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FR. CONCEICAO RODRIGUES COLLEGE OF ENGINEERING
MOULDING ENGINEERS WHO CAN BUILD THE NATION

# TECHNO EDGE

## DEPARTMENT OF ELECTRONICS AND COMPUTER SCIENCE

TECHNICAL ARTICLE .

Iot is a network of physical objects equipped with software, connectivity and sensors which exchange data. .P 26

sale is grouped into "block" and linked together in order,forming a chain of blocks hence the name "blockchain". .P 23


COMPETITION AWARDS AND WINNERS

Debate competition winners Yash and Bryson
.P10

2023

# OUR VISION

creating globally competent engineers with strong fundamentals and good learning ability
to empower
Digitalization and innovation

# OUR MISSION

To enrich the competence in Electronics and Computer Science through knowledge, skills, and commitment to lifelong learning.

To nurture effective solution providers having a practical knowledge base equipped with a multi-disciplinary approach.

To cultivate an ambience to encourage innovation, research and entrepreneurship skills.

To improve employability by creating competitve engineers, with an ethical and professional attitude.

# FROM HOD'S DESK

The Department of Electronics and Computer Science Engineering offers an academic programme which has an optimum mix of Electronics, Communication and Computer Engineering with an emphasis on VLSI, Embedded Systems, Instrumentation, Automation and Robotics, and allied subjects. Our strict adherence to quality norms in teaching-learning and evaluation has always been the strength of the department.Students are moulded to be technically skilled and socially conscious so as to contribute to finding solutions to real-life problems.

They are provided with avenues to develope inter-disciplinaryprojects and to acquire organization, presentation and leadership skills.

The department works with the commitment and resolves to keep the laboratories updated with the latest technologies, to adopt innovative teaching methodologies and thus to impart quality education in Electronics Engineering. We focus on Research in key areas such as Communication, Instrumentation, VLSI and Processor Architecture. The department has a good Industry interaction in terms of project design, consultancy, internships, and industry visits. Our Alumni occupy prestigious positions in reputed organization in India and abroad.

Always striving to provide the best facilities to our students, the department is constantly on the move by organizing workshops, seminars, hands-on sessions to improve the practical aspects of a student's learning process.

# A FOND FAREWELL

*Thank You*

We express our gratitude for your significant contributions to education throughout your career. Your passion, expertise, and dedication have shaped students' academic journeys and inspired their futures. As you retire, we congratulate you on your invaluable service and wish you a remarkable legacy to inspire generations.

# FROM STUDENTS TO GRADUATES

The convocation ceremony held on 18th March was a momentous occasion, filled with a sense of achievement and pride. Graduates from various disciplines gathered to celebrate their years of hard work and dedication. The event was marked by inspiring speeches, the conferring of degrees, and the heartfelt joy of families and friends witnessing their loved ones crossing the stage, ready to embark on new journeys. It was a day of reflection, gratitude, and anticipation for the bright futures ahead.

# Congrats!

Class of 2018

ELECTRONICS AND TELECOMMUNICATION

2023

# ALUMNI EXCELLENCE:

## CELEBRATING SUCCESS BEYOND GRADUATION

Welcome to our newsletter section dedicated to showcasing the remarkable achievements of our esteemed alumni. In this segment, we take great pride in shining a spotlight on the inspiring journeys and outstanding accomplishments of individuals who have ventured beyond the boundaries of academia.

2023

Juilee Sameer Thakur, Electronics Engineering 2021 graduate, earned a Masters Degree in Data Science from Stevens Institute of Technology, USA, with a 3.93 CGPA. Department celebrates and wishes her a successful career.

Ariane Jean Correa, a 2021 graduate of Computer Engineering, has been selected as a Digital Analytics Intern at Paramount Pictures Inc., working with the Nickelodeon research team.

2023

2020 Electronics Engineering alumnus Satya Sathvik Kadambari graduated from the University of Texas at Dallas with a master's degree in Information Technology & Management. Wishing him success and good luck in future endeavors.

Apurva Nehru, a 2017-2018 B.E. Electronics Engineering graduate, recently graduated with a master's degree in Information Systems from Northeastern University. Wishing her success in her professional goals.

2023

# ACHIEVEMENT UNLOCKED

Greetings, esteemed readers!
We are thrilled to dedicate a special section of this newsletter to celebrate the outstanding achievements within our branch. In this section, we will shine a spotlight on the remarkable accomplishments of our students, faculty, and staff members who have reached new heights in their educational pursuits.

# DEBATE WINNERS


Brycen Fernandes & Yash Thorat from the Department of Electronics & Computer Science strike an 'all smiles' pose for the shutterbugs as they proudly accept the winners' prize from Hon. Director Rev. Fr. Valerian Dsouza for winning the Conceicao Rodrigues Memorial Debate (CRMD) 2022 held at Samvad the Auditorium on 8th & 9th October 2022.


CRMD-2022
the indian agenda
FINAL
PROPOSITION
CMD24
OPPOSITION
CRMD
2022
WINNER
₹30,000

# Congrats!

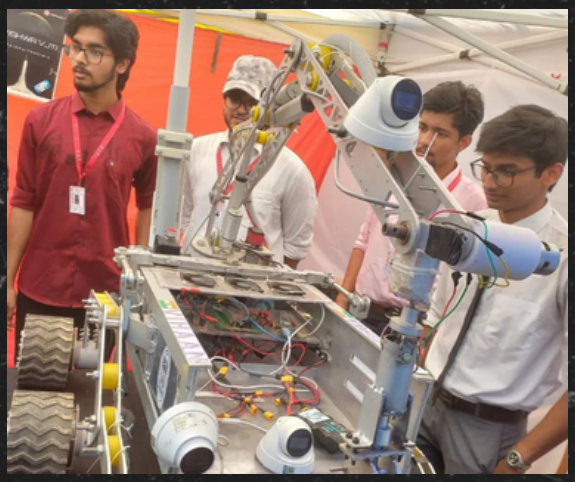

Arpita Kar & Fazil Sheikh Guided by Prof. Vaibhav Godbole sir, their project 'DockiCraft' bagged the consolation prize at the Giant Meterwave Radio Telescope (GMRT) exhibition & competition on the occasion of GMRT Science Day 2023


Siddhesh Patil, Sushant Shanbag, Danish Sharma, Arpita Kar & Anushka Bobade all from B.E. (ECS) are selected at Ingram Micro Technologies (India) as graduate engineer trainee (GET) with CTC of 6 LPA. Founded in California, USA with offices all round the world including Mumbai & Chennai in India, the company provides software solutions for logistics & global supply chain management.


Siddharth Mhade, Shalom Pakhare, Rizwan Baig & Abhishek Athani of B.E. (ECS) for winning the first prize in Prakalp Project Competition & Exhibition under the hardware category during Crescendo 2023 on Friday 10th March 2023. Congratulations to the entire group for their project 'Electric Vehicle (EV) Charging Station' & their mentor/guide Prof. Binsy Joseph

Brycen Fernandes was awarded 'Best All Rounder' at the Annual Day function in Prabhadevi, marking a hat-trick of achievements for the 'trendsetters' batch of B.E. (ECS) students. He has won the technical trophy for two consecutive years and won the fashion show. Brycen proudly poses with his accolades alongside Dr. Sapna Prabhu, Head of Department - Electronics & Computer Science.

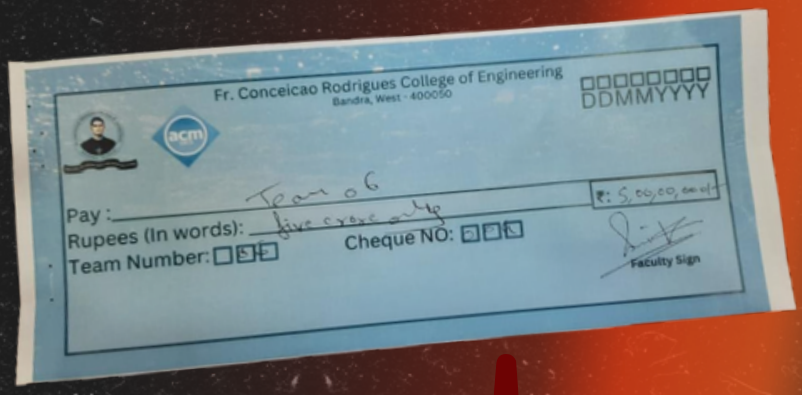
B.E. students from Semester VIII attended the ISRO Space Exhibition at Veermata Jijabai Technical Institute in Matunga on February 24, 2023. Despite crowds and heat, they saw impressive exhibits like CubeSAT, an indigenous communication satellite, and VIHAAN, a robotic rover. Brycen Fernandes met with SVKM's Shri Bhagubhai Mafatlal Polytechnic team, who demonstrated their ATV and provided technical input. Acknowledgments go to Andrea Pinto, Sherwin Dsouza, Max Johnson, and Prof. Jayen Modi for organizing the event.



# NOTABLE MENTIONS


Darshal Parmar and Sachin Parmar won first prize in 24 hour **Hackathon at TCET**, focusing on improving online medical examination.

Shubham Shanbhag and Akshath Mathur from SE ECS bagged a wopping deal of 5 crore for their idea in
**SHARK TANK CRCE**




Shubh Shetty from SE ECS secured 2nd place in **Stratagem Hackathon**

Punit Giri and Shreya Sahay secured 4th place for **Unscript Rookies Hackathon**

# SPORTS SPOTLIGHT

## ATHLEAD INTRA BADMINTON

**GIRLS SINGLES WINNER**

Alisha Rawat

**GIRLS DOUBLES WINNERS**

Alisha Rawa,
Prachiti Patilt

**BOYS DOUBLES 1st RUNNER UP**

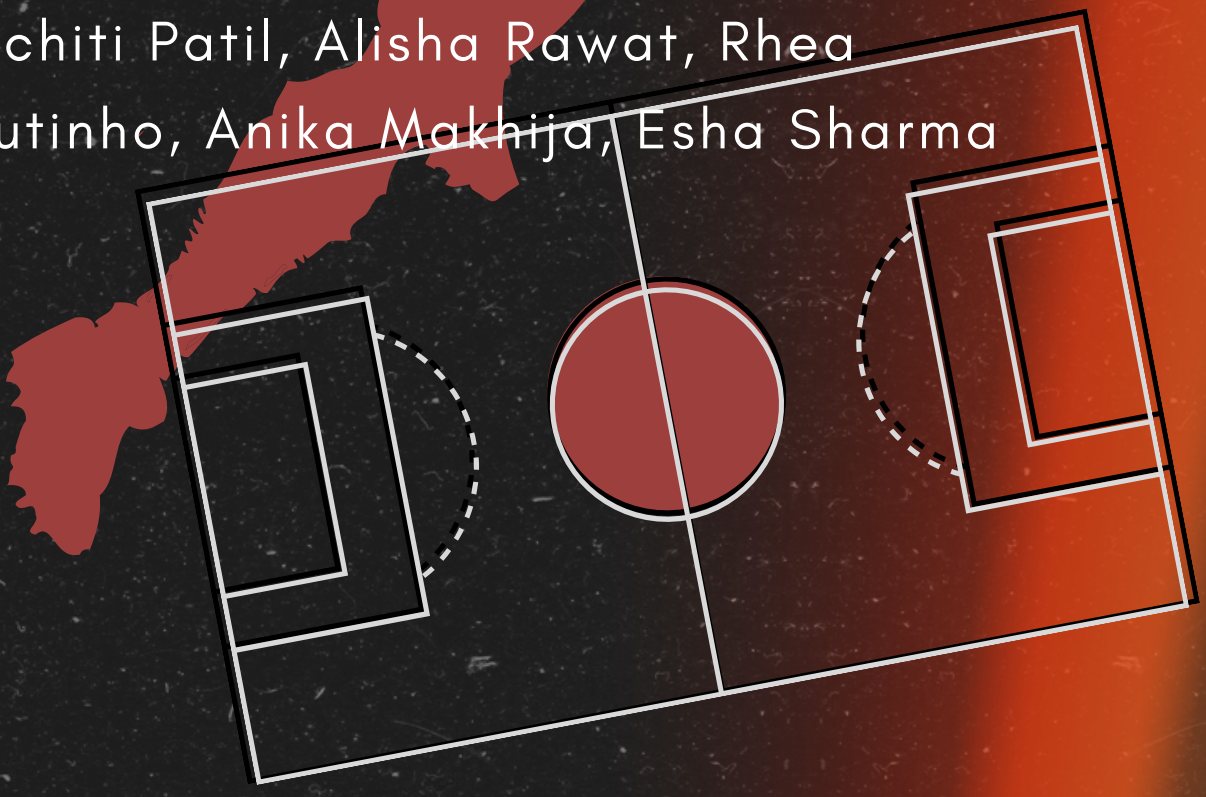
Emmanuel Vazathra,
Leroy Machado

# ATHLEAD
# INTRA RING FOOTBALL


## GIRLS RINK FOOTBALL

## WINNERS

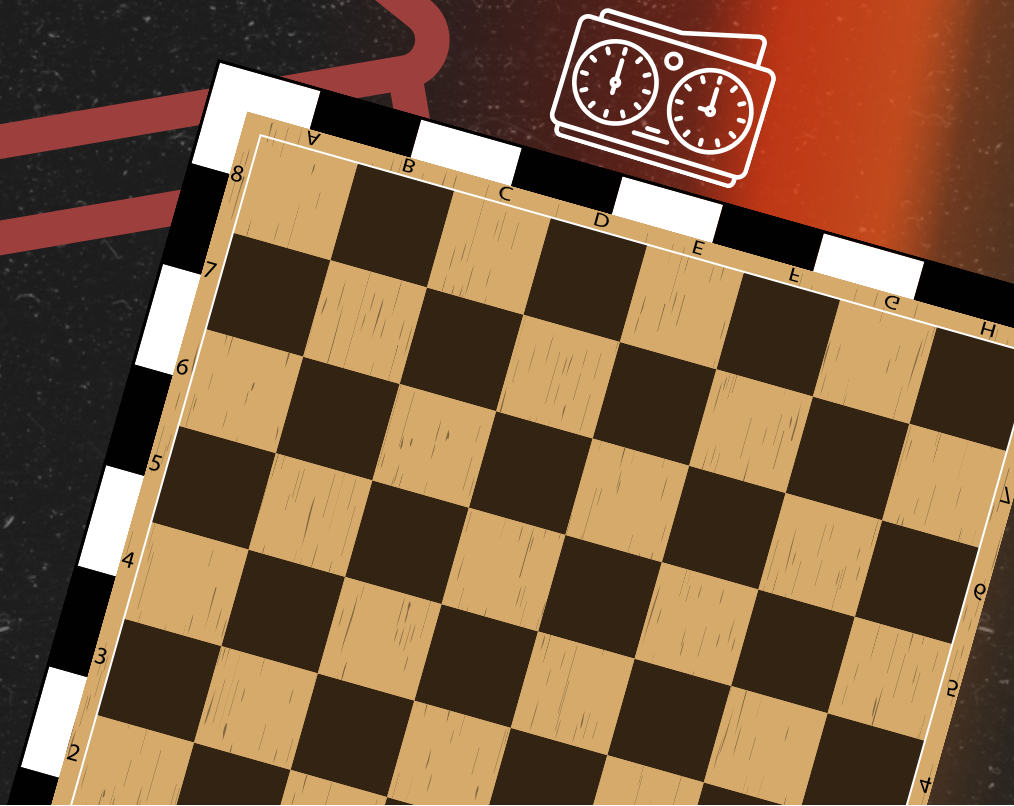
Prachiti Patil, Alisha Rawat, Rhea Coutinho, Anika Makhija, Esha Sharma



# ATHLOES
# GIRLS CHESS COMPETETION

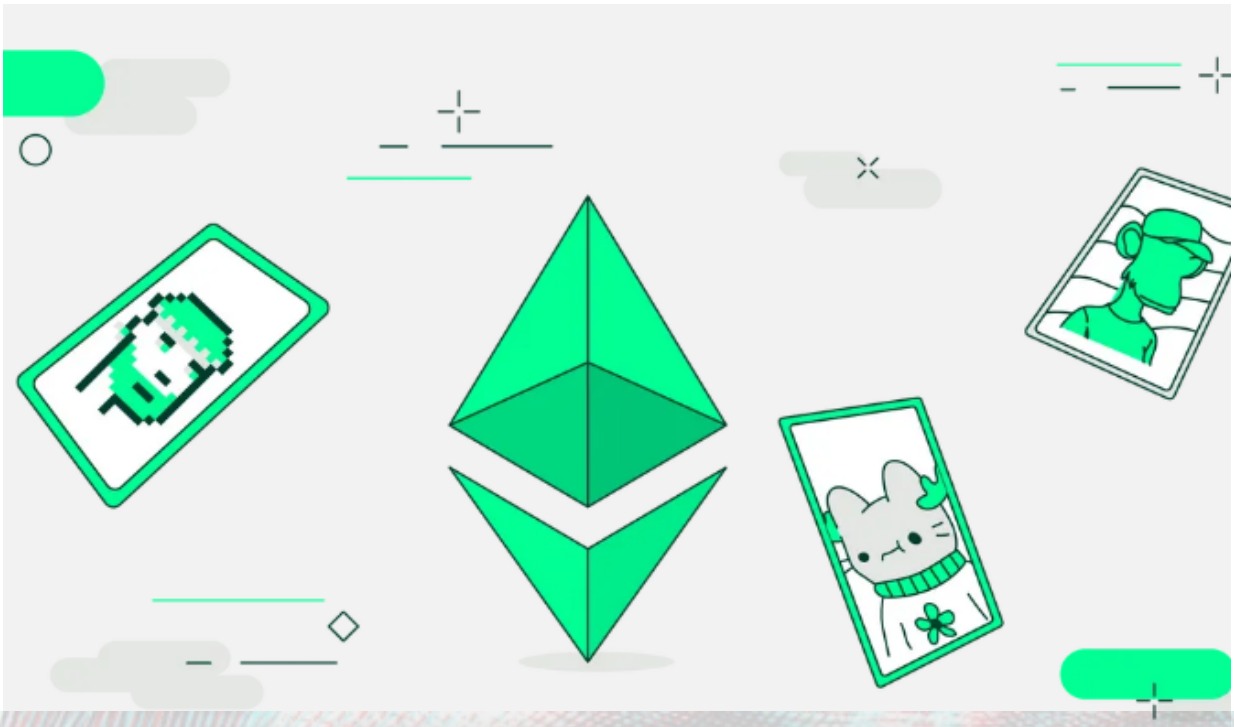

**SECOND PLACE**

Mugdha Zope



## BOYS TUG-OF-WAR

## RUNNER UP
## BE ECS



TECHNICAL ARTICLE

# BLOCKCHAIN: THE BACKBONE OF CYRPTOCURRENCIES AND NFTS

Blockchain technology has surfaced as a revolutionary force, transubstantiating diligence and enabling the rise of cryptocurrencies and Non-Fungible Commemoratives( NFTs). It's the underpinning technology that powers decentralized systems, furnishing a secure and transparent way to record and corroborate deals. To truly comprehend the eventuality of cryptocurrencies and NFTs, it's essential to have a solid understanding of blockchain technology and its abecedarian generalities.
Lets dive in

BY
STEVE SEQUEIRA

# WHAT'S BLOCKCHAIN TECHNOLOGY?

At its core, a blockchain is a decentralized, distributed tally that records deals across multiple computers or bumps. Each sale is grouped into a "block" and linked together in chronological order, forming a chain of blocks- hence the name" blockchain." The crucial attributes that define blockchain technology are translucency, security, invariability, and decentralization.
Translucency Unlike traditional systems where sale records are stored in centralized databases, blockchain technology enables transparent deals visible to all actors. Every sale recorded on the blockchain can be vindicated by anyone, enhancing trust and responsibility. Security Blockchain achieves security through cryptography. Each sale is translated and linked to the former block in the chain using cryptographic hashes, creating a unique identifier. Altering a single sale would bear changing the entire chain, making it computationally infeasible and largely secure. Invariability Once a sale is recorded on the blockchain, it becomes nearly inflexible. The decentralized nature of blockchain ensures that multiple clones of the tally live across the network, making it extremely delicate for any vicious actor to alter or tamper with the data. Decentralization Blockchain operates on a peer- to- peer network, barring the need for interposers or centralized authorities. This decentralization ensures that no single reality has control over the entire network, making it resistant to suppression and single points of failure.

## BLOCK CHAIN IN CRYPTOCURRENCIES

Cryptocurrencies similar as Bitcoin and Ethereum, calculate on blockchain technology to enable peer- to peer electronic deals. Blockchain ensurs the

integrity of cryptocurrency deals by furnishing a transparent and decentralized tally. When a sale occurs, it's broadcasted to the network of bumps, validated through agreement mechanisms(e.g., Proof of Work or Proof of Stake), and added to a block in the blockchain. Miners or validators contend to break complex fine mystifications to validate deals and secure the network. Once a block is added to the blockchain, it's considered verified, and the sale becomes a endless part of the public tally. The decentralized nature of blockchain technology eliminates the need for interposers, reduces sale costs, and enables presto and secure cross-border deals. The Rise of Non-Fungible Commemoratives( NFTs) on the Blockchain Non-Fungible Tokens( NFTs) influence blockchain technology to certify the power and authenticity of digital means, similar as art, collectibles, and virtual real estate. Each NFT represents a specific digital item and can not be changed on a one-to-one base like cryptocurrencies. The blockchain's decentralized nature ensures the failure and oneness of NFTs, furnishing evidence of power and precluding unauthorized duplication or revision. The power history and sale details of NFTs are transparently recorded on the blockchain, allowing collectors and buyers to corroborate the authenticity and provenance of the digital asset. Also, NFTs have introduced new possibilities for generators, enabling them to monetize their digital workshop directly and admit royalties whenever their NFTs are resold. Blockchain technology ensures that these deals are executed automatically and transparently, barring the need for interposers and easing a fairer and more effective ecosystem for artists and generators.Blockchain technology revolutionizes decentralized, secure operations across various sectors.

TECHNICAL ARTICLE

2023

TECHNICAL ARTICLE

# IOT: A REVOLUTION IN CONNECTIVITY

The Internet of Things (IoT) is a new idea that will change how we interact with the world. It has connected devices and systems in ways that were previously unimaginable, and it has quickly emerged as a driving force behind the digital transformation of households, cities, and industries. The Internet of Things (IoT) offers unprecedented levels of automation, efficiency, and convenience, which has the potential to shape our future.

BY STEVE SEQUEIRA

# WHAT IS IOT ?

The Internet of Things (IoT) is essentially a network of physical objects equipped with software, connectivity, and sensors that enable them to collect and exchange data over the internet. These things, which are also known as "smart" devices or "connected" devices, can be household items like refrigerators, thermostats, and wearable devices, as well as industrial machinery and infrastructure parts. The IoT's ability to collect and analyze massive amounts of data is its most important feature. Real-time data on connected objects' status and performance can be obtained from embedded sensors in IoT devices that can capture temperature, location, motion, and other data. This data can be processed and analyzed to get useful insights that help make better decisions and improve a variety of areas. The IoT's potential to boost productivity and efficiency y across industries is one of its major advantages. IoT-enabled sensors can reduce downtime and save money in manufacturing by monitoring equipment performance, predicting maintenance requirements, and optimizing production processes. IoT devices can monitor crop health, soil moisture, and weather conditions in agriculture, allowing for precise irrigation and resource management, ultimately leading to higher crop yields. Similarly, connected devices can improve healthcare outcomes by monitoring patients' vital signs, providing remote diagnosis, and facilitating personalized treatment plans.

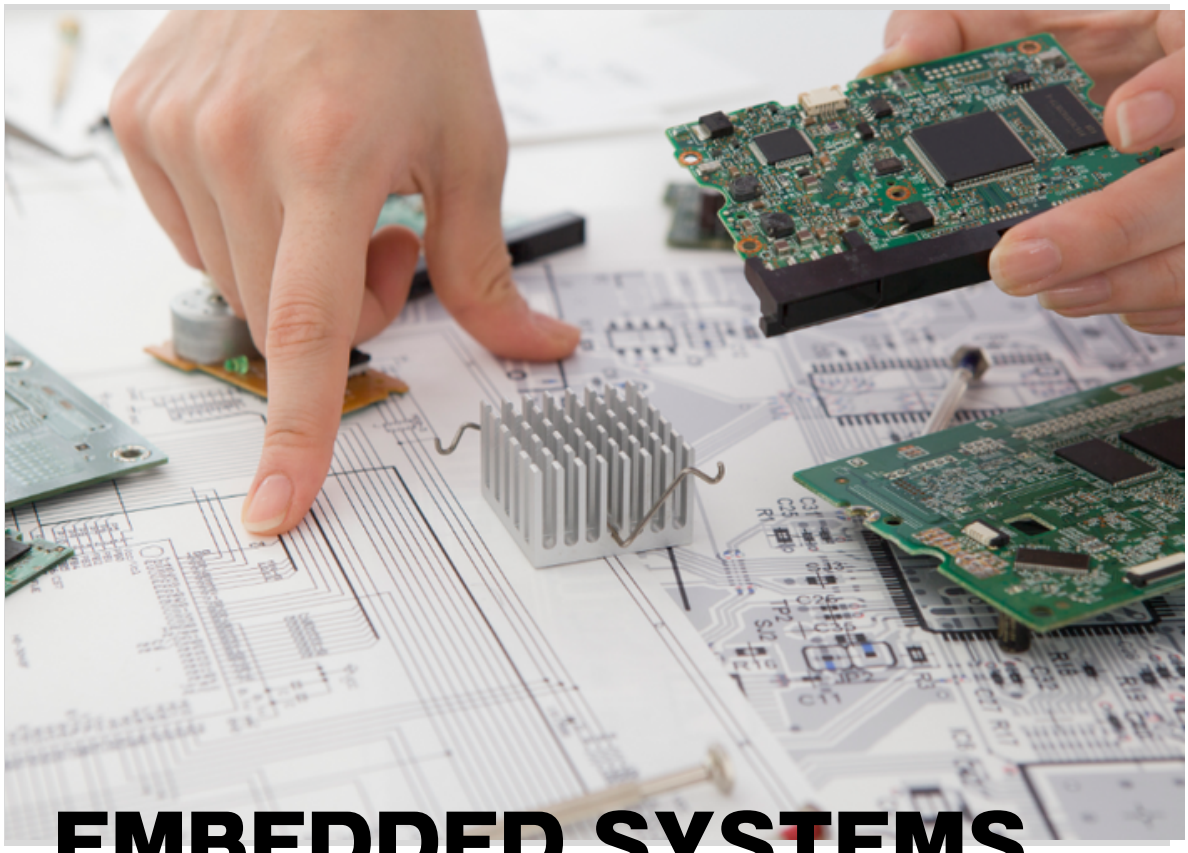
## APPLICATIONS OF IOT

The Internet of Things (IoT) also holds great potential for the development of smart cities, in which interconnected systems and devices can improve urban living. Energy consumption

can be monitored and managed by smart grids, which also optimize distribution and reduce waste. Traffic flow can be improved, congestion can be reduced, and road safety can be increased by intelligent transportation systems. Additionally, connected sensors have the ability to monitor environmental factors like noise levels and air quality, which can aid in sustainable urban development and improve quality of life. However, as the Internet of Things grows, so do privacy and data security concerns. The likelihood of cyberattacks and unauthorized access to sensitive data increases as the number of connected devices to the internet grows. To ensure widespread adoption and trust in IoT technologies, critical challenges such as maintaining data integrity and protecting user privacy must be addressed. Additionally, the IoT's sheer size and complexity present significant infrastructure difficulties. Strong communication protocols, scalable cloud platforms, and effective data processing and storage systems are needed to construct a network that can support billions of interconnected devices. In addition, for seamless integration and optimal functionality, the interoperability of various systems and devices from various manufacturers remains a challenge that must be overcome. In conclusion, the way we live, work, and interact with our surroundings could be completely transformed By the Internet of Things. From working on modern productivity and empowering savvy urban areas to Improving medical care and regular comfort, the IoT is changing different parts of our lives. However, the IoT's full potential can only be realized if infrastructure, data privacy, and security issues are addressed. IoT enables innovation, connected future through continuous development and collabrative efforts

TECHNICAL ARTICLE

2023



TECHNICAL ARTICLE

# EMBEDDED SYSTEMS AND FUTURE

Welcome to the Embedded Systems Article! Embedded systems are computer systems designed to perform specific tasks within larger systems or products.
TIn this edition, we will explore the exciting world of embedded systems and highlight some noteworthy advancements. Let dive in!

BY
JEROME JAMES

# WHAT ARE EMBEDDED SYSTEMS?

**Embedded systems are specialized computer systems designed to perform specific tasks within larger systems or products. They are typically dedicated to a particular function and embedded within devices or equipment. Unlike general-purpose computers, which are designed to run a variety of applications, embedded systems are tailored for specific applications and often operate in real-time.**

## CHARACTERISTICS OF EMBEDDED SYSTEMS:

**Dedicated Functionality:** Embedded systems are designed to perform specific tasks, such as controlling machinery, monitoring environmental conditions, processing data, or providing user interfaces.

**Real-Time Operation:** Many embedded systems must respond to events or inputs in real-time, meaning they have strict timing requirements. This is crucial in applications like robotics, automotive systems, and industrial control, where timely responses are necessary for safety and efficiency.

**Integration:** Embedded systems are integrated into larger systems or products. They interact with other components, sensors, actuators, and external interfaces to fulfill their intended functions.

**Power Efficiency:** Embedded systems are commonly powered by batteries or have limited

## APPLICATIONS OF EMBEDDED SYSTEMS:

**Embedded systems have a wide range of applications across various industries:**

**Consumer Electronics:** Embedded systems are present in smartphones, table

smart TVs, gaming consoles, and wearable devices, enhancing their functionality and enabling seamless user experiences.

**Automotive:** Embedded systems are crucial in modern vehicles for functions such as engine control, anti-lock braking systems (ABS), airbag systems, entertainment systems, navigation, and advanced driver-assistance systems (ADAS).

**Industrial Automation:** Embedded systems control and monitor industrial equipment, including robotics, assembly lines, process control systems, and machine vision systems.

## EMBEDDED SYSTEMS DEVELOPMENT:

**Developing embedded systems involves several stages, including:**

**System Design:** Defining the requirements, functionalities, and constraints of the embedded system, and determining the hardware and software components needed.

**Hardware Design:** Designing hardware components, including microprocessors, memory, sensors, actuators, and communication interfaces.

**Software Development:** Developing embedded software, including firmware, drivers, and application, using low-level programming languages.

**Integration and Testing:** Integrating hardware and software components, conducting tests to ensure the system meets the specified requirements, and validating its performance and reliability.

**Deployment and Maintenance:** Deploying the embedded system into the target environment, monitoring its operation, and providing maintenance and updates as needed.

TECHNICAL ARTICLE

# THE LATEST INNOVATIONS IN ELECTRONICS

Greetings, tech enthusiasts!
Welcome to our article, where we bring you the most exciting developments and innovations in the world of electronics. In this edition, we'll explore cutting-edge technologies, upcoming gadgets, and trends that are reshaping the electronic landscape. So, let's dive in!

BY
JEROME JAMES

## FEATURE STORY: THE RISE OF WEARABLE TECH

Wearable technology has witnessed an impressive surge in popularity, revolutionizing the way we interact with gadgets. From smartwatches and fitness trackers to augmented reality glasses, wearables are becoming increasingly integrated into our daily lives. Discover the latest advancements, key players, and potential applications in this emerging field.

## APPLICATIONS OF EMBEDDED SYSTEMS:

The concept of a smart home continues to evolve, and we're excited to showcase the latest smart home devices hitting the market. From voice-controlled assistants and intelligent thermostats to connected lighting systems, discover how these devices are making our lives more convenient, energy-efficient, and secure.

## INDUSTRY INSIGHTS: THE POWER OF ARTIFICIAL INTELLIGENCE

Artificial Intelligence (AI) is transforming the electronics industry by enabling machines to learn, reason, and make decisions. Uncover the ways AI is enhancing electronics, from autonomous vehicles and robotics to voice recognition and personal assistants. Gain insights into the incredible potential and ethical considerations surrounding AI-powered technologies.

## SUSTAINABLE ELECTRONICS: GREEN INITIATIVES AND E-WASTE MANAGEMENT

In an increasingly environmentally conscious world, the electronics industry is making strides towards sustainability. Explore the latest initiatives aimed at reducing carbon footprints, such as the use of renewable materials, energy-efficient designs, and recycling programs. Gain insights into effective

The concept of a smart home

e-waste management strategies and the importance of responsible disposal and recycling of electronic devices.

## EMERGING TRENDS: EDGE COMPUTING AND IOT INTEGRATION

As the Internet of Things (IoT) continues to expand, the need for efficient data processing and analytics is paramount. Discover the concept of edge computing, where computation and data storage are performed closer to the edge of the network, enabling faster response times and reduced latency. Learn how edge computing is revolutionizing industries such as manufacturing, healthcare, and logistics by enabling real-time insights and actionable intelligence.

## INTERNET OF THINGS (IOT) SECURITY CHALLENGES AND SOLUTIONS

With the proliferation of connected devices, ensuring the security and privacy of IoT systems has become a critical concern. Dive into the challenges and risks associated with IoT security, including device vulnerabilities, data breaches, and privacy concerns. Explore the latest advancements in IoT security solutions, such as secure authentication, encryption, and intrusion detection systems. Stay informed about best practices and emerging standards in IoT security to safeguard your connected devices and networks.

## EMERGING TRENDS: EDGE COMPUTING AND IOT INTEGRATION

Quantum computing is revolutionizing computing power by solving complex problems beyond classical computers. Its potential applications include cryptography, drug discovery, logistics optimization, and financial modeling. Stay updated on research breakthroughs and the race to build practical quantum computers.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