



PRAGATI ENGINEERING COLLEGE (AUTONOMOUS)

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

SUTANTARA INFORMATION FOR ENLIGHTENING

DEPARTMENT OF
INFORMATION TECHNOLOGY

JANUARY-2018



About the Department

The Department of IT was established in the year 2001 to groom the student 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 Institute

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

Mission of the Institute

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

M1: To create stimulating learning ambiance by providing state-of-art infrastructure and to induce innovative and problem-solving capabilities to address societal challenges.

M2: To impart quality technical education with professional team to make the graduates globally competent to IT Enabled Services.

M3: To strengthen industry-academia relationship for enhancing research capabilities.



PSOs for B.Tech IT Program

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.

PEOs for B.Tech IT Program

PEO 1: To have a successful career in IT as researchers, entrepreneurs and IT professionals satisfying the needs of the society.

PEO 2: To motivate students towards higher education and incline them towards continuous learning process.

PEO 3: To inculcate professional ethics of IT industry and prepare them with effective soft skills essential to work in teams.



PROGRAM OUTCOMES

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,

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.

11. Project management and finance:

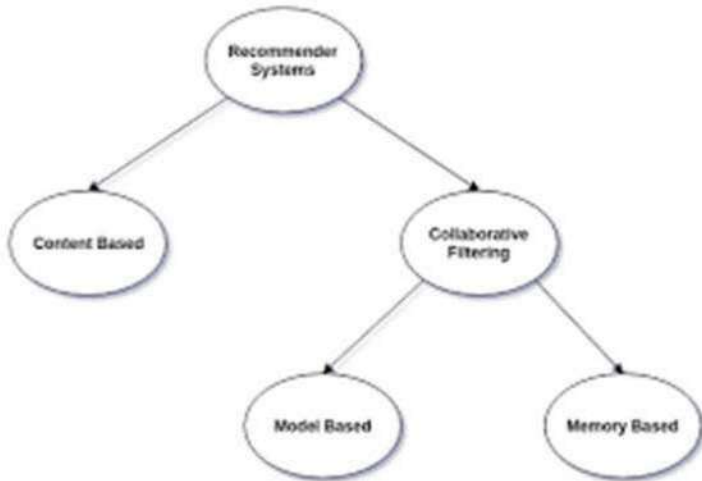
Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

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.



Machine Learning for Recommender systems



Recommender systems are an important class of machine learning algorithms that offer "relevant" suggestions to users. Categorized as either collaborative filtering or a content-based system

How does YouTube know what videos you'll watch? How does Google always seem to know what news you'll read? They use a Machine learning technique called Recommender System. Practically, recommender systems encompass a class of techniques and algorithms which are able to suggest "relevant" items to users. Ideally, the suggested items are as relevant to the user as possible, so that the user can engage with those items: YouTube videos, news articles, online products, and so on.

Items are ranked according to their relevancy, and the most relevant ones are shown to the user. The relevancy is something that the recommender system must determine and is mainly based on his original data. If you've recently watched YouTube videos about elephants, then YouTube is going to start showing you a lot of elephant videos with similar titles and themes!

Collaborative Filtering Systems

Collaborative filtering methods for recommender systems are methods that are solely based on the past interactions between users and the target items. Thus, the input to a collaborative filtering system will be all historical data of user interactions with target items. This data is typically stored in matrix where the rows are the users, and the columns are the items.

Content-based Systems

In contrast to collaborative filtering, content-based approaches will use additional information about the user and / or items to make predictions. Systems implementing a content-based recommendation approach analyze a set of documents and/or descriptions of items previously rated by a user, and build a model or profile of user interests based on the features of the objects rated by that user.

The profile is a structured representation of user interests, adopted to recommend new interesting items. The recommendation process basically consists in matching up the attributes of the user profile against the attributes of a content object. The result is a relevance judgment that represents the user's level of interest in that object. If a profile accurately reflects user preferences, it is of tremendous advantage for the effectiveness of an information access process. For instance, it could be used to filter search results by deciding whether a user is interested in a specific Web page or not and, in the negative case, preventing it from being displayed.

Mr. P Surya Prabhakara Rao
Assistant Professor



Cyber Security



Cyber security or information technology security are the techniques of protecting computers, networks, programs and data from unauthorized access or attacks that are aimed for exploitation.

What is cybersecurity all about?

A successful cybersecurity approach has multiple layers of protection spread across the computers, networks, programs, or data that one intends to keep safe. In an organization, the people, processes, and technology must all complement one another to create an effective defense from cyberattack.

A unified threat management system can automate integrations across select Cisco Security products and accelerate key security operations functions: detection, investigation, and remediation. Users must understand and comply with basic data security principles like choosing strong passwords, being wary of attachments in email, and backing up data. Learn more about basic cybersecurity principles.

Why is cybersecurity important?

In today's connected world, everyone benefits from advanced cyberdefense programs. At an individual level, a cybersecurity attack can result in everything from identity theft, to extortion attempts, to the loss of important data like family photos. Everyone relies on critical infrastructure like power plants, hospitals, and financial service companies. Securing these and other organizations is essential to keeping our society functioning.

Everyone also benefits from the work of cyberthreat researchers, like the team of 250 threat researchers at Talos, who investigate new and emerging threats and cyber attack strategies. They reveal new vulnerabilities, educate the public on the importance of cybersecurity, and strengthen open source tools. Their work makes the Internet safer for everyone.

Types of cybersecurity threats

- Ransomware
- Phishing
- Malware
- Social engineering

Mr. Ch Venkata Ramana
Assistant Professor



Smart Mirror



Smart mirrors are straight from science fiction . They're part of an optimistic vision of the future that imagines a world where screens and data are everywhere , ready to feed you whatever information you need at a moment's notice. Basically, the mirror is looks like normal mirror but when someone stand in front of it the scene changes. The mirror provides a functional , user friendly and inter active UI to its user for accessing their social sites , mess engers, etc. It has widgets for displaying the current whe ther conditions, Time,Events , Latest news headlines The Smart Mirror would help in developing smart houses with embedded artificial intelligence, as well as finding its app lications in industries. Switching home appliancesbecomes easy with mirror. Virtual dressing, a smart way of having trials with your fashion sense make things quite easy in malls. Having such intellectual mirror will only surge the beauty of home. The raspberry pi is programmed using python and connects to a monitor with inbuilt speaker so as to provide an onscreen interface and voice assistance as well.

A smart mirror, also known as a magic mirror, displays the time, weather, calendar, news, and social media updates. The magic is created by placing a transparent mirror over a screen such as a tablet, monitor, or TV. The technology is driven by a Raspberry Pi or Windows PC, combined with voice recognition and touch technology. Looking to build a smart mirror? Order the glass, frame, or the entire system for your project. We specialize in man ufacturing glass and acrylic mirrors that are superior to standard 2-way mirrors.Unlike a 2-way mirror,smart mirrors provide a crystal clear view of the text and graphics.

Technology

Virtual mirrors or smart mirrors usually utilize computer vision, face detection and face tracking technologies to analyze visual patterns and represent digital information. The technology uses algorithms to collect, analyze and make meaningful inferences from data from one or multiple images.

A virtual mirror or smart mirror is a device that displays a user's own image on a screen as if that screen were a mirror. Some versions feature augmented reality additions to the video display, or use an entirely virtual graphical avatar of the user.

Virtual mirrors are available as mobile phone applications, with some allowing users to modify the appearance of their hairstyle, make-up or accessories. The technology is also used in online shopping and in-store shopping to show people how an item of makeup, clothing,handbag or accessory might look on them. Some major retailers use the technology to provide virtual dressing rooms to customers.

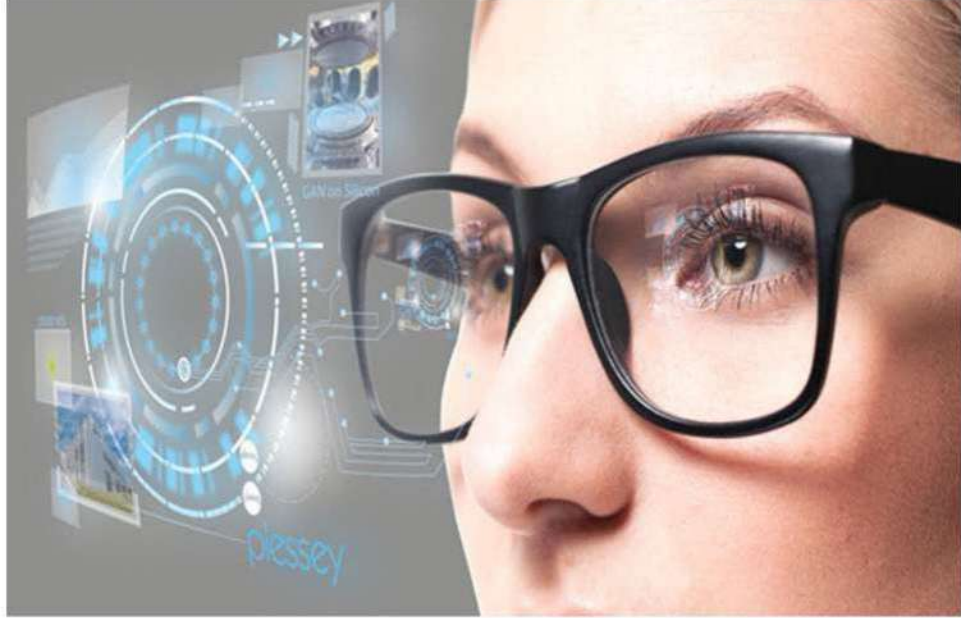
Many color contact sites feature a similar virtual try-on environments to simulate the look a user will achieve when actually wearing the contact lenses. The best product in this domain is Purple Patch from Wifin Technologies.The Freshlook color studio, and Colorful Eyes eye color changer are both examples of color contactsites that featurerthis cutting edge technology.

Mrs. G Surya kala Eswari
Assistant professor



Smart Glasses

Smart glasses are wearable devices that display real-time information directly in front of users' field of vision by using Augmented Reality (AR) techniques. Generally, they can also perform more complex tasks, run some applications, and support Internet connectivity.



Head-worn displays (HWD) have recently gained significant attention, in particular thanks to the release of a temporary version of Google Glass. Moreover, the anticipation of the commercial launch of Google Glass 1 in the upcoming months and the fresh news that Facebook, Inc. acquired Oculus Rift2 increased the popularity of such devices even further. The trend of wearable device purchases is importantly growing and some business analysts forecast more than 20 million annual sales of Google Glass in 2018. Furthermore, researchers have been already studying and investigating HWD for several years.

The main purpose of smart glasses is to provide users with information and services relevant for their contexts and useful for the users to perform their tasks; in other words, such devices augment users' senses. In addition, they allow users to do basic operations available on today common mobile devices such as reading, writing e-mails, writing text messages, making notes, and answering calls. Therefore, although most of the usage of smart glasses is passive for the users, i.e. reading content on the little screen of the device, active interaction with such devices is fundamental to control them and supply inputs. In fact, users need ways to ask smart glasses for instance to open a particular application, answer something they need to know, insert content for emails, messages or input fields, or to control games.

Smart glasses could be used as a body camera. In 2018, Chinese police in Zhengzhou and Beijing were using smart glasses to take photos which are compared against a government database using facial recognition to identify suspects, retrieve an address, and track people moving beyond their home areas.

Mrs. Y Srilatha
Assistant Professor



Intelligent Apps



Intelligent Apps 'hat are intelligent apps?

The next generation of mobile applications will be the result of multiple worlds colliding: when application development meets artificial intelligence, the Internet of things and big data analytic, intelligent apps are the outcome. Put simply, these are apps that continually learn from user behavior and other data sources to become even more relevant and useful over time.

Intelligent apps are applications that use historical and real-time data from user interactions and other sources to make predictions and suggestions, delivering personalized and adaptive user experiences. So can we see intelligent apps as an application of artificial intelligence and advanced machine learning in the form of an application. Over the last decade, access to large amounts of data and increasing processing power have enabled machine learning to take a huge leap forward. Unlike traditional systems, which take a lot of time to embed knowledge, machine learning doesn't require much programming. The more the system is used, the better it gets. So, these apps intuitively adapt and learn from interaction with an enterprise's data to deliver unparalleled customized insights that enhance business results. The key requirement is to have access to vast quantities of high-quality data. A good example of an intelligent app is a VPA (Virtual Personal Assistant), which helps you manage daily tasks such as emails and highlights important information for the user. These assistants still have limited options but are getting more and more sophisticated. But, the use of intelligent apps isn't limited to this alone. Organizations like Salesforce and Oracle are increasingly infusing AI into various enterprise applications that span sales and marketing, supply chain, HR, and other areas of business, providing them with actionable business and customer insights that enhance business results. For instance, an intelligent app with a predictive analytic engine collecting data from industrial machines on a customer's premise can automatically alert a field technician that a part is approaching failure.

Ms. B Preethi Devi
Assistant Professor



RAIN Technology

The revolution in technology evolved the internet which made it a medium of communication. In this client and server based technology the main issue is maintaining a regular and continuous connection, for the solution of this problem or issue is the use of clustering.

Clustering is nothing but joining or linking of two or more systems to manage the workloads and this helped in approaching the RAIN technology. RAIN stands for Reliable Array of Independent Nodes which was developed by the California institute of technology. The aim of RAIN technology is to address the fault management, communication as well as storage in a disturbed environment and capable of furnishing the solution by decreasing the number of nodes. The technology is the name of a project and after that; it was named as 'Rainfinity's Technology' which is the name of a clustered solutions company. RAIN technology is a different collection of nodes known as clusters. It also offers a new parameter or feature which puts back an out of order node and replaces it by a new node.

There are many features or characteristics of RAIN technology and they are as follows:

Clustering: The clustering is nothing but the bonding of two or more systems for handling different workloads.

Distributed: The distributed system is a kind of a system which has many independent computers and the communication between them takes place via a computer network.

Shared-Nothing: The architecture of shared-nothing is a distributed computing architecture which has multiple nodes and each node will have a private or personal memory and input/output devices.

Fault tolerant: RAIN technology achieves fault tolerant by implementing the software.

Reliance on software: RAIN technology depends on software to furnish data reliability to different computer servers.

Use of inexpensive nodes: This applied science avails loosely coupled clusters availing inexpensive RAIN nodes.

Advantages of RAIN Technology:

It has the feature of fault tolerance.

RAIN technology is easy to manage.

It has the open architecture and also has the feature of portability

This technology supports different environments.

It does not furnish any limitation in the distance.

This technology possesses the features or parameters like availability and scalability.



Mrs. K R L Srujana
Assistant Professor



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Big Data:

Big Data and Hadoop Training – Explore the Curriculum to Master Big Data and Hadoop.

Big data refers to problems that are associated with processing and storing different types of data. Most of the companies today, rely on big data analytics to gain huge insight about their:

customer,
product research,
marketing initiatives and many more.

For your surprise, big data led Germany to win the world cup.

Hadoop and Spark are the two most famous frameworks for solving Big Data problems.

If you already have some knowledge of Big Data, splendid! If not, now is the time to start.



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