GOVERNMENT POLYTECHNIC, NANDED INFORMATION TECHNOLOGY DEPARTMENT

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LATEST TRENDS IN INFORMATION TECHNOLOGY

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GOVERNMENT POLYTECHNIC NANDED VISION STATEMENT

To become a national level institute, imparting value based technical education catering to the needs of stakeholders with fully developed professionalism among the students.

MISSION STATEMENTS



- 1. Create conducive environment for quality technical educational
- 2. Strive for excellence in all disciplines through effective teaching learning process
- 3. Strengthen industry institute interaction and placement
- 4. Cater to the needs of society and community through various skill development

programs.

INFORMATION TECHNOLOGY DEPARTMENT



Become premier center in Information Technology with value based education that will prepare students for ever changing technological challenges of 21st century.

MISSION STATEMENTS

Mission

1.To train the students in the latest technologies.

2.Provide an environment that inculcates ethics and effective soft-skills.

3.Develop the skill sets among students that will benefit employer and society.

- Basic and discipline specific knowledge:
 Apply knowledge of basic mathematics,
 science and engineering fundamentals and
 engineering specialization to solve the
 engineering problems.
- Problem analysis: Identify and analyze well defined engineering problems using codified standard methods.
- Design/Development of solutions: Design solutions for well-defined technical problems and assist with the design of systems components or processes to meet specified needs.
- Engineering Tools, Experimentation and Testing: Apply modern engineering tools and appropriate technique to conduct standard tests and measurements.
- Engineering practices for society, sustainability and environment: Apply appropriate technology in context of society, sustainability, environment and ethical practices.
- Project Management: Use engineering management principles individually, as a team member or a leader to manage projects and effectively communicate about well-defined engineering activities.
- Life-long learning: Ability to analyse
 individual needs and engage in updating in
 the context of technological changes.

PROGRAM OUTCOMES



- Become competent Information
 Technology engineer to work as a programmer or an administrator in a team or as an individual.
- Pursue higher studies in relevant field of engineering with a desire for lifelong learning.
- Become a successful professional
 with ethical and societal
 responsibilities.

- Modern Information Technology:
 Use latest technologies for
 operation and application of
 information.
- Information Technology Process: Maintain the information processes using modern information and communication technologies.

Program Specific Outcomes



INTRODUCTION

Information Technology industry keeps on The evolving regularly. Every day some new technology emerges into the market, new inventions are done and what not. So as Information Technology students we must be aware of newly emerging technologies. Emerging technologies play a vital role in the modernization of industries. New technologies help in transforming enterprises into a digital world. This technology is mainly helpful in manufacturing, energy and mobility markets. Whenever the word technology comes, there is always something new and the hunt to develop and implement a new technology that could enhance businesses is obstinate. The curiosity to know and seek knowledge about the technology and how it will impact the daily lives of the human species.

Several years ago, people never heard about social, mobile, cloud, etc. and that the technologies will rule our lives. The accelerated growth of users' needs and their expectations to interact in real-time scenarios on these applications has disrupted the business ecosystem. These technological headways play an influential role to face the challenges of the global world. These emerging technologies have the indeterminate power to strengthen lives, transform the global economic scenarios and make this world a better place for the upcoming and future generations.



Technology is indeed one of the fastest-growing agents in the present world than ever before. The emerging technology has brought a significant transfer in information, technology and development sectors mainly.

Some of the emerging technologies are:-

- 1. Artificial Intelligence
- 2. Machine learning
- 3. Big data
- 4. Quantum Computing
- 5. Blockchain
- 6. Cyber Security
- 7. Internet of Things (IoT)
- 8.5G
- 9. Virtual Reality and Augmented Reality.

And many more.....

TRENDING TECHNOLOGIES

1. Blockchain



2. Quantum Computing





BLOCKCHAIN



A Blockchain is a growing list of records, called blocks, that are linked together using cryptography. Each block contains a cryptographic hash of the previous block, a timestamp, and transaction data (generally represented as a Merkle tree).

The timestamp proves that the transaction data existed when the block was published in order to get into its hash. As blocks each contain information about the block previous to it, they form a chain, with each additional block reinforcing the ones before it. Therefore, blockchains are resistant to modification of their data because once recorded, the data in any given block cannot be altered retroactively without altering all subsequent blocks.

Blockchains are typically managed by a peer-topeer network for use as a publicly distributed ledger, where nodes collectively adhere to a protocol to communicate and validate new blocks. Although blockchain records are not unalterable as forks are possible, blockchains may be considered secure by design and exemplify a distributed computing system with high Byzantine fault tolerance.

The blockchain was popularized by a person (or group of people) using the name Satoshi Nakamoto in 2008 to serve as the public transaction ledger of the cryptocurrency bitcoin, based on work by Stuart Haber, W. Scott Stornetta, and Dave Bayer.The first decentralized blockchain was conceptualized by a person (or group of people) known as **Satoshi Nakamoto** in 2008.



Satoshi Nakamoto

Nakamoto improved the design in an important way using a Hashcash-like method to timestamp blocks without requiring them to be signed by a trusted party and introducing a difficulty parameter to stabilize rate with which blocks are added to the chain. The design was implemented the following year by Nakamoto as a core component of the crypto currency. Bitcoin, where it serves as the public ledger for all transactions on the network.

HOW IBM DEFINED BLOCKCHAIN?

Blockchain is a shared, immutable ledger that facilitates the process of recording transactions and tracking assets in a business network. An asset can be tangible (a house, car, cash, land) or intangible (intellectual property, patents, copyrights, branding). Virtually anything of value can be tracked and traded on a blockchain network, reducing risk and cutting costs for all involved.

BLOCKCHAIN AS AN EMERGING TECHNOLOGY

Although most people think of blockchain technology in relation to cryptocurrencies such as Bitcoin, blockchain offers security that is useful in many other ways. In the simplest of terms, blockchain can be described as data you can only add to, not take away from, or change. Hence the term "chain" because you're making a chain of data. Not being able to change the previous blocks is what makes it so secure. In addition, blockchains are consensus-driven, so no one entity can take control of the data. With blockchain, you don't need a trusted third-party to oversee or validate transactions.



Several industries are involving and implementing blockchain, and as the use of blockchain technology increases, so too does the demand for skilled professionals. From a bird's eye view, a blockchain developer specializes in developing and implementing architecture and solutions using blockchain technology. The average yearly salary of a blockchain developer is ₹469K.

If you are intrigued by Blockchain and its applications and want to make your career in this trending technology, then this is the right time to start. To get into Blockchain, you need to have hands-on experience of programming languages, the fundamentals of OOPS, flat and relational databases, data structures, web app development, and networking.



Confirmation

Proof of work

Ledae

Distribution



CBSE INTRODUCES BLOCKCHAIN TO GO PAPERLESS, MAKE RESULTS TAMPER-PROFF



Speaking to ANI on Sunday, CBSE Director of Information and Technology Johri Antriksh said. "Blockchain implementation has been done by CBSE. Earlier we introduced Artificial intelligence Machine learning (ML) (AI) and for affiliation systems. Here, the data is linked and stored with cryptographic security so that it immutable and traceable.



This will serve as a single source trustfull data for verification for students going for higher education or employment. To create the 'Academic (BlockChain) Documents' software, CBSE collaborated with the Centre of Excellence for Blockchain Technology of National Informatics Center under MeitY.

Blockchain technology records the data in distributed ledger with an ownership of all participating stakeholders. The data is recorded in the chain based on the consensus among the stakeholders and simultaneously replicated at all the locations in the distributed network of BlockChain nodes. This eliminates the dependency on a third party for verification.

The data of the last three years starting from 2019 has been recorded in this and the other data of previous years will be uploaded gradually.

QUANTUM COMPUTING

Quantum computing is a type of computation that harnesses the collective properties of quantum states, such as superposition, interference, and entanglement, to perform calculations. The devices that perform quantum computations are known as quantum computers. Though current quantum computers are too small to outperform usual (classical) computers for practical applications, they are believed to be capable of solving certain computational problems, such as integer factorization (which underlies RSA encryption), substantially faster than classical computers. The study of quantum computing is a subfield of quantum information science.

Quantum computing began in 1980 when physicist Paul Benioff proposed a quantum mechanical model of the Turing machine. Richard Feynman and Yuri Manin later suggested that a quantum computer had the potential to simulate things a classical computer could not feasibly do. In 1994, Peter Shor developed a quantum algorithm for factoring integers with the potential to decrypt RSAencrypted communications. Despite ongoing experimental progress since the late 1990s, most researchers believe that "fault-tolerant quantum computing [is] still a rather distant dream".



In recent years, investment in quantum computing research has increased in the public and private sectors. On 23 October 2019, Google AI, in partnership with the U.S. National Aeronautics and Space Administration (NASA), claimed to have performed a quantum computation that was infeasible on any classical computer, but whether this claim was or is still valid is a topic of active research.

QUANTUM COMPUTING AS AN EMERGING TECHNOLOGY

Quantum Computing, which is a form of computing that takes advantage of quantum phenomena superposition and like quantum entanglement. This amazing technology trend is also involved in preventing the spread of the corona virus, and to develop potential vaccines, thanks to its ability to easily query, monitor, analyze and act on regardless of the data. source. field where Another quantum computing is finding applications is banking and finance, to manage credit risk, for high-frequency trading and fraud detection.



Quantum computers are now a multitude times faster than regular computers and huge brands like Splunk, Honeywell, Microsoft, AWS, Google and many others are now involved in making innovations in the field of Quantum Computing. The revenues for the global quantum computing market are projected to surpass \$2.5 billion by 2029. And to make a mark in this new trending technology, you need to have experience with quantum mechanics, linear algebra, probability, information theory, and machine learning.



Quantum Computer

Google and NASA's Quantum Computer



LATEST NEWS

✓ Robot-Artist Gives Public Performance.

PRESS

✓ Jack Dorsey steps down as C.E.O. of Twitter.

✓ Parag Agrawal – New TwitterC.E.O.



✓ Apple's First AR headset.



News in detail.....

CREEPY HUMANOID ROBO-ARTIST GIVES PUBLIC PERFORMANCE OF ITS OWN AI-GENERATED POETRY

Ai-Da creates artworks and writes poetry using a sophisticated language model, word data bank, and speech pattern analysis.

When people worry about robots coming to take their jobs, I don't think "poet" is what they had in mind. Enter Ai-Da, a highly realistic, AI-driven robot firmly rooted in the uncanny valley that can paint, draw, sculpt, and, yes, write its own poetry.

In a first for robot-kind, Ai-Da gave a public performance of poetry "she" created in commemoration of famed Italian poet Dante Alighieri. The event took place Friday at the University of Oxford's Ashmolean Museum as part of an exhibit honoring the 700th anniversary of Dante's death.



Humanoid Robot Ai - Da

For Ai-Da, writing poetry isn't as simple as putting pen to paper: She was given all 14,233 lines of Dante's three-part epic, the "Divine Comedy," to digest and then, by drawing on her data bank of words and speech pattern analysis programs, used algorithms to draft a reactive work.



Friday was the latest in a series of Al-driven artistic performances since the robot's first solo exhibition in 2019. Gallerist Aidan Meller created Ai-Da in collaboration with Engineered Arts, a U.K.based robotics company, and scientists at the universities of Oxford and Leeds.

Speaking to the Guardian, Meller said Ai-Da's language model is so advanced that she can produce as many as 20,000 words in 10 seconds. While her human handlers do engage in some "restrictive editing" of her content, overwhelmingly the words and sentence structure in her poetry are entirely AI-generated. In an interview with CNN, Meller said that Ai-Da's ability to imitate human writing is "so great, if you read it you wouldn't know that it wasn't written by a human." "The Ai-Da project was developed to address the debate over the ethics of further developing AI to imitate humans and human behavior," he told the outlet. "It's finally dawning on us all that technology is having a major impact on all aspects of life and we're seeking to understand just how much this technology can do and what it can teach us about ourselves."



"All of us should be concerned about [the] widespread use of AI language models on the internet, and how that will affect language, and crucially, meaning making, in the future," he told the outlet. "If computer programs, rather than humans, are creating content that in turn shapes and impacts the human psyche and society, then this creates a critical shift and change to the use and impact of language – which we need to be discussing and thinking about."

TWITTER'S JACK DORSEY STEPS DOWN FROM C.E.O. ROLE

Twitter's Jack Dorsey Steps Down From C.E.O. Role

SAN FRANCISCO — Jack Dorsey stepped down on Monday as chief executive of Twitter, the social media site he co-founded in.



Twitter Ex.C.E.O Jack Dorsey He was replaced by Parag Agrawal, who as the company's chief technology officer had recently been working on technologies associated with cryptocurrencies, which have become a fascination of the tech industry's power brokers, including Mr. Dorsey.

Mr. Dorsey's exit marks a significant shift at the company, which has navigated years of pressure from investors who thought it did not make enough money and criticism from Washington, particularly from Republican lawmakers who have complained Twitter has helped stifle conservative voices in social media.

Mr. Dorsey, 45, who is also the chief executive of the payments company Square, was fired from the top job at Twitter in 2008 but returned in 2015. His departure represents the second recent significant shake up at a major social media company.



The departure of Mr. Dorsey is a critical changing of the guard for the company. Mr. Dorsey's name has been as closely associated with Twitter as Mr. Zuckerberg's has been with Facebook, although Twitter is nowhere near as large.

CORPORATE BIGGIES LAUD INDIAN SUCCESS IN US

Following the announcement of Parag Agrawal as CEO Twitter, the social media site was flooded with of congratulatory tweets from tech leaders, politicians in India, all Indians from the and world. over Patrick Collison, the billionaire co-founder and CEO of financial services company Stripe, tweeted, "Google, Microsoft, Adobe, IBM, Palo Alto Networks, and now Twitter run by CEOs who grew up in India. Wonderful to watch the amazing success of Indians in the technology world and a good reminder of the opportunity America offers to immigrants.(Congrats, Parag!)" In response, Tesla cofounder Elon Musk tweeted, "USA benefits greatly from Indian talent!"

IIT-Bombay congratulated its "alumnus Dr Parag Agrawal". The institute said Agrawal obtained his BTech degree in computer science and engineering from IIT-B in 2005.

<u>APPLE'S AR HEADSET</u> COMING NEXT YEAR WITH <u>'MAC-LEVEL' POWER</u>



Apple's first AR headset will be released in the fourth quarter of 2022, according to a research note from analyst Ming-chi Kuo seen by MacRumors and 9to5Mac. Kuo predicted back in March that the headset would be released sometime next year, and is now also providing more technical information on the device.

The headset will have two processors, according to Kuo, one with "the same level of computing power as M1" and one lowerend chip to handle input from the various sensors. For example, Kuo says that the headset has "at least 6-8 optical modules to simultaneously provide continuous video see-through AR services."



Apple's AR Headset

The headset is also said to have two 4K OLED microdisplays from Sony.

Kuo seems convinced that it'll be a standalone platform, however, writing "If the AR headset is positioned only as an accessory for the Mac or iPhone, it will not be conducive to the growth of the product. An AR headset that works independently means that it will have its own ecosystem and provide the most complete and flexible user experience." PRINCIPAL: - DR.G.V. GARJE SIR DEPARTMENT: - INFORMATION TECHNOLOGY HEAD OF THE DEPARTMENT: -S.N. DHOLE SIR MENTOR:- S.G. MUNDHE SIR PREPARED BY: - SAMRUDDHI SURESH JOJARE BRANCH: - INFORMATION TECHNOLOGY ROLL NUMBER: - 1529

SEMESTER: - FIFTH (IF5I)

ACADEMIC YEAR: - 2021 - 2022