NATIONAL EDUCATION SOCIETY ®

# JAWAHARLAL NEHRU NEW COLLEGE OF ENGINEERING

# INFORMATION SCIENCE AND ENGINEERING

INSIGHT

INFORMATION SCIENCE INQUISITIVE GROUP FOR HIDDEN TALENTS

# KAUSHALYA DEEPA

## 2023-24

# PREFACE

In the story of life, student days are the most colorful chapters filled with wonder and growth.

The Department of Information Science and Engineering presents "Kaushalya Deepa," an annual publication that vividly showcases the diverse talents of our students and the enriching student-faculty collaborations within our dynamic academic environment. Every year, a diverse array of technical and non-technical activities are organized, engaging IS&E students from all semesters. This magazine chronicles the event details, encompassing activities, student participation, project exhibitions, and student articles, along with their aspirations and accomplishments. Furthermore, the magazine introduces a section titled "Student Sight," which showcases student perspectives, poetry, technical articles, and more.

We are happy to get support and encouragement from Dr. Y Vijaya Kumar, Principal JNNCE, Dr. R. Sanjeev Kunte, HOD of Information Science and Engineering.

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# HOD TALK


I am very happy to pen a few lines about our department for the department magazine. I am very glad to inform you that our institution got NAAC accreditation with an 'A' grade, which speaks about the quality and standard of the education imparted to the students by the department and the institution.

With a very good infrastructure and academic facilities provided, along with the guidance of highly experienced and qualified faculty and staff of the department, students are excelling in their careers. A new laboratory has been set up in the department, and additional faculty have been recruited to cater to the increase in intake to 180.

The department is encouraging students to take up MOOC courses in addition to their regular academics to enrich their knowledge with state-of-the-art technologies. Many students have enrolled in such beyond the curriculum certification courses like NPTEL, Coursera, etc., and successfully completed them. Majority of the final year academic projects have resulted in publishing their innovative concepts in journals/conferences and many such final year projects have been funded by KSCST for their innovative projects.

I am extremely happy to inform you that several students have enrolled for VTU B.E. (Hons.) and B.E. with a Minor degree.

The faculty engagement in research and development activities has resulted in an increase in paper publications in reputed indexed journals and conferences, and many patents have been filed. In addition, Dr. Chethan G.S. from the department has been awarded a Ph.D. degree recently.

Students are well-trained by the department to face campus placements and industry environments by signing MOUs with reputed companies.

-Dr. R Sanjeev Kunte B.E., M.Tech., Ph.D
Professor and HoD, Dept. of ISE,
JNNCE, Shivamogga

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# INSIGHT INAGURATION


# LIST OF EVENTS CONDUCTED IN 2023-24

## WORKSHOPS AND WEBINARS

**Hands-On Session on Programming with Arduino Uno and Raspberry pi**

A hands on session on IOT was conducted for 8th semester students. The resource person for this event were Mr. Pradeep HK and Dr. R. Sanjeev Kunte.

Students got to know about implementation IOT system using Arduino UNO and Raspberry Pi using Wokwi software. Student coordinators were Aditya Basavaraj, Bindushri S Patil, Ananya Babu, Mohan R Bedre. The event was conducted on 23/4/2024.

**IISC Industrial Visit**

Industrial trip was conducted for 8th semester students. Students visited three major areas of IISC- ART Park, SERC, ICER, on 15-03-2024. The trip was co-ordinated by Dr. Pavan Kumar MP, Mr. Aruna Kumar P and Mrs. Thara K L of ISE department.


## Student Development program on programing with C

Student development program was arranged on the topic "Programming with C" on 20/11/2023.The resource person for this event was all teaching Staff of ISE department. The event was co-ordinated by Mr. Sayed Aftab Ahamed, Mr. Sudeep Manohar, Mr. Sharath Kumar S.R of ISE department.

## Advances in Data Engineering

Expert talk was arranged on the topic " Advances in Data Engineering". The resource person for this talk was Ms. Nischitha A. C, Data Engineer, Atkins Realis, Bengaluru. The program was held on 08/01/2024. The event was co-ordinated by Mr. Akshay M J and Mr. Pavan M of ISE department.

## Application development on DBMS

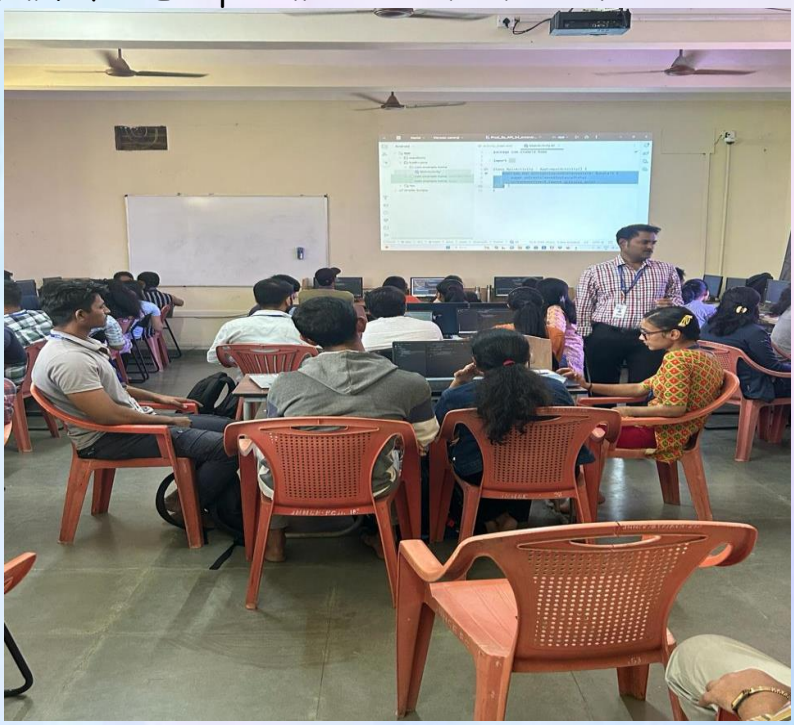
Student Development program was organized on the topic "Application development on DBMS" on 13/01/2024. The resource person for this workshop was Mr. Saaketh Hegde S and Mr. Sanketh Kashyap, 7$^{th}$ semester ISE students. The program was coordinated by Dr. Deepa V.B, Mr. Pavan M and Mr. Sharath Kumar S.R of ISE department.

## Visit to Agriculture College (ZAHRS) Navule

Field Visit to Agriculture College (ZAHRS) Navule, was arranged for the 3rd semester students as a part of outreach program on 30/01/2024 and 01/02/2024. The Event was co-ordinated by Mrs. Manasa S.M and Mrs. Thara K.L of ISE department.

## Android APP Development using Kotlin

Student development program was organized on the topic "Android APP Development using Kotlin". The resource person for this workshop was Dr. Chethan K.R, Professor and Head, Department of AIML, JNNCE. This SDP was co-ordinated by, Mr. Pradeep H.K, Dr. Samara Mubeen and Mr. Vishwas C.G.M of ISE department on 24/02/2024.



## Resume building and Preparation for placement

Talk on placement preparation was arranged on the topic "Resume building and Preparation for placement" on 7/03/2024. The resource person for this event was Mr. Suraj S.M student of 8th semester. The event was co-ordinated by Dr. Jyothi K, Mr. Sharath Kumar S.R and Mrs. Prathima L of ISE department.


## Higher education Institution(HEI)

Students of Government PU and High school, Thirthahalli has visited our Department as a part of visit to Higher education Institution(HEI) on 05/01/2024. The event was co-ordinated by Dr. Jyothi K and Mr. Sayed Aftab Ahamed and Mr. Girish Mantha of ISE department.

## SDP on IOT Applications

Student development program was organized on the topic "IOT Applications" for 5th semester students from 25th January to 27th January. Student coordinator was Pannaga P Raj. Faculty coordinators were Dr. Samara Mubeen and Mr. Vishwas CGM.

## Artificial Intelligence: Relevance and Recent Trends

Expert talk was arranged for students on the topic " Artificial Intelligence : Relevance and Recent Trends" on 21/07/2023. The resource person was Mr. Srivatsa G Dixit and Mr. Prasanna Mavinakuli. The event was co-ordinated by Mr. Sathyanarayana K.B., Assistant professor of ISE department.

## Technical Advances in Information Security"

Expert talk was arranged for students on the topic "Technical Advances in Information Security" on 24/08/2023.The resource person for this event was Mr. Sarwar Jahan M, Information security Architect @sales force The event was co-ordinated by Dr. Sanjeev Kunte R and Mr. Vishwas C G M.

## Elliptic curve Cryptography

An Expert talk was arranged on the topic "Elliptic curve Cryptography" for 7th semester students. The talk was delivered by Dr. Sheela S, Associate Professor, department of ECE, JNNCE. Date:16/12/2023 co-ordinated by Dr. R Sanjeev Kunte and Dr. Jyothi K.

## Decoding the invisible: Art of steganography

Expert talk was arranged for students on the topic "Decoding the invisible: Art of steganography" on 22/11/2023. The resource person was Dr. Manjunath Kamath , Professor and Head, Department of CSE, Yenepoya Institute of technology, Mangaluru. The event was coordinated by Dr. R. Sanjeev Kunte and Dr. Raghavendra R.J.

# TECHNICAL EVENTS

## Guess the Technology

The event "Guess the Technology" was conducted on 14-3-2024, where participants deduce specific technological terms based on visual or textual clues presented via PowerPoint slides, encouraging critical thinking and knowledge retention in an engaging manner.

## Pick and Speak

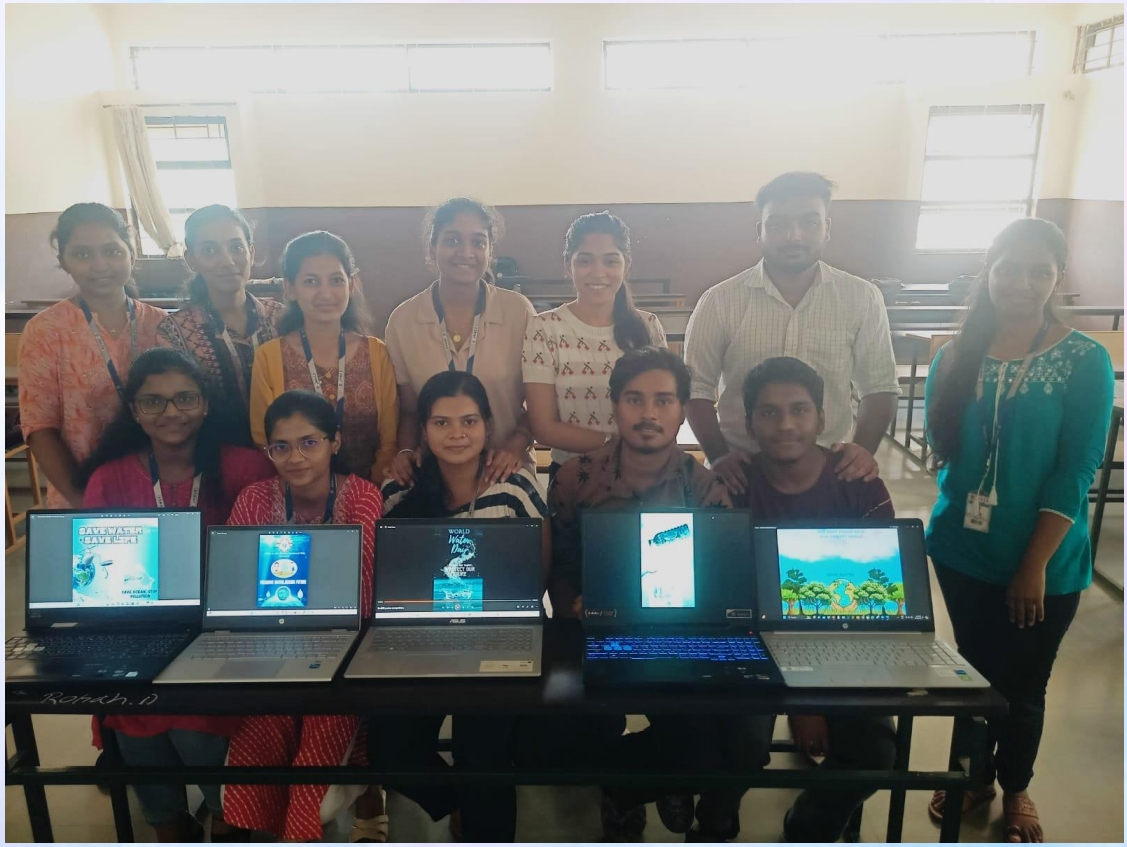
Pick and speak event was conducted on 14-3-2024. Participants have been given different general topics such as Leadership, Global Warning, Importance of Kindness, Travelling.

## Memory Game

Memory Game event is the best way to check ones memory. It was conducted on 24-4-2024, Participants were allowed to memorize various slides displayed on power point along with computer parts and other items displayed on table.

## Poster Design

Poster Design event was conducted on 24-4-2024. Students were given a chance to design on topic "Water Conservation". The best one is selected as winner.



## Debate

Debate is a formal discussion where opposing arguments are presented on a specific topic persuade. This was conduct on 25-4-2024. Participants were given with various topics like online shopping vs offline shopping, work from home vs work from office AI is gift or curse, online class or offline class which is more effective.

## Tech Quiz

The Tech Quiz Event was conducted on 26-4-2024. Participants were allowed to choose any one of the options provided for technical concept based questions. Technical quiz helps students by reinforcing their understanding of key concepts through active recall. It also identifies areas where they need further study, enhancing their overall learning and retention.

## Spy Coder and Hiring Challenge

The Spy Coder Event was conducted on 27-4-2024. Spy coder and hiring challenges help students by enhancing their coding and problem-solving skills through practical experience. They also provide exposure to industry standards and expectations, boosting their confidence and readiness for placements.

## Hackathon Presentation

The Hackathon Event was conducted on 29-4-2024. Hackathon presentations help students enhance their problem-solving and public speaking skills. They also foster creativity and collaboration, pushing students to articulate ideas clearly and work effectively under pressure.

# NON-TECHNICAL EVENTS

## BGMI

BGMI (Battle Ground Mobile India) Gaming Event was conducted on 22-4-2024. BGMI is a popular multiplayer royale game which offers intense action and strategic game play on mobile devices.

## Rangoli

As a part of Cultural Event Rangoli competition was conducted on 22-4-2024. The time Duration was 2 hours. Judgments were based on overall visual impact with the emphasis on originality, use of colors, creativity etc.

## Mic Drop Madness

Singing competition was conducted on 24-4-2024. Participants were allowed to form a team of three and perform for 5 minutes or Solo performance was allowed for a duration of 2 minutes.

# SPORTS EVENTS

## Carrom

Carrom Event was conducted on 13-4-2024. Players took turns flicking a striker to pocket their colored disks while avoiding opponents pieces, aiming to accumulate points and achieve victory.

## Chess

Chess Board Event was conducted on 17-05-2024. Chess involves strategic moves on a checkered board with different pieces, aiming to checkmate the opponent's king, fostering critical thinking and problem solving skills.

## Tug of War

Tug of War Event was conducted on 13-05-2024. Tug of war promotes teamwork and physical strength as teams compete to pull the opposing side across a designated line, encouraging camaraderie and fostering a sense of unity and determination.

## Badminton

Badminton Event was conducted on 19-05-2024. Players engaged in badminton by hitting a shuttlecock back and forth over a net, offering a fun and challenging way to stay physically active.

## Volleyball

Volleyball Event was conducted on 17-05-2024. Players used to hit a ball over a net. Volleyball promotes physical fitness, coordination, and teamwork among students. It also helps in developing communication skills and strategic thinking, beneficial both on and off the court.

## Throwball

Throwball Event was conducted on 17-05-2024. Players passed ball over a net, combining teamwork and agility, which fosters coordination and fitness .

# Cricket

Cricket Event was conducted on 21-04-2024 .Cricket is exciting for students due to its fast-paced action and strategic play. It also fosters friendships and teamwork, making it a delightful experience.

# PROJECT EXHIBITION CUM COMPETITION 2024

Project exhibition cum competition was held on 29/04/2024 for 8th semester students in which all final year projects were showcased to students of 4th and 6th semester, inorder to give exposure to academic projects. The project was evaluated by Mr. Nagraj Hegde, Senior Software Developer at Harman International, Bangalore.

The Event coordinators were Dr. Pavan Kumar M.P, Mr. Sudeep Manohar, Mr. Sharath Kumar S.R and Mrs. Suchethana HC.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# STUDENTS SIGHT

## Dance

Like the sunset on quivering waters,

Like the rising smoke in a tango with raging flames, She

danced.....

To the sweet caress of wind mourning the last leaves of fall,

To the chords of raindrops gliding along the hues of blooms.

Nature obliged in unison not at the mere movement of her limbs but at the passion that ran through her veins for it wasn't just a dance, it was a DIALECT ....of her very soul.

- Ashitha D
  6th A, ISE

# "Advancements in Quantum Computing: A Revolution on the Horizon"

## Introduction

Quantum computing is poised to revolutionize information processing, offering exponential speed over classical computers. Recent breakthroughs are propelling this technology into the mainstream, with Google's claim of quantum supremacy in 2019 being a pivotal moment. Companies like IBM, Rigetti, and D-Wave are advancing quantum hardware, bringing us closer to a new era.

**Key Advancements**

1. Error Correction: Techniques such as surface codes and topological qubits are addressing the fragility of qubits, a major challenge in quantum computing.
2. Increased Qubit Counts: IBM's 127-qubit processor showcases the rapid scaling up of quantum systems, enabling larger and more complex computations.
3. Variety of Quantum Algorithms: Algorithms like Shor's and Grover's highlight quantum computing's potential in cryptography, optimization, and more.
4. Quantum Networking: Teleportation of qubits and quantum repeaters are paving the way for a quantum internet, promising secure transmission.

**Challenges Ahead**

1. Decoherence: Extending coherence times for qubits is crucial to meaningful computations, as they are prone to losing their quantum state.
2. Scalability: Building large-scale quantum computers with thousands of qubits requires overcoming engineering and reliability challenges.
3. Algorithm Development: Further research is needed to optimize quantum algorithms for various applications and hardware.

**The Future of Quantum Computing**

Industries like finance, pharmaceuticals, and materials science are eager to leverage quantum computing for optimization and simulation. The potential of a quantum internet could revolutionize data transmission and cybersecurity.

In conclusion, recent advancements in quantum computing signal a new era in information processing. While challenges persist, the profound impact on science, technology, and society is undeniable. We stand at the brink of a quantum revolution that promises to reshape our world.

- Ananya
  4th Semester, ISE

# ಸ್ನೇಹ ಸ್ಪರ

ಸ್ನೇಹದ ಸ್ಪರ್ಶ

ಕೆಲವು ಪರಿಚಯಗಳೇ ಹಾಗೆ ಅನಿಸುತ್ತೆ
ಭೇಟಿ ಅಪರಿಚಿತ
ನಾಚಿಕೆಯಲ್ಲಿ ಸೇರುವ ಮೊದಲ ನೋಟಗಳು
ಗಾಬರಿಯಲ್ಲಿ ತೊದಲುವ ಮಾತಿನ ಮೊದಲ ಅಕ್ಷರಗಳು
ಕ್ಷಣ ಅವರೊಟ್ಟಿಗೆ ಮಾತನಾಡಲು ಭಯದಿ ಹೆಚ್ಚುತ್ತಿದೆ ಎದೆ ಬಡಿತಗಳು
ಆಗಷ್ಟೇ ಪರಿಚಯವಾದ ಸ್ನೇಹದ ಸುಂದರ ಭಾವನೆಗಳು
ಒಂದಿನ ಅದೆಷ್ಟು ಹೃದಯಕ್ಕೆ ಆತ್ಮೀಯತೆ ಆಗಿಬಿಡುತ್ತದೆ
ಅಂದ್ರೆ
ಅವರ ಮಾತಿಲ್ಲದೆ ಕಿವಿಗಳು ಮೌನವಾಗುತ್ತವೆ
ಅವರ ಕಾಣದೇ ಕಂಗಳು ಕತ್ತಲಾಗುತ್ತವೆ
ಸನಿಹದ ಸುಳಿವು ಕಾಣದೆ ಹೃದಯವು ಅವರ ಆಗಮನಕ್ಕೆ ಕ್ಷಣ ಕ್ಷಣವೂ ಕಾಯುತ್ತದೆ
ಮನಸು ಉಸಿರು ಬಿಗಿಹಿಡಿದು
ಅವರ ಆ ಒಂದು ನಗು ಕಾಣಲು ಹಾತೋರೆದು ಕೂತಿರುತ್ತದೆ...!

- ಆದಿತ್ಯ ಎನ್ ಕಂಬಳಿ
4th A, ISE

# My College Life

Everyone had their own perspective to aspire, But
the teen minds were in utmost fear.
Meeting new and became friends with a few,
Others didn't open up as they were all new.

All were nervous with their first class,
But never thought it shall soon pass.
Some topped the class and others bunked,
Making memories though they flunked.

All the fun that I was missing was needed by my heart,
all the pain that was inside me was tearing me apart, All
those gossips & jokes will be just now memory,
all the memories will be like the bunch of leaves growing in a tree.

Everyone expected the last day to come soon, But
they were crying for the moon.
Some cried others just consoled,
In the end, everyone has to be a rat in the hole.

- BHAVANA G T
8th Sem, 'A' Sec, ISE

# METAVERSE:THE DIGITAL WORLD

The metaverse is like a huge, digital world where people can hang out, play games, work, and do lots of stuff together online. It's like living in a never-ending video game!

It's important because it's changing how we use technology. Instead of just looking at screens, we're actually stepping into a digital world and interacting with others in a whole new way.

For example, you might attend virtual classes or meetings, explore virtual worlds with your friends, or even shop in virtual stores.

For instance, games like "VRChat" allow people to create their own avatars and explore virtual worlds together, chatting and interacting just like they would in real life. Another example is "Rec Room," where players can hang out, play mini-games, and even create their own experiences within the game.

In the metaverse, students can explore historical events through immersive simulations, collaborate with peers worldwide on projects, and receive personalized learning paths. They attend virtual classes, conduct science experiments, and connect with mentors globally. For example, students studying marine biology can dive into virtual oceans to explore coral reefs, identify marine life, and simulate environmental changes, enhancing their understanding beyond traditional textbooks and lectures.

- Rakshitha G Upadhya
  8th sem B sec, ISE

# Life Game

In the land of cash and power's glow,
Here's a tale to make you go whoa!
In the race for dough, don't be a clown, Money's
cool, but don't let it weigh you down!

Once you're rich, remember your roots,
Those who helped, those friendly shoots.
Riches are nice, but don't lose your flair,
Stay kind and fun, it's a winning pair!

Money and power, they come and go, But
your charm, it steals the show.
Use your might to spread good vibes,
That's the ticket to joyful tribes!

In life's game, play fair and square,
No tricks or cheats, it's only fair!
Forgive and forget, it's the way to go, Even
if they give you a funny show!

- Suraksha S Nayak
8th sem B sec, ISE

# PAINTING

In strokes of color, stories unfold,
A canvas, a world waiting to be told.
Brushes dance with hues so bold,
In the language of art, secrets hold.

From tranquil scenes to storms that rage,
Painting captures every age.
With palette in hand, dreams take flight,
In the realm of imagination's might.

Upon the canvas, dreams take shape,
In colors vibrant, emotions escape.
With every stroke, a tale is spun,
In the realm where fantasies run.

The artist's hand, a graceful drape,
Crafting beauty, in every scrape.
From dawn's first light to setting sun,
Painting as art, forever undone.

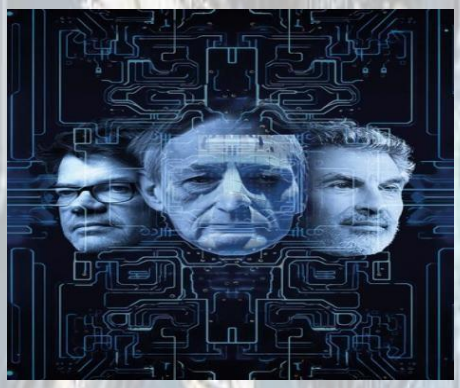
In landscapes vast, and portraits fair,
Echoes of souls, suspended in air.
So let the brush dance, let the colors sing,
In the canvas of life, let creativity spring.

A symphony of colors, beyond compare,
Painting as art, a silent prayer.
For in the world of art, we find our wings,
And in painting's embrace, the heart takes wing.

- Rajani N Chauhan
8th Sem,B Sec, ISE

# GENERATIVE AI: CATALYST FOR INNOVATION

In the rapidly evolving tech landscape, generative AI is emerging as a transformative force, poised to reshape how we approach innovation and problem- solving. This cutting- edge technology offers a powerful symbiosis between human ingenuity and artificial intelligence, opening new frontiers of creativity and efficiency. Imagine harnessing an AI assistant capable of rapidly generating code snippets, algorithm outlines, and fertile idea sparks tailored to your project requirements. Instead of starting from scratch, you leverage machine learning to seed your development process with rich conceptual frameworks and potential solutions. From there, your human expertise takes over, refining and optimizing the raw material into a groundbreaking technological break through. Moreover, generative AI proves indispensable in tackling the ever- increasing complexity of software development and data analysis tasks. By offloading the labor-intensive aspects of baseline code generation and data preprocessing to AI, you can dedicate your talents to the most intellectually demanding and innovative aspects project.



**GOD FATHERS OF MODERN AI**


**FORGING THE FUTURE: GENERATIVE AI AND THE NEXT WAVE OF TECHNOLOGICAL INNOVATION**

Of course, as pioneers in this nascent field, we must maintain a steadfast commitment to ethical AI development and responsible implementation. But by embracing generative AI as a collaborative partner, we unlock unprecedented opportunities for rapid prototyping, accelerated innovation cycles, and solutions that transcend the limitations of any single human mind.

- ANANYA T Y

4TH SEM, ISE

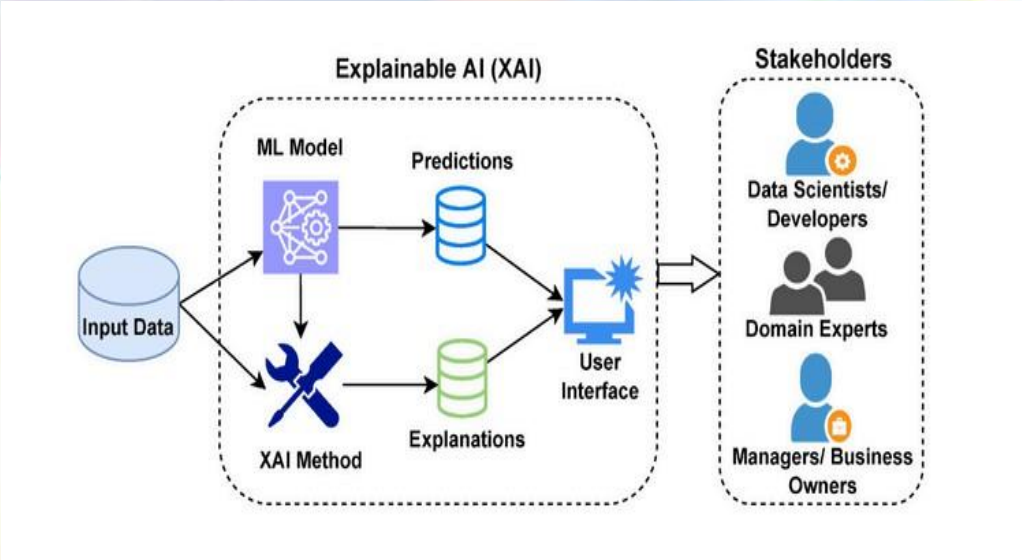
# Demystifying Explainable Artificial Intelligence (XAI)

**What is XAI?**

XAI is a subfield of AI that aims to make AI decision-making transparent and understandable to humans. It addresses the "black box" problem in AI, where decisions made by AI models are opaque and difficult to interpret

**Why is XAI Important**?

As AI systems become more prevalent, their decisions can have significant impacts on our lives. For instance, an AI system might deny a loan application or diagnose a medical condition. In such cases, it's crucial to understand how the AI arrived at its decision. This understanding promotes trust, allows for error correction, and ensures that the system is making fair and unbiased decisions.




**How Does XAI Work?**

XAI techniques can be broadly classified into two categories: model-specific and modelagnostic methods. Model-Specific Methods: These methods are tailored to specific types of AI models. For example, Decision Tree models are inherently explainable as they provide clear decision paths. For Neural Networks, techniques like Layer-wise Relevance Propagation can be used to understand the contribution of each neuron to the final decision. 1. Model-Agnostic Methods: These methods can be applied to any AI model. One popular technique is Local Interpretable Modelagnostic Explanations (LIME), which explains the predictions of any classifier in an interpretable and faithful manner.

- KOUNTHEYA S SATHISH
4th sem, ISE

# CLOUD COMPUTING

Cloud computing is a key technological development in the information technology industry. It is one of the best techniques for managing and allocating a lot of information and resources across the entire internet. Technically speaking, cloud computing refers to accessing IT infrastructure through a computer network without having to install anything on your personal computer. Businesses can modify their resource levels to match their operational needs by utilizing cloud computing. Organizations and corporations can cut infrastructural costs with the use of cloud computing. Organizations can test their applications more quickly, with better management, and with less upkeep. The IT team can adapt resources to changing and erratic requirements thanks to cloud computing. There is proof that cloud computing has a role in everyday life thanks to various applications in various contexts. This essay will cover every aspect of cloud computing, including its architecture, traits, types, service models, advantages, and challenges.

The development of cloud computing has significantly changed how the IT sector functions today. Cloud computing makes it possible to investigate better IT services with lower expenses and less investment. The popularity of software as a service has increased because of cloud computing's impact on how IT hardware is developed and procured. It is an internet-based technology that gives users access to server-stored data as a service whenever they want. Customers only pay for the service they use because it is a pay-as- you-go service. Cloud computing is as a computing model in which massively scalable IT- enabled capabilities are offered as a service to numerous customers. It is the use of internet-based computer technology for a variety of services (as storage capacity, processing power, business applications, or components). It is a set of network-enabled services that offer scalable, guaranteed, typically customized, relatively affordable services in an easy-to-use manner.

Cloud computing is defined as a computing approach in which enormously scalable IT-related capabilities are delivered as a service through the internet to various external consumers. This is an information technology service paradigm in which hardware and software are given to consumers on demand across a network without the use of a device or location. The National Institute of Standards and Technology defines cloud computing as a model for allowing ubiquitous, convenient, a shared pool of customized computing resources, and services that can be swiftly supplied and deployed with minimum administrative work or service contact.

- Niharika TR
4th sem, ISE

## *How to Install a CPU Cooler*

Installing a CPU cooler is essential for maintaining optimal performance and preventing overheating in your computer system. This guide will walk you through the step-by-step process of installing a CPU cooler onto your motherboard.

Materials Needed: CPU cooler, Thermal paste, Screwdriver, Rubbing alcohol and cloth (for cleaning)

**Step 1: Prepare Your Workstation**

Before starting the installation process, ensure that you have a clean and well-lit workspace. Lay out all the necessary materials and tools to avoid any interruptions during the installation.

**Step 2: Remove the Old CPU Cooler (if applicable)**

If you're replacing an existing CPU cooler, start by powering down your computer and disconnecting all cables. Carefully remove the old cooler by unscrewing it from the motherboard. Clean off any residual thermal paste from the CPU using rubbing alcohol and a cloth.

**Step 3: Apply Thermal Paste**

Apply a small pea-sized amount of thermal paste onto the center of the CPU. Use caution not to apply too much, as excess thermal paste can lead to inefficient heat transfer.

**Step 4: Install the CPU Cooler**

Position the CPU cooler onto the CPU, aligning the mounting brackets with the holes on the motherboard. Secure the cooler in place using the provided screws or mounting mechanism. Make sure the cooler is firmly attached and level on the CPU.

**Step 5: Connect the Fan**

If your CPU cooler includes a fan, connect it to the appropriate header on the motherboard. Ensure that the fan is oriented correctly for optimal airflow.

**Step 6: Test the Installation**

Once the CPU cooler is securely installed, reconnect all cables and power on your computer. Monitor the CPU temperature using software or BIOS utilities to ensure that the cooler is functioning correctly.

**Step 7: Final Checks**

Double-check all connections and ensure that the CPU cooler is securely mounted. Run stress tests or perform tasks that put a heavy load on the CPU to verify that temperatures remain within safe limits.

- Ananya M
Amrutha K A
Bhoomika Y R
Monisha D S
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# Illuminating the Future: The Rise of Li-Fi Technology

In an era where connectivity is fundamental to our daily lives, technological innovations continually strive to meet the evolving demands of society. Among these innovations, LiFi technology has emerged as a promising alternative to traditional wireless communication methods. While WiFi has long been the dominant force in connectivity, LiFi offers a novel approach by utilizing light to transmit data, potentially reshaping how we access and interact with the digital world.

LiFi, or Light Fidelity, operates on the principle of using light-emitting diodes (LEDs) to transmit data wirelessly. These LEDs emit light that flickers at high speeds, a rate imperceptible to the human eye, to encode and transmit binary data. At the receiving end, specialized photodetectors decode the light signals back into digital information, enabling seamless data transfer. One of the most significant advantages of LiFi technology lies in its unparalleled speed. Theoretically capable of achieving data transfer rates of several gigabits per second, LiFi has the potential to far exceed the bandwidth limitations of traditional WiFi networks. This increased speed opens up a myriad of possibilities, from enabling seamless streaming of high definition video content to facilitating real-time data exchange in critical sectors such as healthcare and finance. Moreover, LiFi offers
enhanced security compared to WiFi. Unlike radio waves used in WiFi, which can penetrate through walls and floors, light signals in LiFi are confined to the physical boundaries of a room. This inherent confinement significantly reduces the risk of signal interception from external sources, making LiFi an attractive option for environments where data privacy and security are paramount, such as government agencies, research facilities, and corporate boardrooms.

Another compelling advantage of LiFi technology is its potential to alleviate spectrum congestion. With the proliferation of wireless devices competing for bandwidth on traditional WiFi networks, spectrum scarcity has become an increasingly pressing issue. LiFi operates in the visible light spectrum, which is thousands of times larger than the radio frequency spectrum used by WiFi. This abundance of available spectrum means that LiFi can support a greater number of connected devices without experiencing the same congestion issues as WiFi, thereby providing a more reliable and robust connectivity solution.

- Neha G M
4th sem, ISE

# STEGNOGRAPHY

In an age where digital communication dominates, the need for secure methods of information exchange has never been more critical. While encryption methods are widely known and used to protect data from prying eyes, there exists another, more covert technique for concealing information: steganography. Unlike encryption, which focuses on encoding the content of a message to prevent unauthorized access, steganography hides the existence of the message itself. This article delves into the fascinating world of steganography, exploring its history, techniques, applications, and challenges.

Steganography traces its roots back to ancient times when secret messages were concealed within wax tablets, tattooed on shaved heads, or even written on the inside of envelopes. However, with the digital age came new opportunities for concealment. In the realm of digital steganography, data is embedded within seemingly innocuous files such as images, audio files, or even text documents.

Digital steganography employs various techniques to hide data within a carrier file. One common method is least significant bit (LSB) insertion, where information is embedded by subtly altering the least significant bits of the pixels in an image or the samples in an audio file. Other techniques include spread spectrum, where data is distributed across the frequency spectrum of a carrier signal, and phase encoding, which modifies the phase of certain frequency components in an audio signal.

Steganography finds applications in both benign and malicious contexts. In the realm of digital forensics, steganalysis—the detection of hidden messages—plays a crucial role in uncovering criminal activities such as cyber espionage or terrorism. On the other hand, steganography is also used for legitimate purposes, such as watermarking images to protect intellectual property or embedding metadata in digital media files.

Despite its utility, steganography faces several challenges. The primary obstacle lies in the detection of hidden messages, known as steganalysis. Researchers continually develop sophisticated algorithms to detect and extract concealed data from carrier files. Additionally, the proliferation of high-quality steganography tools makes it easier for malicious actors to exploit this technique for nefarious purposes. To combat this threat, organizations must invest in robust cybersecurity measures and stay abreast of the latest developments in steganalysis techniques.

Steganography represents a compelling blend of art and science, offering both opportunities and challenges in the realm of digital communication. As technology continues to advance, so too will the techniques and applications of steganography. By understanding its principles and implications, we can better navigate the complex landscape of digital security and privacy in the modern age.

- Shreya KV
6TH SEM, ISE

## CYBERSECURITY: PROTECTING THE DIGITAL WORLD

In today's connected world, cybersecurity is more crucial than ever. With the personal and professional lives increasingly reliant on digital technologies, the risk of cyber threats has become a pressing concern. Cybersecurity is the practice of protecting our digital information, systems, and networks from unauthorized access, use, disclosure, disruption, modification, or destruction.

**Why is Cybersecurity Important?**

1. Protection of Personal Info: Cybersecurity safeguards your sensitive information, such as passwords and personal data, from falling into the wrong hands.
2. Prevention of Financial Loss: Cyber attacks can result in significant financial losses, including stolen money and intellectual property.
3. Protection of Critical Infrastructure: Cybersecurity is essential for safeguarding critical infrastructure, such as power grids, healthcare systems, and transportation networks.

**The Best Practices for Cybersecurity**

1. Use Strong Passwords: Choose complex passwords and avoid using easily guessable information.
2. Keep Software Up-to-Date: Regularly update your operating system and software to ensure you have the latest security patches.
3. Use Two-Factor Authentication: Add an extra layer of security by requiring a second form of verification, such as a fingerprint or code sent to your phone. Avoid opening suspicious attachments or clicking on links from unknown sources.
4. Back Up Your Data: Regularly back up your important files to prevent data loss in case of a cyber attack.

Cybersecurity is a shared responsibility that requires the collective effort of individuals, businesses, and governments. By understanding the importance of cybersecurity and practicing good cyber hygiene, we can protect our digital world and ensure a safer, more secure future.

- Adithya
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## *Exploring the Marvels of Humanoid Robotics: A Bridge between Science Fiction and Reality*

**Introduction**: Humanoid robots, once relegated to the realm of science fiction, have now become a tangible manifestation of human ingenuity. These anthropomorphic machines, with their ability to mimic human movements and behaviors, stand at the forefront of technological advancement, promising a myriad of applications across various fields. This essay delves into the captivating world of humanoid robotics, exploring their evolution, capabilities, challenges, and potential impact on society.

**Evolution of Humanoid Robotics**: The concept of humanoid robots traces back centuries, with ancient myths and folklore featuring tales of artificial beings crafted by human hands. However, it was not until the 20th century that significant strides were made in actualizing these fantastical creations. Pioneering works by scientists and engineers laid the foundation for modern humanoid robotics, culminating in the development of iconic robots like ASIMO by Honda and the bipedal humanoid robot by Boston Dynamics.

**Capabilities and Functionality**: Humanoid robots are designed to resemble humans both in appearance and functionality, equipped with limbs, sensors, and processors that enable them to interact with their environment. These robots exhibit a remarkable range of capabilities, from walking and running to recognizing faces, interpreting gestures, and even engaging in rudimentary conversations. Advancements in artificial intelligence (AI) and machine learning have empowered humanoid robots with the ability to adapt to new situations, learn from experiences, and perform complex tasks with increasing autonomy

**Impact on Society**: The proliferation of humanoid robotics promises to reshape the fabric of society, influencing how we work, learn, and interact with technology. While some fear the displacement of human labor, others see opportunities for collaboration and innovation. Humanoid robots have the potential to augment human capabilities, particularly in tasks that are dangerous, monotonous, or physically demanding. Moreover, they have the capacity to enhance accessibility and inclusivity, providing assistance to individuals with disabilities and bridging gaps in healthcare and education.

**Conclusion**: Humanoid robots represent a convergence of human creativity and technological prowess, blurring the lines between science fiction and reality. As these remarkable machines continue to evolve, their impact on society will be profound, ushering in a new era of human-robot interaction and collaboration. While challenges and ethical considerations persist, the potential benefits of humanoid robotics are vast, offering solutions to some of the most pressing challenges facing humanity. In the journey towards realizing this potential, it is imperative that we approach the development and deployment of humanoid robots with careful consideration and foresight, ensuring that they serve to enhance, rather than diminish, the human experience.

- TILAK S
  4TH Sem, ISE

## "Engineering Social Media: Navigating the Nexus of Technology and Society"

In today's digital landscape, social media platforms serve as the cornerstone of modern communication, revolutionizing how individuals connect, share, and engage with content.

Behind the seamless user experience of platforms like Facebook, Twitter, and Instagram lies a complex fusion of engineering ingenuity and societal dynamics. Engineers grapple with multifaceted challenges, from optimizing server architecture to ensuring data privacy and security in the face of exponential user growth. The ethical implications loom large as algorithms shape user experiences, potentially reinforcing biases and echo chambers, while the spread of misinformation raises concerns about platform integrity. Moreover, the democratization of content creation has given rise to new challenges in moderating harmful or inappropriate content, prompting engineers to develop advanced content moderation tools powered by machine learning algorithms.

However, amidst these challenges lie boundless opportunities for innovation, with emerging technologies such as artificial intelligence and blockchain poised to reshape the social media landscape. AI-driven features like personalized recommendations and content filtering algorithms are enhancing user experiences while blockchain technology is being explored for decentralized social media platforms, promising increased transparency and data ownership for users.

As engineers navigate this intricate nexus of technology and society, they wield the power to not only shape the future of social media but also influence broader societal interactions and discourse, fostering connectivity, collaboration, and positive social change. Moreover, the role of engineers extends beyond platform development to include addressing issues of accessibility, digital literacy, and online safety, ensuring that social media remains a force for good in an increasingly interconnected world. By collaborating with policymakers, researchers, and civil society organizations, engineers can help mitigate the negative impacts of social media while maximizing its potential as a tool for empowerment, education, and social cohesion in the digital age.

- Sinchana G Adiga
  6TH SEM, ISE

# THE RAISE OF 5G TECHNOLOGY AND ITS IMPACT ON SOCIETY

5G technology is the latest generation of mobile communication networks, offering faster speeds and improved reliability compared to previous generations. It has the potential to revolutionize the way we live, work, and play, by enabling new and innovative applications that were previously not possible. In this we will explore the impact of 5G technology on society and what makes it so unique. One of the most significant benefits of 5G technology is the increased speed and reliability it offers. With 5G networks, users can expect download speeds that are many times faster than 4G networks, making it possible to download large files, such as movies and games, in just a matter of seconds. Additionally, 5G networks offer improved reliability, with lower latency and greater network stability, making them ideal for applications that require real-time communication, such as virtual and augmented reality. Another impact of 5G technology on society is the way it will transform the Internet of Things (IoT).

IoT refers to the growing network of connected devices that communicate with each other, including smart homes, smart cities, and wearable devices. With 5G networks, these devices can communicate with each other faster and more reliably, enabling new and innovative applications such as autonomous vehicles, smart cities, and wearable devices.5G technology also has the potential to change the way we work. With the increased speed and reliability of 5G networks, it will be possible to work from anywhere, at any time, with the same level of productivity as in the office. This could lead to a more flexible and efficient workforce, as well as new opportunities for remote work and telecommuting. Finally, 5G technology will also have a significant impact on entertainment.

With 5G networks, users will be able to stream high- quality video, play online games, and access virtual and augmented reality experiences with ease. This will lead to a more immersive and interactive entertainment experience, enabling new and innovative forms of storytelling and entertainment .In conclusion, 5G technology is set to have a profound impact on society, offering faster and more reliable communication, transforming the IoT, changing the way we work, improving healthcare, and revolutionizing entertainment. As 5G networks continue to roll out, it is likely that we will see even more exciting and innovative applications in the future.

- SPARSHA P
  4th sem, ISE

# The Impact of Internet of Things(IoT) on smart cities

The Internet of Things (IoT) is a network of devices that can talk to each other and affect our daily lives. IoT technology is becoming increasingly important for smart cities, which are places that use technology to improve life for their people and save resources.

Smart cities are using IoT in lots of cool ways, such as Connected public transport, Traffic monitoring and management, Water level and flood monitoring, Video surveillance and analytics, Weather monitoring, Air quality and pollution monitoring, Smart metering for water, fire and smoke detection, and water quality monitoring, etc. Smart lighting is another popular way to improve smart cities. Smart lights save energy, lower costs, and increase safety. IoT is also being used for security cameras that help police catch bad guys and keep an eye on traffic One city doing cool stuff with IoT is Lublin, Poland . They have a system for connected public transport that tells people when their bus or train will come. This makes transportation more efficient, shortens waiting times, and improves reliability. Another city, Dublin have a Smart Docklands project that includes flood monitoring with sensors. This helps detect flooding and report it using LoRaWAN and Sigfox technologies.

IoT can also help in managing traffic congestion in smart cities. By collecting data on traffic flow, volume, and speed, traffic management systems can optimize traffic signals, divert traffic, and provide real-time traffic updates to drivers. This can help in reducing travel time, fuel consumption, and air pollution. Smart parking solutions are another area where IoT can enhance transportation in smart cities. By providing real-time information on parking availability, drivers can save time and reduce congestion. Additionally, smart parking solutions can help in optimizing parking space usage and reducing the need for parking infrastructure expansion.

Video surveillance is commonly used by law enforcement in smart cities to identify stolen cars, control traffic, collect tolls, and detect crime. While these uses have practical benefits, heavy surveillance methods like these have raised privacy concerns and questions about the use of personal data. In short, IoT is important for smart cities. By using IoT in areas like transportation, traffic, water, cameras, lights, weather, and air quality, smart cities can become more efficient, safe, and sustainable.

- SANJAY S
  6TH SEM, ISE

# Artificial Intelligence in Art and Creative Industries

Artificial Intelligence is transforming the creative landscape, introducing a new era where technology and creativity merge in fascinating ways. The impact of AI on art and the creative industries is profound, reshaping traditional processes and opening up new possibilities for artists, film makers, musicians, and designers.

AI algorithms are being used to generate art that can mimic classical styles or create entirely new forms of expression. Tools like Art breeder allow artists to input ideas and see them transformed into unique pieces through the power of generative adversarial networks (GANs). This collaboration between human and machine is not about replacing artists but enhancing their creativity, providing them with new tools to express their vision.

In film making, AI is starting to play a role in scriptwriting and editing. Companies like Script Book use AI to analyze scripts and predict box office success, offering valuable insights during the pre-production phase. AI algorithms can also suggest plot twists and character developments, assisting writers in crafting compelling narratives. Furthermore, AI-driven software can automate certain aspects of post-production, such as color correction and sound editing, making these processes more efficient.

The music industry has also embraced AI, with tools like AIVA (Artificial Intelligence Virtual Artist) composing music for commercials, games, and even films. These AI composers analyze vast amounts of music theory and compositions to create music that resonates with human emotions. Meanwhile, platforms like Amper Music enable users to create custom soundtracks without needing extensive musical knowledge, democratizing music production.

However, the integration of AI in creative industries is not without challenges. Intellectual property rights, authorship, and the originality of AI-generated content are significant issues. There's an ongoing debate about whether AI-created works should be protected under copyright laws or considered public domain.

The potential of AI in art and creative industries seems boundless. As technology advances, AI will likely become a more integrated tool, serving as both a collaborator and an enhancer of human creativity.

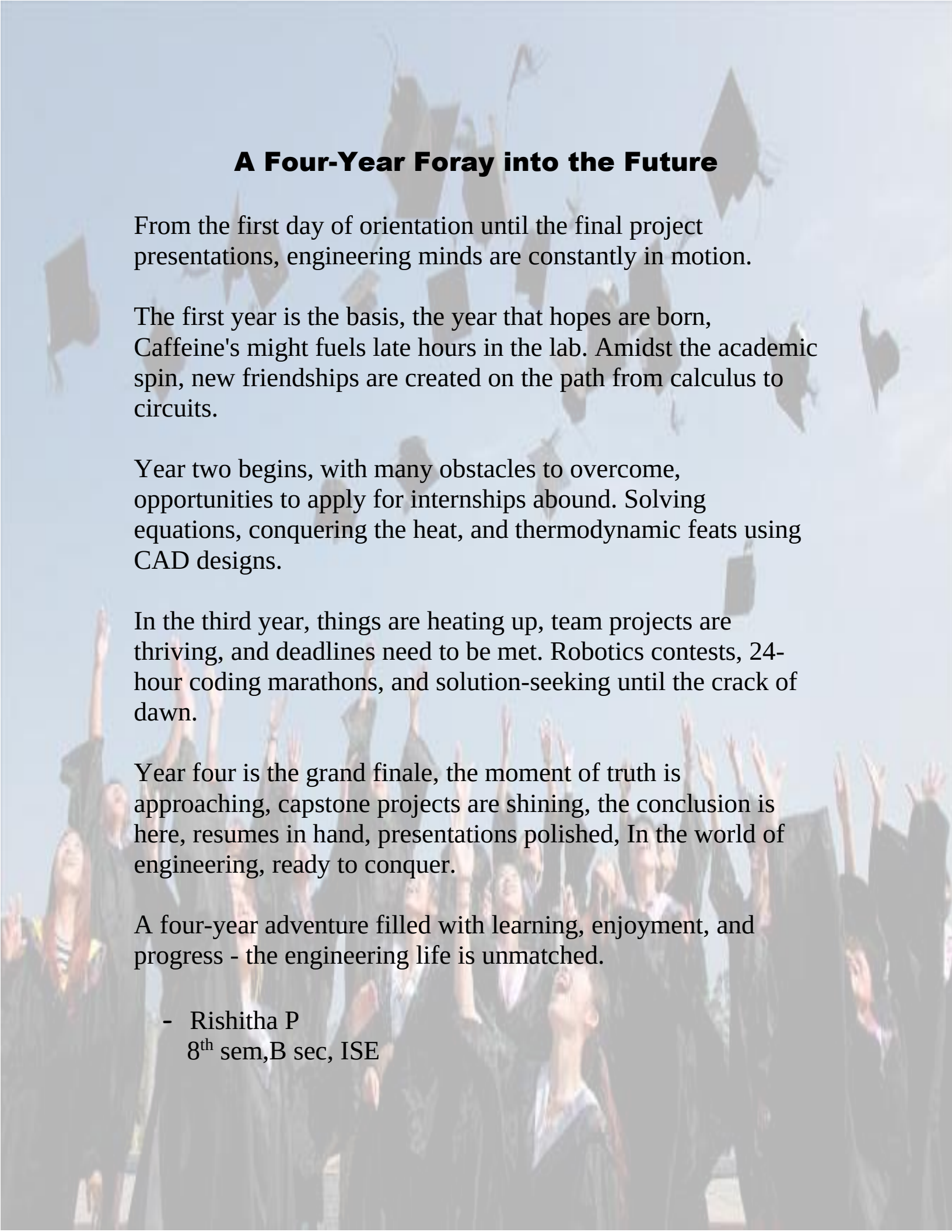
- Sindhu M R
6th B , ISE

# 3D PRINTING

3D printing can create physical objects from a geometrical representation by successive addition of material . This 3D process had many experienced a phenomenal expansion in recent years. First commercialised of the 3D printing processes in year 1980 by Charles Hull . Currently, 3D printing primarily used for producing artificial heart pump , jewelry collections , 3D printed cornea , PGA rocket engine , steel bridge in Amsterdam and other products related to the aviation industry as well as the food industry.3D printing technology has originated from the layer by layer fabrication technology of three-dimensional (3D) structures directly from computer-aided design (CAD) drawing . 3D printing technology is a truly innovative and has emerged as a versatile technology stage. It opens new opportunities and gives hope to many possibilities forcompanies looking to improve manufacturing efficiency. Conventional thermoplastics, ceramics, graphene-based materials, and metal are the materials that can be printed now by using 3D printing technology . 3D printing technology has the potential to revolutionize industries and change the production line.

The adoption of 3D printing technology will increase the production speed while reducing costs. At the same time, the demand of the consumer will have more influence over production. Consumers have greater input in the final product and can request to have it produced to fit their specifications. At the meantime, the facilities of 3D printing technology will be located closer to the consumer, allowing for a more flexible and responsive manufacturing process, as well as greater quality control. Furthermore, when using 3D printing technology, the need for global transportation is significantly decreased. This is because, when manufacturing sites located nearer to the end destination, all distribution could be done with fleet tracking technology that saves energy and time. Lastly, the adoption of 3D printing technology can change the logistics of the company. The logistics of the companies can manage the entire process, offer more comprehensive and start-to-finish services.

-Harshith
4th Sem, ISE



# A Four-Year Foray into the Future

From the first day of orientation until the final project presentations, engineering minds are constantly in motion.

The first year is the basis, the year that hopes are born, Caffeine's might fuels late hours in the lab. Amidst the academic spin, new friendships are created on the path from calculus to circuits.

Year two begins, with many obstacles to overcome, opportunities to apply for internships abound. Solving equations, conquering the heat, and thermodynamic feats using CAD designs.

In the third year, things are heating up, team projects are thriving, and deadlines need to be met. Robotics contests, 24-hour coding marathons, and solution-seeking until the crack of dawn.

Year four is the grand finale, the moment of truth is approaching, capstone projects are shining, the conclusion is here, resumes in hand, presentations polished, In the world of engineering, ready to conquer.

A four-year adventure filled with learning, enjoyment, and progress - the engineering life is unmatched.

- Rishitha P
  8th sem,B sec, ISE

# A SMILE

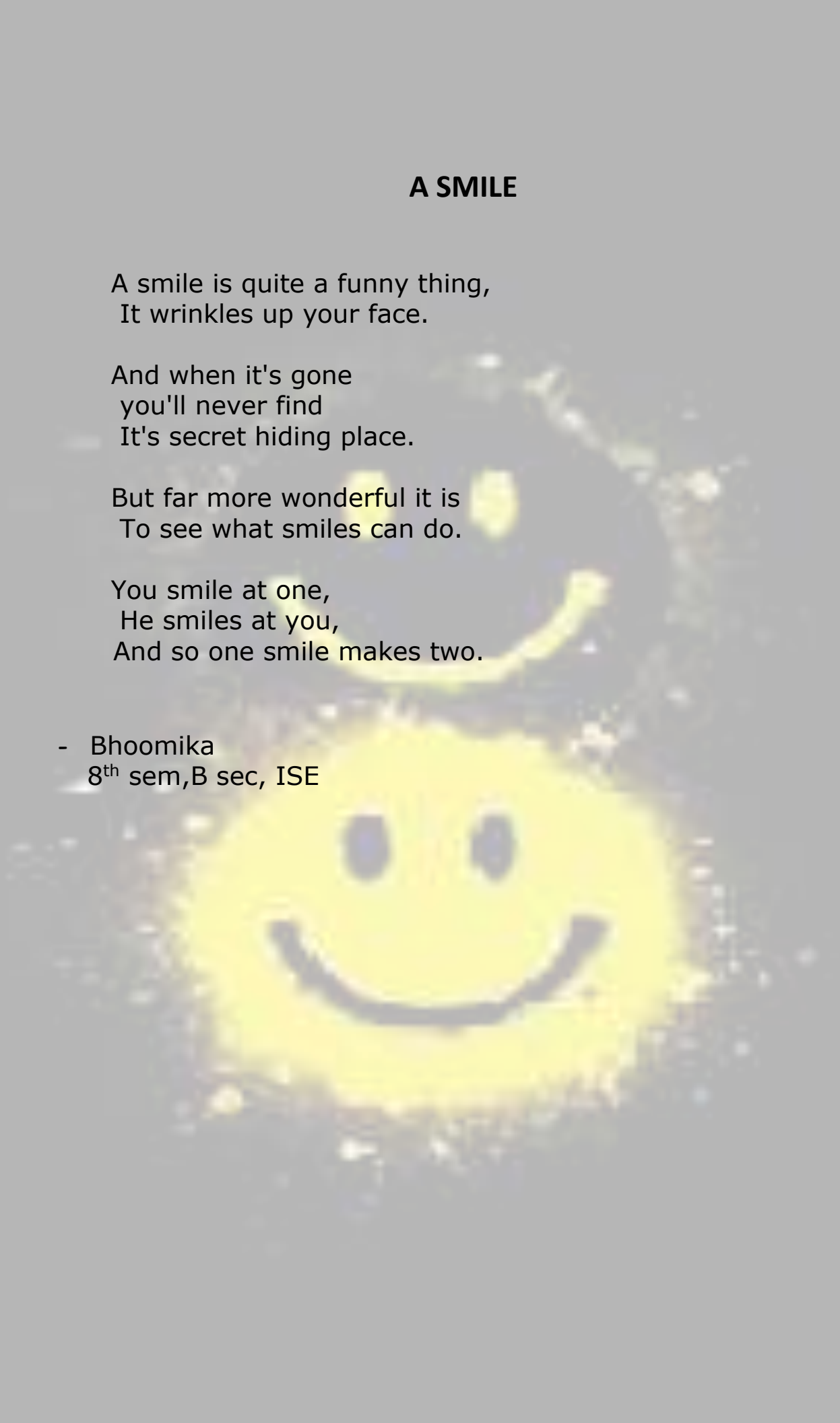
A smile is quite a funny thing,
It wrinkles up your face.

And when it's gone
you'll never find
It's secret hiding place.

But far more wonderful it is
To see what smiles can do.

You smile at one,
He smiles at you,
And so one smile makes two.

- Bhoomika
8th sem,B sec, ISE



## Student's Achievements:

- Yashawini K J(4JN20IS103) Student of 8th B ISE Won 3rd place in Folk orchestra in
- VTU Fest 2024 held at SJC Institute of Technology, Chikkballapura.

- Suraj S M(4JN20IS094) Student of 8th B ISE Won 3rd place in Folk orchestra in
- VTU Fest 2024 held at SJC Institute of Technology, Chikkballapura.

- Vaishnavi (4JN20IS099) Student of 8th B ISE won second place in One Act Play, in VTU Fest 2024 held at SJC Institute of Technology, Chikkballapura.

- Gururaj Naik (4JN21IS028) Student of 6th A ISE has secured second place in One Act Play, Skit First place and Installation First place in VTU Fest 2024 held at SJC Institute of Technology, Chikkballapura.

- Sushmitha H S (4JN212IS111) Student of 6th B ISE won First place in Skit and Second place in One Act Play in VTU Fest 2024 held at SJC Institute of Technology, Chikkballapura.

- Yashawini K J(4JN20IS103) Student of 8th B ISE Won First place in Classical Solo, First place in Folk Dance and Second place in Folk orchestra in 22nd VTU Fest held at Nagarjuna College of Engineering and Technology, Chickballapura.

- Suraj S M (4JN20IS094) Student of 8th B ISE Won First place in Folk Dance and Second place in Folk orchestra in 22nd VTU Fest held at Nagarjuna College of Engineering and Technology, Chickballapura.

- Gururaj Naik (4JN21IS028) Student of 6th A ISE has secured Third place in 22nd VTU Fest held at Nagarjuna College of Engineering and Technology, Chickballapura.

- Shashidhar R A (4JN21IS092) student of 6thB ISE Won Third place in Photography Event Organised by JNNCE Shivamogga.

- Manvitha N Rao (4JN21IS088), student of 4th B ISE won Third place in Group dance in JNNCE Shivamogga.

- Shashidar R A (4JN21IS092) student of 6$^{th}$B ISEhas hassecured Gold Medal in Hip Hop dance performance in mega crew event organized by P.E.S. College of engineering campus Mandya, Karnataka.

- Pavan L (4JN21IS068) student of 6$^{th}$ B ISE has secured Winner place in Foot ball Inter collegiate VTU Central Karnataka Division level Tournament held at Adichunchanagiri Institute of Technology, Chikamagalur.

- Karthik S (4JN21IS042) student of 6th A ISE has secured Winner place in Shuttle Badminton Inter collegiate VTU Central Karnataka Zone Tournament held at S.I.T Tumkur.

- Karthik S (4JN21IS042) student of 6$^{th}$ A ISE has secured Runner-up place in Cricket Men's Inter collegiate VTU Central Karnataka Zone level Tournament held at JNNCE, Shivamogga.

- Chinmay Hegde A J (4JN21IS022) student of 6$^{th}$ A ISE has secured Runner-up place in Cricket Men's Inter collegiate VTU Central Karnataka Zone level Tournament held at JNNCE, Shivamogga.

- Sindhu Venkataramana Bhat (4JN22IS145) student of 4$^{th}$ C ISE has participated in Quiz Competition in Programming Languages organized by Innovation Hub in Association with department of Information Science and Engineering and Institution of Engineers.

- Gold In Mega Crew Dance, 18th ISAFF India National Aerobics Championship, 2023.

- 18th ISAFF India national aerobics championship, 2023.

- bronze in solo dance, 18th ISAFF India national aerobics championship, 2023.