PANIMALAR ENGINEERING COLLEGE

(A CHRISTIAN MINORITY INSTITUTION)
JAISAKTHI EDUCATIONAL TRUST
ACCREDITED BY NATIONAL BOARD OF ACCREDITATION

TECH NEWS

HALF YEARLY NEWSLETTER FROM COMPUTER SCIENCE AND ENGINEERING

DEPARTMENT VISION

To provide an academically conducive environment for individuals to develop as technologically superior, socially conscious and nationally responsible citizens.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

To impart and disseminate sound knowledge to the students on the fundamentals of mathematics and advanced fields of computer science and inter related disciplines to solve simple and complex engineering problems and train them to achieve sustainable growth in their professional career.

To enhance the ability of students to evaluate the specific requirements of software industry and provide innovative engineering solutions and efficient product designs.

To facilitate the students to make use of their technical competency to identify and develop appropriate product design, development, testing, maintenance, analysis of problems and provide corrective measures.

To enable the students to develop strong leadership qualities with aggressive optimism, multidisciplinary skills, excellent communication skills and function as effective and reliable team members giving importance to professional and ethical principles.

To inculcate in the students to associate in social networking, pursue continued learning of the latest developments in computer science and involve in higher research and contribute to the development of software industry and related engineering fields.

PROGRAM SPECIFIC OBJECTIVES (PSOS)

PSO 1: To inculcate technical skills to analyze, design and implement software's related to algorithms, networking, web services, multimedia, big data analytics and recent topics of varying complexity.

PSO 2: To develop the capability to comprehend and solve the interdisciplinary problems through appropriate technology with the understanding of contemporary business environment.

PSO 3: To develop an ability to utilize the latest technology and platforms to become a triumphant professional, successful entrepreneur and an urge for pursuing higher studies.

DEPARTMENT MISSION

To develop our department as a center of excellence, imparting quality education, generating competent and skilled manpower. We prepare our students with high degree of credibility, integrity, ethical standards and social concern. We train our student to develop to devise and implement novel systems, based on Education and Research.

PROGRAM OUTCOMES(POS)

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

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

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

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 to provide valid conclusions.

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.

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.

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

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

Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings

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.

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.

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.

STUDENT ACHIEVEMENTS AND AWARDS

Mr. **BALACHANDAR B**, Final Year CSE, Won **First Prize** in National level coding competition conducted by CSI India.

Ms. **AKSHIDHA U**, Final Year CSE, Won **First Prize** in National Skill Championship 2K20 App Development competition conducted by Make Intern & Enactus IIT,Delhi.

Ms. **ANGEL F**, Final Year CSE, Won **First Prize** in National Web Development competition conducted by CSI - Chennai chapter.

Mr. **SURAJ R**, Final Year CSE, Won **First Prize** in National Web Designing competition conducted by SRM University, Ramapuram, Chennai.

STAFF ACHIEVEMENTS AND AWARDS

Dr. L. Jabasheela, Dr. S. Suthir and Mr.N. Balaji, Published a patent titled *Dynamo Electric Vehicle*.

Mr. M.S. Vinmathi, Mr.V.Sathya and Mr.M. Maheshwari, published a patent titled *Smart Wearable Temperature Monitoring device with Social Distance feature based on IOT*.

Dr. V.D. Ambeth kumar, published a patent titled *Theft vehicle detection using digital signature based ecu and image processing field of invention*.

ETL - AN INTRODUCTION

BY SANGEETHA K, ASSISTANT PROFESSOR

ETL(Extract, Transform and Load) is a tool that extracts the data from various RDBMS source systems, transforms the data like applying filtering, calculations, combining, etc. finally load the transformed data to Data Warehouse. The data loaded in Data Warehouse will be in the form of dimension and fact tables.

Extraction

Staging area is required during load if required to get the data from multiple data sources together or to join two or more systems together. Data extracted from source systems can be used in multiple data warehouse system, Operation Data stores, etc. ETL allows you to perform complex transformations and requires extra area to store the data.

Transform

The set of functions can be applied on extracted data to load it into the target system. For example, If required sum-of-sales revenue and this is not in database, apply the SUM formula during transformation, then load the data.

Load

During Load phase, data is loaded into the end-target system and it can be a flat file or a Data Warehouse system.

NOSQL DATABASES

BY KIRUTHIKA, ASSISTANT PROFESSOR

NoSQL databases (aka "not only SQL") are non-tabular databases and store data differently than relational tables. NoSQL databases come in a variety of types based on their data model. The main types are document, key-value, wide-column, and graph. They provide flexible schemas and scale easily with large amounts of data and high user loads.

The term "NoSQL database," use to refer any non-relational database. Also "NoSQL" stands for "non SQL" or "not only SQL." The most agree one is NoSQL databases are databases that store data in a format other than relational tables.

Types of NoSQL databases

There are four major types of NoSQL databases emerged: document databases, key-value databases, wide-column stores, and graph databases.

- Document databases store data in documents similar to JSON (JavaScript Object Notation) objects. Each document contains pairs of fields and values. The values can typically be a variety of types including things like strings, numbers, booleans, arrays, or objects.
- Key-value databases are a simpler type of database where each item contains keys and values.
- Wide-column stores store data in tables, rows, and dynamic columns.
- Graph databases store data in nodes and edges. Nodes typically store information about people, places, and things, while edges store information about the relationships between the nodes.

Difference between RDBMS and NoSQL databases

One of the key differences between relational database management systems (RDBMS) and NoSQL databases is the way the data is modeled in the database.

RDBMS vs NoSQL: Data Modeling Example

Consider an example of storing a author and their books. In a relational database, we will likely create two tables: one for author and one for books. To retrieve all of the information about a author and their books, information from the Users table and Hobbies table will need to be joined together.

TABLE – AUTHOR

id	first_name	last_name	SSN	city
1957	Harvey	Deitel	CT347T6	Texas

TABLE – BOOKS

id	author_id	book_name
10	1957	Python for programmers
11	1957	Operating Systems
12	1958	Visual C#

Let's consider how the same information stored in a document database like MongoDB. It doesnt require any joins so retrieval will be faster.

```
"_id":1957,
"first_name": "Harvey ",
"last_name": "Deitel",
"SSN": "CT347T6",
"city": "Texas",
"books": ["Python for programmers", "Operating Systems", "Visual C#"]
}
```

METAVERSE
BY SHANMUGA PRIYAA B, FINAL YEAR, CSE-B

METAVERSE is a network of 3D virtual worlds focused on social connection. In futurism and science fiction, the term is often described as a hypothetical iteration of the Internet as a single, universal virtual world that is facilitated by the use of virtual and augmented reality headsets.

People can hang out with friends, work, visit places, buy goods and services, and attend events. While many virtual worlds exist online, users currently can't move between them while retaining their identities and assets. The eventual metaverse could solve this problem, turning disparate online worlds into a single, seamless entity. It has even been dubbed the next evolution of the internet.

Two factors are behind the current increase in interest around the metaverse: the pandemic-led virtualisation of life and advancements in the technology that enables these platforms. Zuckerberg told Facebook employees that the future of the company would go well beyond the current social apps. He said Facebook would build an interconnected set of experiences as part of the metaverse.

"In metaverse, everything can be traded, this is a huge opportunity for creators to come with something unique and find a niche for themselves. You can rent your land for events, you can create wearables that people can buy and wear in the metaverse, you can have billboards and build games. It all depends on your imagination,

Facebook, which will start trading as Meta Platforms, has said it wants to be seen as a metaverse company rather than a social media one. The tech giant, which has about 3 billion users, has been investing heavily in augmented and virtual reality and has

been building out its VR environment Horizon, accessed through its Quest headsets.

Video game platform Roblox Corporation, which went public this year, envisions the metaverse as a place where "people can come together within millions of 3D experiences to learn, work, play, create and socialize."

Microsoft, which owns Xbox and the world-building game Minecraft, is also a key player in the gaming world.
Computer chip maker

Nvidia Corp built its Omniverse platform for connecting 3D worlds into a shared virtual universe. It says Omniverse, which is used for projects like creating simulations of real-world buildings and factories, is the "plumbing" on which metaverses could be built.

Snapchat owner Snap Inc has long been building custom avatars and augmented reality filters to overlay digital features on the real world. This year it unveiled its first true augmented reality glasses, available for developers to experiment with creating experiences for the spectacles.

Cloud software firm Autodesk makes programs used by architects and engineers to design and create buildings and products. Its software is also used to build virtual worlds for gaming and entertainment.

"People will be logging in through the website. They can choose an avatar and get connected".

The expansion of the Metaverse will expand the value unlocked and potentially lead to a rapid expansion of the global economy. Dominic Ryder, CEO of vEmpire says Metaverse has become the next natural progression for the way people interact digitally, and the possibilities are endless.

TECH QUIZ

1. What technology is used to make telephone calls over the Internet possible?
2. What tool would you use to reduce the digital image size?
3. Why is Big Data important?
4. What kind of malware is designed to take advantage of a security hole before it is known?
5. What does acronym FOSS stand for?
6. Which computer language is the most widely used?
7. What technology is used to record cryptocurrency transactions?

ANSWERS

1. Voice over Internet Protocol (VoIP)
2. CROP
3. Because it may be analyzed to reveal patterns and trends
4. Zero-day exploit
5. Free and Open-Source Software
6. JAVA
7. Blockchain

TOP TRENDING TECHNOLOGIES
BY SHIRLY., FINAL YEAR, CSE-B

1Artificial Intelligence and Machine Learning

Artificial intelligence and machine learning once represented the cutting edge of computer science. When these technologies were created in the last 20th century, they hardly had any applications and were, in fact, mostly academic. However, these technologies have gained applications over the years and reached ordinary people's hands through their mobile phones. having a job in machine learning and artificial intelligence domain(s) places you at the forefront of technological development in the field of computer science.

Data Science

In the 2022s, data analysis is likely to blow up more than ever. With computational technology growing at a more excellent pace than ever, the data analysis capabilities in people's hands are likely to increase. Newer, faster data analysis algorithms and methods are likely to come up and be put into practice. The benefit of having a career in data science, regardless of the domain your company works in, is that you are an essential part of the firm's overall business. The data that you produce and the interpretations that you provide are likely to be a necessary part of the business strategy of any company that you serve.

Full Stack Development

Full-stack development refers to the development of both client-side and server-side software and is bound to be one of the top trending technologies of 2021. being a full stack developer gives you and your company the flexibility of working on both ends of the web development spectrum. The client-side or front end will generally require knowledge of suites such as HTML, CSS, and Bootstrap. The server side requires knowledge of PHP, ASP, and C++.

Robotic Process Automation

Robotic Process Automation isn't just about robots. It is a lot more about the automation of processes than anything else. These processes could mean anything from automatic email replies to automated data analysis and automatic processing and financial transactions approval. Robotic process automation makes tasks considerably faster for the common consumer by making such approvals automatic based on certain conditions entered by the programmer. In sectors such as financial services, robotic process automation can reduce the lean time to approve financial transactions online. It improves the productivity of the company as a whole, as well as that of its clients.

EDGE COMPUTING

It is another rising new technology in 2022 which is very similar to cloud computing, except that data is not stored in a centralised repository. In areas where network access might be difficult or impossible, cloud computing is challenging since you can no longer access the repository where your data is stored. What edge computing does is transfer data closer to the location where it needs to be used.
Edge computing has excellent applications in the Internet of Things devices. As far as IoT is concerned, a physical device you need to control with your smartphone should not need to access data from a centralised repository that might be thousands of kilometres away. Instead, data should stay as close to the device as possible.

BLOCKCHAIN TECHNOLOGY
BY VISHWA R, THIRD YEAR, CSE

A blockchain is a distributed database that is shared among the nodes of a computer network. As a database, a blockchain stores information electronically in digital format. Blockchains are best known for their crucial role in cryptocurrency systems, such as Bitcoin, for maintaining a secure and decentralized record of transactions. The innovation with a blockchain is that it guarantees the fidelity and security of a record of data and generates trust without the need for a trusted third party.

One key difference between a typical database and a blockchain is how the data is structured. A blockchain collects information together in groups, known as blocks, that hold sets of information. Blocks have certain storage capacities and, when filled, are closed and linked to the previously filled block, forming a chain of data known as the blockchain. All new information that follows that freshly added block is compiled into a newly formed block that will then also be added to the chain once filled.
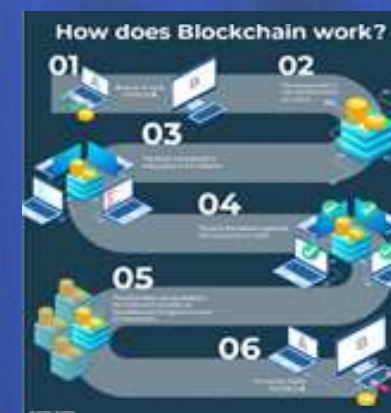
A database usually structures its data into tables, whereas a blockchain, like its name implies, structures its data into chunks (blocks) that are strung together. This data structure inherently makes an irreversible time line of data when implemented in a decentralized nature. When a block is filled, it is set in stone and becomes a part of this time line. Each block in the chain is given an exact time stamp when it is added to the chain.

APPLICATIONS :
Money transfers : The original concept behind the invention of blockchain technology is still a great application. Money transfers using blockchain can be less expensive and faster than using existing money transfer services.
Financial exchanges: Many companies have popped up over the past few years offering decentralized cryptocurrency exchanges. Using blockchain for exchanges allows for faster and less expensive transactions.
Lending : Lenders can use blockchain to execute collateralize loans through smart contracts. Smart contracts built on the blockchain allow certain events to automatically trigger things like a service payment, a margin call, full repayment of the loan, and release of collateral.
Insurance: Using smart contracts on a blockchain can provide greater transparency for customers and insurance providers.
Real estate: Real estate transactions require a ton of paperwork to verify financial information and ownership and then transfer deeds and titles to new owners.