PRAGATI ENGINEERING COLLEGE (AUTONOMOUS)

Approved by ACITE,New Delhi & Permanently Affilicated to JNTUK,Kakinada
&Accredited By NAAC with 'A' Grade

SUTANTRA

- INFORMATION FOR ENLIGHTENING

DEPARTMENT OF INFORMATION TECHNOLOGY

About IT department

The Department of IT was established in the year 2001 to groom the students for the requirements of IT industry. The Department has emerged as a reputed center of learning in the coastal districts of Andhra Pradesh. Footprints of the department´s students can be found in most of the local and global software majors. Student of this department mainly, brought glory to the college by securing University Rank.

The department strives to empower the students, to achieve the demanding standards of IT industry, by bringing about a synergistic academic environment wherein cutting edge technologies, industry experts, faculty and students are engaged in a sustained interaction.

Vision of the College

To Emerge as a Premier Institution for Technical Education in the Country through Academic Excellence and to be Recognized as a Center for Excellence in Research & Development, catering to the needs of our Country.

Mission of the College

To realize a strong Institution by consistently maintaining State-of-art-infrastructure and building a cohesive, World Class Team and provide need based Technical Education, Research and Development through enhanced Industry Interaction.

Department Vision

To attain academic excellence in the field of Information Technology and research serving to the needs of the society through technological developments.

Department Mission

- To create stimulating learning ambiance by providing state-of-art infrastructure and to induce innovative and problem-solving capabilities to address societal challenges.
- To impart quality technical education with professional team to make the graduates globally competent to IT Enabled Services.
-To strengthen industry-academia relationship for enhancing research capabilities.

PEOs for B.Tech IT Programme

PEO1:

Students will have successful career in IT as researchers, entrepreneurs and IT professionals satisfying the needs of the society.

PEO2:

Students will exhibit inclination towards higher education and continuous learning process.

PEO3:

Students will practice ethical behavior in IT industry with effective soft skills essential to work in teams.

PSOs for B.Tech IT Programme

PSO1:

Develop software programs in various programming languages learnt to create the software applications to solve the real life problems of the society.

PSO2:

Excel in emerging software tools and technologies.

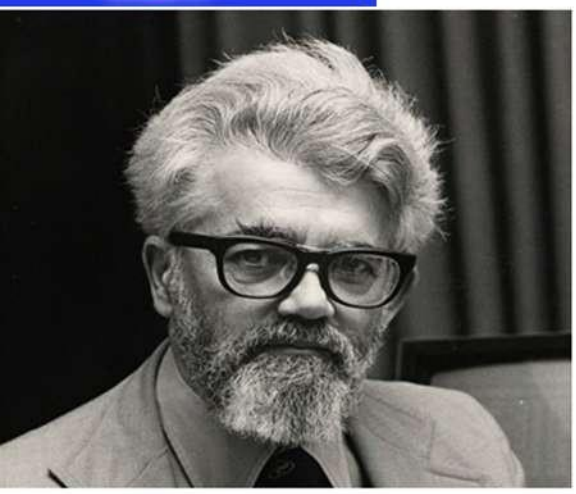
PSO3:

Effectively transform their ideas and bring consensus for the transformation of the idea into a usable software product / application.

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 multidisciplinary 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.

John McCarthy



John McCarthy (September 4, 1927 – October 24, 2011) was an American computer scientist and cognitive scientist. McCarthy was one of the founders of the discipline of artificial intelligence He co-authored the document that coined the term "artificial intelligence" (AI), developed the Lisp programming language family, significantly influenced the design of the ALGOL programming language, popularized time-sharing, invented garbage collection, and was very influential in the early development of AI.

He received many accolades and honors, such as the 1971 Turing Award for his contributions to the topic of AI, the United States National Medal of Science, and the Kyoto Prize.

McCarthy often commented on world affairs on the Usenet forums. Some of his ideas can be found in his sustainability Web page, which is "aimed at showing that human material progress is desirable and sustainable". McCarthy was a serious book reader, an optimist, and a staunch supporter of free speech.

McCarthy saw the importance of mathematics and mathematics education. His Usenet .sig for years was, "He who refuses to do arithmetic is doomed to talk nonsense"; his license plate cover read, similarly, "Do the arithmetic or be doomed to talk nonsense."

His 2001 short story "The Robot and the Baby" farcically explored the question of whether robots should have (or simulate having) emotions, and anticipated aspects of Internet culture and social networking that have become increasingly prominent during ensuing decades.

Honors and awards of John McCarthy

1. Turing Award from the Association for Computing Machinery (1971).
2. Kyoto Prize (1988).
3. National Medal of Science (USA) in Mathematical, Statistical, and Computational Sciences (1990).
4. Inducted as a Fellow of the Computer History Museum "for his co-founding of the fields of Artificial Intelligence (AI) and timesharing systems, and for major contributions to mathematics and computer science". (1999)
5. Benjamin Franklin Medal in Computer and Cognitive Science from the Franklin Institute (2003).
6. Inducted into IEEE Intelligent Systems' AI's Hall of Fame (2011), for the "significant contributions to the field of AI and intelligent systems".
7. Named as one of the 2012 Stanford Engineering Heroes.

MIXED REALITY

THE FUTURE OF EDUCATION

G.SAI LAHARI
19A31A1218

The latest advancement in the world of technology is mixed reality, and unsurprisingly, many are keen to see how it will influence the education scene. Essentially a combination of virtual reality and augmented reality, mixed reality is set to play a big role in training the students of the future.

Below is a look at how MR is changing the face of education.

1. Learning from everywhere

Virtual reality, augmented reality, and now mixed reality are breathing life to the notion that learning can be accomplished anywhere, and not just within the confines of the classroom. Digital reality is enabling students to benefit from immersive experiences, which prepare them for real life in a more hands-on way.

As technology evolves, more institutions are bound to come to terms with the importance of through demonstration rather than intensive lectures. Mixed reality will also foster better relationships between students and their future employees by introducing them to their prospective career fields earlier.

2. Collaborative Learning

Developers are appreciative of the role of collaborative learning in the classroom and are introducing VR, AR and MR technologies with which young minds can work on projects, visit learning sites, and participate in lectures together, even when they're not in the same physical space.

A good example is EON Creator, an interactive tool from EON Reality, which enables users to combine learning materials with videos, sound effects, notes, and PowerPoint presentations, explore the creations of other students and teachers, and meet virtually for collaborations from nearly anywhere and at any time.

3. Education at a greater scale

Mixed reality is opening doors to learning avenues that were previously well out of reach. Today, a proper VR ready laptop and a pair of MR headsets are all a curious learner needs to explore harsh deserts, dive into deep seas and walk on alien planets, all while in the comfort of their classroom or home. Although the price of entry is still far higher than most educators would like, technological advancements, such as Mobile VR and Microsoft's $300 headsets, point towards a future where mixed reality and virtual reality tech are affordably placed in the hands of every learner.

4. Meaningful competition

Competition has always been a major hallmark of a student's learning journey. However, experts have complained for years that modern education, particularly at the university level, tends to lay too much emphasis on competition among students than the actual learning experience.

5. The end of traditions

Despite heavy influence by technology, educational institutions have maintained a somewhat adamant commitment to tradition. The teaching methods in many classrooms have therefore not changed in decades.

Conclusion

Mixed reality is undoubtedly poised to change the way teachers deliver and students acquire new information, knowledge, and skills, both in and out of the classroom.

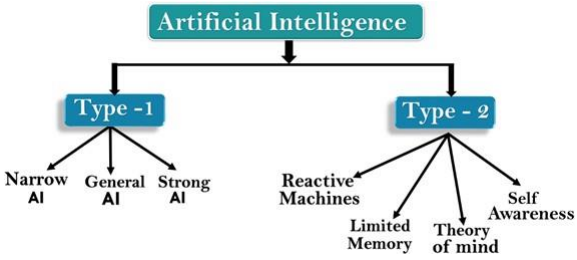
MR technology will not only make learning more enjoyable, but it will also increase the efficiency of education by engaging students in a manner with which textbooks simply cannot compete. With tech giants like Google, Apple and Microsoft investing big in mixed reality; it won't be long until it becomes standard for classrooms to be equipped with MR gadgets.

ARTIFICIAL INTELLIGENCE(AI)

ARTIFICALINTELLIGENCE(AI) refers to the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions. The term may also be applied to any machine that exhibits traits associated with a human mind such as learning and problem-solving. The ideal characteristic of artificial intelligence is its ability to rationalize and take actions that have the best chance of achieving a specific goal. As technology advances, previous benchmarks that defined artificial intelligence become outdated. For example, machines that calculate basic functions or recognize text through optimal character recognition are no longer considered to embody artificial intelligence, since this function is now taken for granted as an inherent computer function.AI is continuously evolving to benefit many different industries. Machines are wired using a cross-disciplinary approach based mathematics, computer science, linguistics, psychology, and more.

Types of Artificial Intelligence:

Artificial Intelligence can be divided in various types, there are mainly two types of main categorization which are based on capabilities and based on functionally of AI. Following is flow diagram which explain the types of AI.



AI type-1: Based on Capabilities

1. Weak AI or Narrow AI:

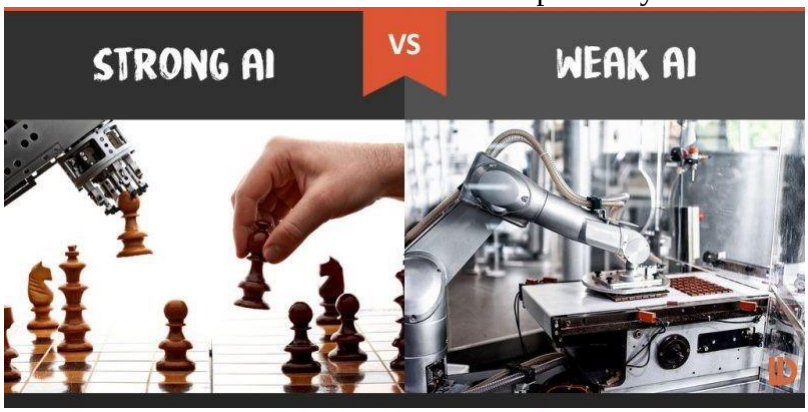
Narrow AI is a type of AI which is able to perform a dedicated task with intelligence. The most common and currently available AI is Narrow AI in the world of Artificial Intelligence.

Narrow AI cannot perform beyond its field or limitations, as it is only trained for one specific task. Hence it is also termed as weak AI. Narrow AI can fail in unpredictable ways if it goes beyond its limits.

Apple Siriis a good example of Narrow AI, but it operates with a limited pre-defined range of functions.
IBM's Watson supercomputer also comes under Narrow AI, as it uses an Expert system approach combined with Machine learning and natural language processing.
Some Examples of Narrow AI are playing chess, purchasing suggestions on e-commerce site, self-driving cars, speech recognition, and image recognition.

2. General AI:

General AI is a type of intelligence which could perform any intellectual task with efficiency like a human.
The idea behind the general AI to make such a system which could be smarter and think like a human by its own.
Currently, there is no such system exist which could come under general AI and can perform any task as perfect as a human.
The worldwide researchers are now focused on developing machines with General AI.
As systems with general AI are still under research, and it will take lots of efforts and time to develop such systems.



3. Super AI:

Super AI is a level of Intelligence of Systems at which machines could surpass human intelligence, and can perform any task better than human with cognitive properties. It is an outcome of general AI.
Some key characteristics of strong AI include capability include the ability to think, to reason, solve the puzzle, make judgments, plan, learn, and communicate by its own.
Super AI is still a hypothetical concept of Artificial Intelligence. Development of such systems in real is still world changing task.

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CYBER SECURITY IMPORTANT

Cybercrime is without question one of the most worrying threats for modern against it. Cyber security initiatives have recently accelerated in response, as a means for businesses to stay one step ahead of potential threats.

Cybersecurity or information technology security (it security) is the protection of computer systems and networks from the theft of or damage to their hardware, software, or electronic data, as well as from the disruption or misdirection of the services they provide.

The field is becoming more important due to increased reliance on computer systems, the Internet and wireless network standards such as Bluetooth and Wi-Fi, and due to the growth of "smart" devices, including smartphones, televisions, and the various devices that constitute the "Internet of things". Owing to its complexity, both in terms of politics and technology, cybersecurity is also one of the major challenges in the contemporary world.

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EDGE COMPUTING

Edge computing is transforming the way data is being handled ,processed ,and delivered from millions of devices around the world. The explosive growth of internet-connected-devices the IOT - along with new applications that require real-time computing power, continues to drive edge-computing system.

Faster networking technologies ,

Such as 5G wireless,are allowing for edge computing systems to accelerate the creation or support of real-time applications,such as video processing and analytic,self-driving cars,artificial intelligence and robotics ,to name a few.

While early goals of edge computing were to address the costs of bandwidth for data traveling long distances because of the growth of IOT - generated data,the rise of real-time applications that need processing at the edge will drive the technology ahead.

Characteristics :

- Geographically distributed
- Autonomous and distributed
- Real-time interactions
- Heterogeneous
- It is contextual and low latency

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REFERENCE :

https://www.sciencedirect.com/science/article/pii/S2352864817301335

CLOUD COMPUTING

Cloud computing is the on-demand availability of computer system resources, especially data storage (cloud storage) and computing power, without direct active management by the user. The term is generally used to describe data centres available to many users over the Internet. Large clouds, predominant today, often have functions distributed over multiple locations from central servers. If the connection to the user is relatively close, it may be designated an edge server.

types of cloud

Depending on the type of data you're working with, you'll want to compare public, private, and **hybrid clouds** in terms of the different levels of security and management required.

- **Public Cloud** – Whole computing infrastructure is located on the premises of a cloud computing company that offers the **cloud service**.
- **Private Cloud** – Hosting all your computing infrastructure yourself and is not shared. The security and control level is highest while using a private network.
- **Hybrid Cloud** – using both private and public clouds, depending on their purpose. You host your most important applications on your own servers to keep

- them more secure and secondary applications elsewhere.
- **Community Cloud** – A community cloud is shared between organizations with a common goal or that fit into a specific community (professional community, geographic community, etc.)

Types of cloud services

Cloud computing services fall into 4 categories: infrastructure as a service (IaaS), platform as a service (PaaS), software as a service (SaaS) and FaaS (functions as a service). These are sometimes called the cloud computing stack, because they build on top of one another.

1. **Infrastructure-as-a-service (IaaS)**
   IaaS is the most basic category of **cloud computing services** that allows you rent IT infrastructure (servers or VM's) from a cloud provider on a pay-as-you-go basis.
2. **Platform as a service (PaaS)**
   Platform-as-a-service (PaaS) refers to the supply an on-demand environment for developing, testing, delivering and managing software applications. It is designed to quickly create web or mobile apps, without worrying about setting up or managing the underlying infrastructure of servers, storage, network and databases needed for development.
3. **Software as a service (SaaS)**
   Software-as-a-service (SaaS) is a method for delivering software applications over the Internet as per the demand and on a subscription basis. SaaS helps you host and manage the software application and underlying infrastructure and handle any maintenance (software upgrades and security patching).
4. **FaaS (functions as a service)**
   FaaS adds another layer of abstraction to PaaS, so that developers are completely insulated from everything in the stack below their code. Instead of handling the hassles of virtual servers, containers, and application runtimes, they upload narrowly functional blocks of code, and set them to be triggered by a certain event. FaaS applications consume no IaaS resources until an event occurs, reducing pay-per-use fe

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