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K. S. R. COLLEGE OF ENGINEERING

(Autonomous)

Accredited by NAAC with "A++" Grade Approved by AICTE, New Delhi &
Affiliated to Anna University, Chennai
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TECHNICAL MAGAZINE

TRONIX 23

Department of

ELECTRONICS AND COMMUNICATION ENGINEERING

ACADEMIC YEAR 2022-2023

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An ISO 9001: 2008 Certified Institution.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

TRONIX 23

TECHNICAL MAGAZINE

ACADEMIC YEAR 2022 – 2023

K.S.R. COLLEGE OFENGINEERING

Vision

We envision to achieve status as an excellent educational institution in the global knowledge hub, making self-learners, experts, ethical and responsible engineers, technologists, scientists, managers, administrators and entrepreneurs who will significantly contribute to research and environment friendly sustainable growth of the nation and the world

Mission

IM1	To inculcate in the students' self-learning abilities that enable them to become competitive and considerate engineers, technologists, scientists, managers, entrepreneurs, and administrators by diligently imparting the best of education, nurturing environmental and social needs.
IM2	To foster and maintain a mutually beneficial partnership with global industries and Institutions through knowledge sharing, collaborative research, and innovation.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Vision

We envision as a center of excellence in the field of Electronics and Communication Engineering to produce technically competent graduates with diverse teaching and research environments.

Mission

DM1	To educate the students with the state of art technologies to meet the growing challenges of the industries.
DM2	To develop an innovate, competent and ethical Electronics and Communication Engineer with strong foundations to enable them for continuing education.

PEOs and PSOs

Program Educational Objectives (PEOs)

PEO1-**Employability and Higher Education** Excel in Professional career and higher education by acquiring knowledge in mathematical, social, scientific & engineering principles.

PEO2-**Core Competence** Analyze, design and develop/implement core engineering problems in communication systems that are technically sound, economically feasible and socially acceptable.

PEO3-**Interpersonal Skills and Team Work** Exhibit professionalism, ethical communicating skills and team work by engaging in lifelong learning for sustainable development of the society.

Program Specific Outcomes (PSOs)

PSO1- **Professional Skill:** Specify design and test modern electronic systems that perform analog and digital processing functions.

PSO2- **Problem – Solving Skills:** Design essential elements (circuits and antennas) of modern RF/Wireless communication systems.

MAGAZINE

CHAIRMAN MESSAGE

Shri. R. Srinivasan, BBM., MISTE.,

Chairman, KSR Educational Institutions

Education is the foundation of a brighter tomorrow, and this magazine reflects the vibrant spirit of our learners. May it continue to inspire creativity, excellence, and lifelong curiosity in every reader..In the recent times, the role of KSRCE is to carry out proactive research and development activities to make the students as well as faculty member's intellectuals, which are very challenging and demanding. It is of great significance that this magazine is going to deliberate upon It will definitely explore new areas of practice and enhancing quality of professional services.

I am sure this magazine will be a milestone in ensuring the highest standards in this profession. I wish the organizers the very best in this and all their other endeavors.

I am eagerly looking forward to seeing you and enjoying this magazine in KSRCE Campus.

With best wishes

Mr. R. Srinivasan

Chairman

KSR Educational Institutions

PRINICIPAL MESSAGE

Dr. P. Senthil Kumar, M.E., Ph.D.
Principal

I extend my heartfelt congratulations to the Department of ECE for bringing out the prestigious biannual department magazine, TRONIX. This magazine provides a valuable platform for both students and faculty members to enhance their technical knowledge and showcase their literary talents. I am confident that such an initiative will ignite a passion for reading, foster creativity, and instill a strong sense of belonging within the department.I appreciate the efforts of the editorial board for taking on this responsibility with dedication and excellence. I wish the magazine great success and look forward to its continued contribution to academic and creative growth.

With best wishes
Dr. P. Senthil Kumar
Principal

CONTROLLER OF EXAMINATION

Dr. P.S.Periasamy, M.E., Ph.D.
Professor & COE

I am extremely happy that our department magazine TRONIX has come out very well. This magazine reflects the state of art of the department, highly qualified faculty and most prolific students. The magazine has helped in bringing out the creative instinct of the students and their proficiency. I am very happy to be a part of this magazine. I congratulate all the faculty and students in making this magazine a success.

With best wishes
Dr. P.S.Periasamy
Professor & COE

HOD MESSAGE

Dr.C.Gowri Shankar M.E.,Ph.D

Head of the Department

The HOD of ECE take great honour in congratulating the students who have contributed for the current year's Evolve magazine TRONIX. I really hope that this would be as useful as the last Evolve editions. Acknowledging the fact that the magazine is completely created and designed by the students I really hope this would kindle a spark in the minds of the students who are yet to contribute towards the progress of the Evolve Initiative in the upcoming years. All the best students!

With best wishes

Dr.C.Gowri Shankar

Head of the Department

EDITORIALS

- K.S.R. College of Engineering is on its 25th year. Being the pioneers in Engineering Education, our chairman, Thiru. R. Srinivasan, always wanted the Institution to be a model institution and working towards it.
- In this year of release, the editorial board cordially records its gratitude and indebtedness to the management for these novel practices.
- With congratulation to the outgoing engineers, we wish the students for a successful ensuring academic year. I expect more cooperation and commitment from the students which will eventually lead them for a better future.

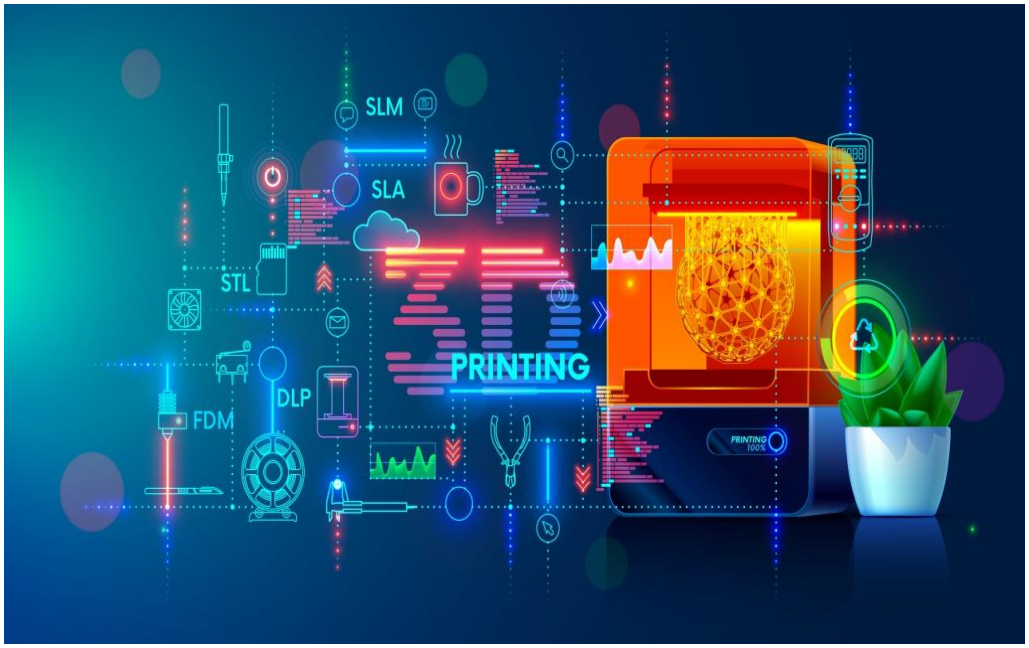
EDITORIALBOARD

3D PRINTING REVOLUTIONIZING INDUSTRIES

The world of manufacturing and design is experiencing a seismic shift with the advent of 3D printing technology. This innovative process, also known as additive manufacturing, has evolved from a niche concept to a powerful force reshaping industries globally.

In the early 1980s, Charles Hull pioneered 3D printing with stereolithography. Since then, 3D printing technologies have diversified, including Fused Deposition Modeling (FDM), Stereolithography (SLA), and Selective Laser Sintering (SLS). Today, it is used in diverse sectors, with a transformative impact.

One of the most remarkable applications is in healthcare. 3D printing enables the creation of customized prosthetics, implants, and even the potential to print functional human organs, promising new hope for patients. In aerospace, manufacturers utilize 3D printing for lightweight, high-performance components, reducing fuel consumption and environmental impact. The automotive industry benefits from rapid prototyping and intricate part production. In fashion and design, it fosters unique creations, and in architecture, it constructs models and even buildings with precision.



The advantages of 3D printing are abundant—cost-effectiveness through reduced waste and tooling costs, customization catering to individual needs, rapid prototyping accelerating product development, and the ability to create complex geometries previously unattainable.

However, challenges persist, such as material limitations, time-consuming large-scale production, and concerns regarding intellectual property rights and counterfeiting.

As we look ahead, the future of 3D printing holds promise. Advancements in bioprinting could revolutionize healthcare, while its potential in space exploration and sustainable manufacturing could reshape these industries.

Nithyasri M

II-ECE

TRENDS IN EMBEDDED SYSTEM

Overview:

Technology trends are accelerating, and devices have developed into distinctive qualities that fit in many categories and sectors, including embedded. Due to its outcomes being application-oriented and advance development areas in focus, embedded systems and devices will gain more popularity in the coming future while considering various business sectors and their applications. Let us see recent trends under embedded systems.

System on Chip (SoC):

System on Chip (SoC) solution is another new trend in embedded system technology. Many businesses provide SoC based embedded devices, and among these solutions is the market delivery of analog and mixed-signal integrated circuits as a popular one. ASIC with great performance, small size, low cost, and IP protection is one such solution. Due to their size, weight, and power performance, it is very popular for application specific system needs.

Wireless technology:

The primary goal of building wireless embedded software solutions is information transmission and reception. The wireless embedded system plays an important role where physical connections are impossible in any setting, and the use of IoT peripherals and devices becomes vital. With the technological advances in the areas of wireless solutions like Z-Wave, Bluetooth, Wi-Fi, and ZigBee the applicability of embedded wireless systems has drastically increased.

Automation:

Every system in use today is becoming more automated. Every sector of growth has some level of automation, largely due to developments in computers, robots, and advancement in intelligent technologies like artificial intelligence and machine learning. The usage of embedded devices speeds up the connection of multiple storage components and can easily link up with cloud technology to power the device's quick expansion of cognitive processing. The applications based on facial recognition and vision solution offers benefits like image identification & capturing, image processing, post processing, etc., and alerting for security in real time. For example, a smart factory outfitted with IoT, and artificial intelligence can significantly boost productivity by monitoring operations in real time and allowing AI to make decisions that prevent operational errors.

Ranjith Kumar B S

I-ECE

HOW AI IS TRANSFORMING THE AEROSPACE TECHNOLOGY

- ✓ AI (Artificial Intelligence) is a simulation of the human mind processes by machines, especially computer systems.
- ✓ Specific applications of AI include specialized systems, natural language processing, speech recognition, and computer vision.
- ✓ AI (Artificial Intelligence) broadly refers to any human-like behavior displayed by the machine or system.
- ✓ In AI's simplest form, computers are programmed to "mimic" human behavior using comprehensive data from past examples of similar behavior
- ✓ This can vary from recognizing differences between a cat and a bird to execute complex activities in a factory environment.
- ✓ AI systems work by consuming copious amounts of labeled training data, analyzing the data for relationships and models, and using these models to make predictions on future states.
- ✓ In this way, a chatbot powered examples of text chats can learn to produce realistic exchanges with people, or an image recognition tool can learn how to identify and describe objects in images by looking at millions of examples.
- ✓ AI programming has been focused on three cognitive skills: learning, reasoning, and self-correction.
- ✓ AI is important as it can give businesses insights into their operations that they may not have been aware of in the past. In certain cases, AI can perform tasks better than human beings.

- ✓ Especially in repetitive, meticulous tasks like analyzing large numbers of legal documents to ensure the appropriate fields are filled in properly, AI tools often complete jobs quickly with a few mistakes.
- ✓ Today, AI makes it possible to improve the customer experience through automation and self-service solutions, optimize employee workflow, and ensure higher air safety with analytical and prescriptive aircraft maintenance. It also allows airlines to make informed decisions about pricing and market position through intelligent use of the information.
- ✓ Briana Brownell also admits AI's key role in operations optimization.
- ✓ "I see many chances! For instance, optimizing operations including adding, changing, or removing routes, setting flight times, pricing, and product offerings.
- ✓ Achievement is driven by having a deep understanding of various customer segments and where new business opportunities exist."

Yuvanesh N
I-ECE

INTERNET OF THINGS (IoT)

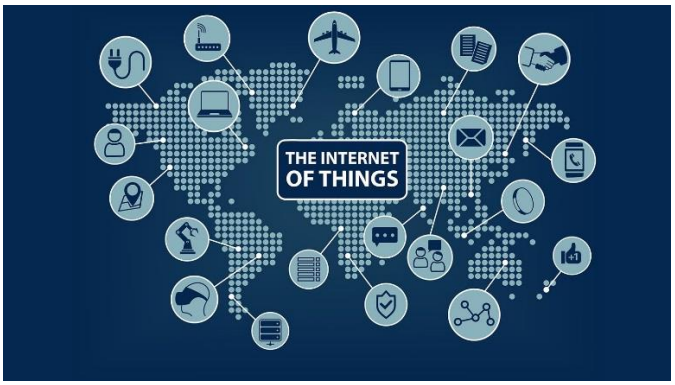
Overview:

IoT systems allow users to achieve deeper automation, analysis, and integration within a system. They improve the reach of these areas and their accuracy. IoT utilizes existing and emerging technology for sensing, networking, and robotics.

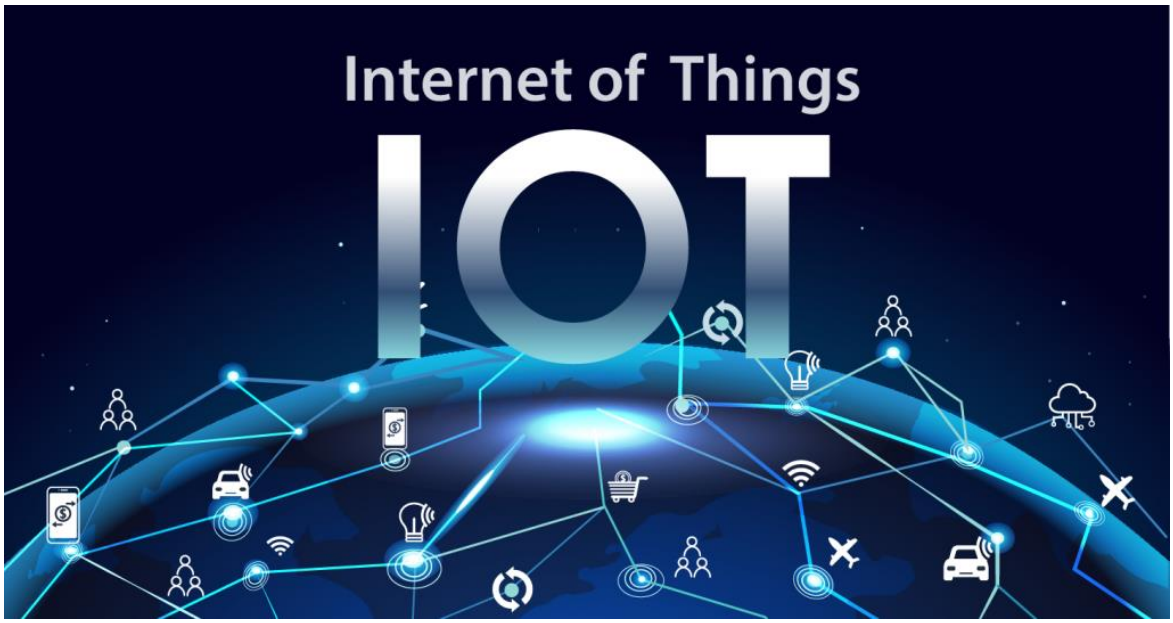
IoT exploits recent advances in software, falling hardware prices, and modern attitudes towards technology. Its new and advanced elements bring major changes in the delivery of products, goods, and services; and the social, economic, and political impact of those changes.

INTRODUCTION - HISTORICAL BACKGROUND OF LOT

INTERNET of Things (IoT) also known as the Internet of Objects is a foundation for connecting things, sensors, actuators, and other smart technologies, thus enabling person-to-object and object-to-object communications. an integrated part of the future internet and could be defined a dynamic global network infrastructure with mobile configuring capability based on standard and interoperable communication protocols where physical and vital thang have leas ties, physical ate buts, virtual personalities, use intelligent interfaces and are seamlessly integrated into information network Based on the traditional information carriers including the mobile communication network, IoT is a network that interconnects ordinary physical objects with the identifiable addresses that provides intelligent services. It is the next revolution after the great hit of the imams that brought a new dimension into the world of Information and Communication Technologies (ICTs).



IOT



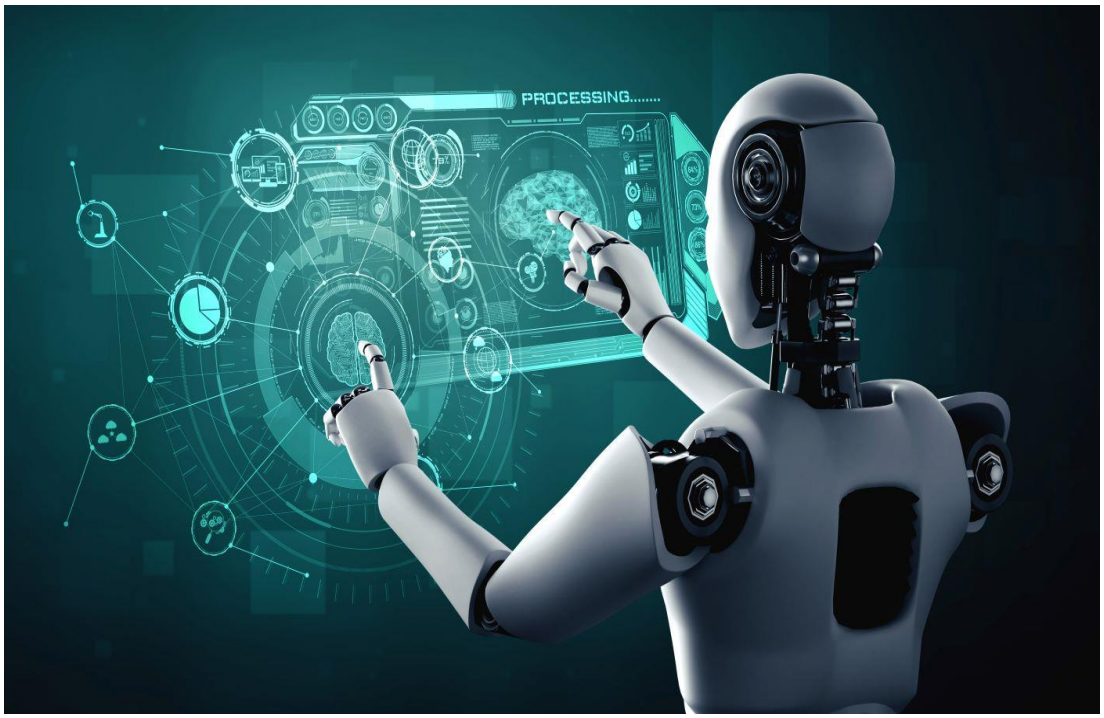
The Internet of things describes devices with sensors, processing ability, software and other technologies that connect and exchange data with other devices and systems over the Internet or other communications networks. The Internet of things encompasses electronics, communication and computer science engineering.

G Dinesh kumar
II ECE

ROBOTIC PROCESS AUTOMATION (RPA)

Robotic process automation (RPA), also known as software robotics, uses automation technologies to mimic back-office tasks of human workers, such as extracting data, filling in forms, moving files, et cetera. It combines APIs and user interface (UI) interactions to integrate and perform repetitive tasks between enterprise and productivity applications. By deploying scripts which emulate human processes, RPA tools complete autonomous execution of various activities and transactions across unrelated software systems.

This form of automation uses rule-based software to perform business process activities at a high-volume, freeing up human resources to prioritize more complex tasks. RPA enables CIOs and other decision makers to accelerate their digital transformation efforts and generate a higher return on investment (ROI) from their staff.



Less coding:

RPA does not necessarily require a developer to configure; drag-and-drop features in user interfaces make it easier to onboard non-technical staff.

Higher customer satisfaction:

Since bots and chatbots can work around the clock, they can reduce wait times for customers, leading to higher rates of customer satisfaction.

Vignesh K

II - ECE

THE GREAT SANGAM POET