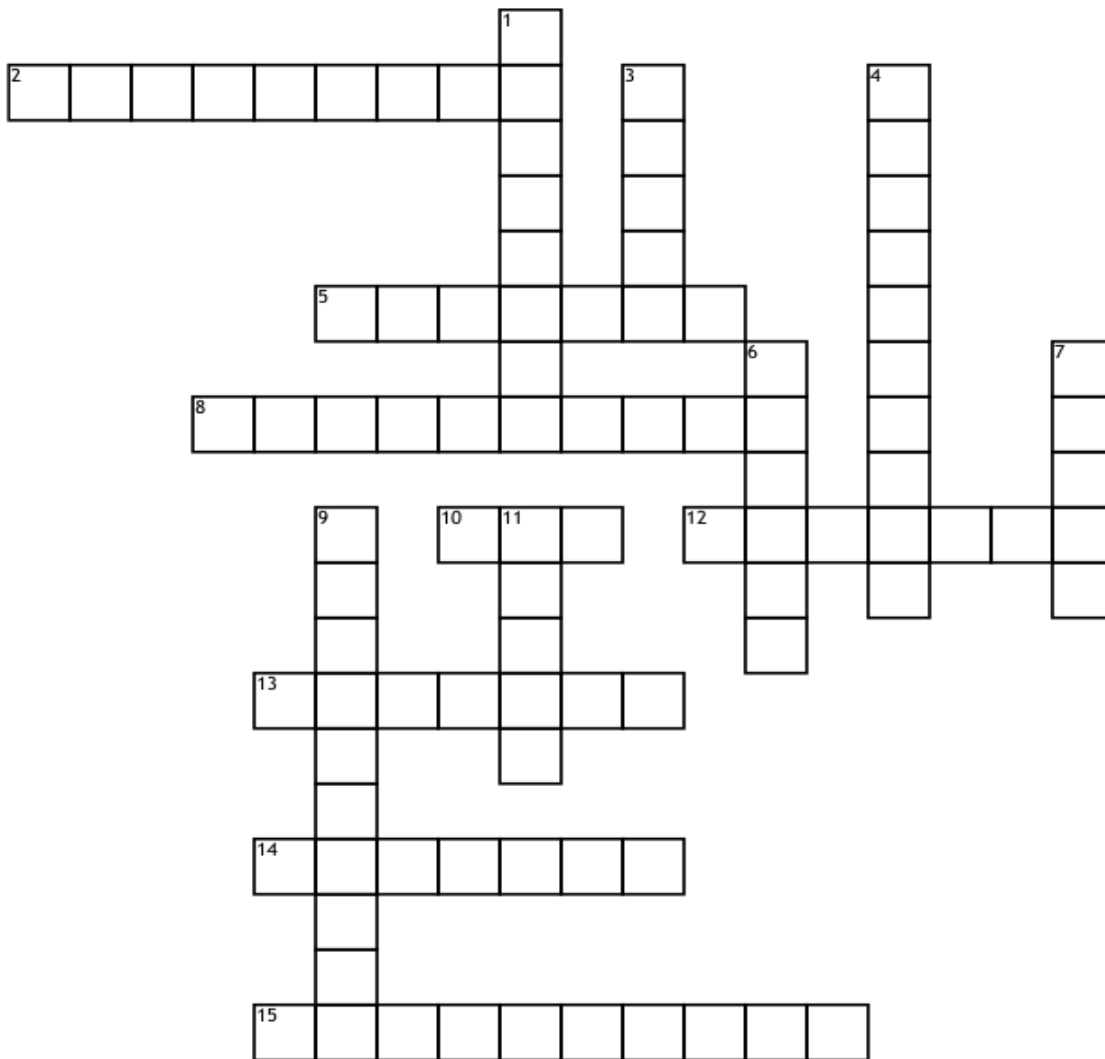
Across

2. Internal storage drive

5. where the sound comes from

8. external storage device using USB connection

10. where the actual computer processes it's data

12. this allows you to transfer paper to your computer

13. The thing that looks like a tv and shows your picture

14. this is where you have paper images come out of

15. camera card that holds data

Down

1. this has keys you type on

3. The item you slide and click

4. you can record sound with this

6. you can record videos with this

7. the button that has the applications menu

9. the place for DVD or Cds to be inserted

11. these spots are where you plug specific things into the CPU

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