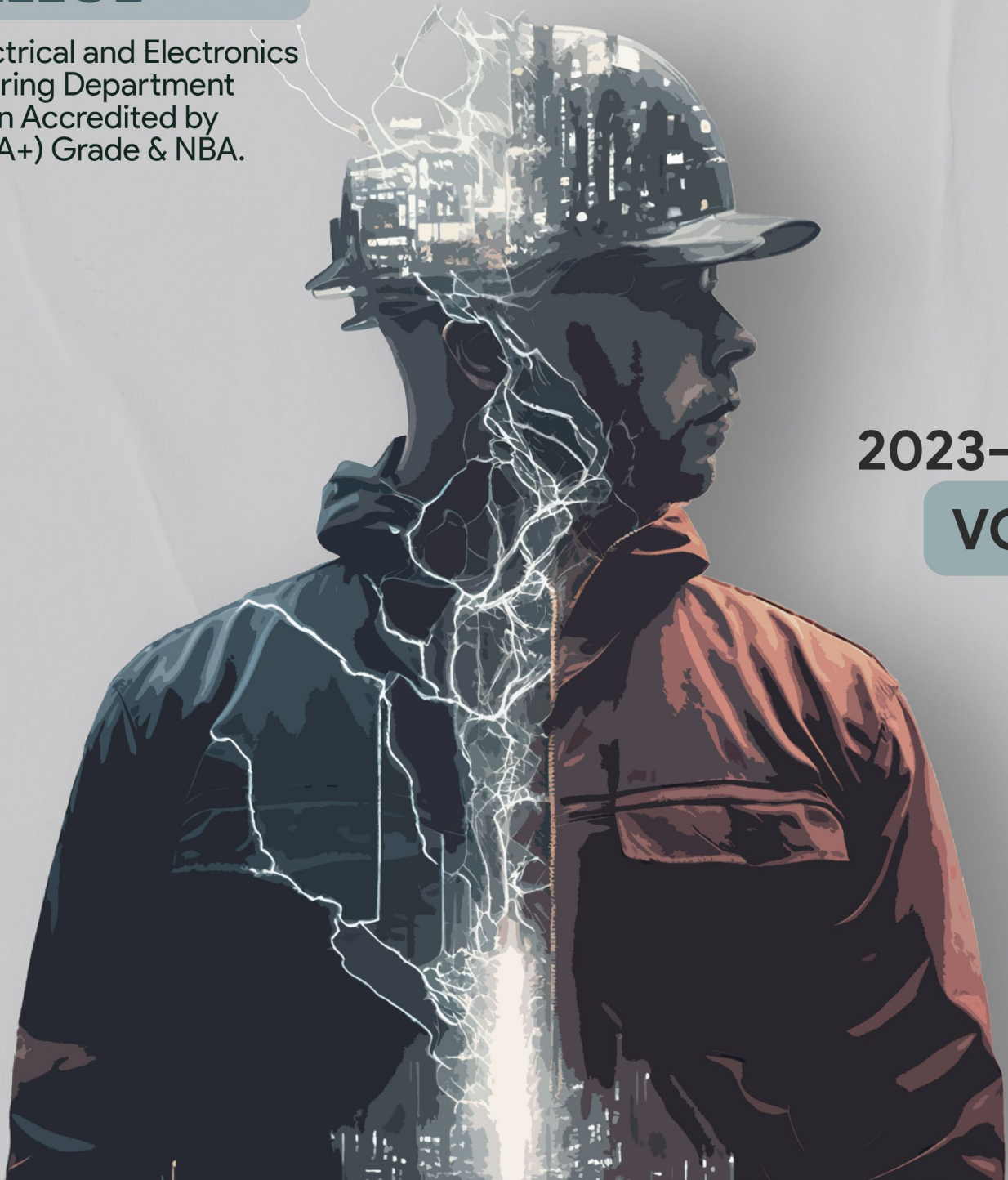


# CIRCUITRY

DEPARTMENT OF EEE // MAGAZINE

**NANDHA  
ENGINEERING  
COLLEGE**

The Electrical and Electronics  
Engineering Department  
has been Accredited by  
NAAC (A+) Grade & NBA.



**2023-2024**

**VOL-II**



**JUN 2024**

# VISSION & MISSION

## Vission:

To foster academic excellence imparting knowledge in Electrical, Electronics and allied disciplines to meet the changing needs of the society.

## Mission:

To equip the students with leadership qualities for accepting the challenges in various engineering sectors.

To excel in the thrust areas of Electrical and Electronics Engineering to solve real world problems.

To empower the students to adapt the latest technologies by providing innovative learning environment





# PROGRAM EDUCATIONAL OBJECTIVES



The graduates of Electrical and Electronics Engineering will be

PEO 1: Core Competency: A Successful professional with domain knowledge in Electrical and Electronics Engineering using emerging techniques.

PEO 2: Research, Innovation and Entrepreneurship: Able to demonstrate multi-disciplinary skills through innovation and research to meet the societal needs.

PEO 3: Ethics, Human values and Life-long learning: Able to demonstrate ethical practices and managerial skills through continual learning.

PE  
OS

# PROGRAM OUTCOMES



PO 1: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 2: Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3: Design and Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 4: Investigation of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5: Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO 6: The Engineer and Society: Apply reasoning acquired by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional Engineering practice.

PO 7: Environment & Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the Knowledge of, and need for sustainable development.

PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9: Individual and Teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11: Project Management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one 's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: Lifelong Learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change



PO's

# PROGRAM SPECIFIC OUTCOMES

The students of Electrical and Electronics Engineering will be able to

PSO 1: Analyze, design and validate processes, products by applying knowledge and skills in Power system, Electrical Machines and Power Electronics.

PSO 2: Design and analyze the processes of smart grid and renewable energy systems using appropriate tools and techniques.

# CHAIRMAN'S NOTE



## Thiru V Shanmugam

---

**S**ri Nandha Engineering Trust. I am immensely pleased to know the Nandha Engineering College has become alma mater for many of our young and future generations. Success starts with a thought or an idea when a thought or an idea when nourished with hope and confidence, that idea sprouts, blossoms and leads to action with knowledge.

# SECRETARY'S NOTE



## S Thirumoorthi

---

**S**ri Nandha Engineering Trust. Nandha Provides rich and diversified culture to hone the young brains so as to get envelope in to the challenging scenario with performance, competiveness, value creation and other professional skills.

# PRINCIPAL'S NOTE



## Dr.U.S.Ragupathy

---

**I**t gives me immense pleasure to welcome you all to Nandha Engineering College (Autonomous), an eco-friendly campus that strives with a goal to attain excellence by empowering students with sound knowledge, wisdom and experience. Our strength lies in creating pleasant ambience with an excellent infrastructure, qualified and experienced faculty, commitment to personal care, motivation to excel in academic/extracurricular activities and continuous interaction with industry.



# HOD'S NOTE



## Dr. Ramani .G

---

I feel privileged in presenting the magazine “CIRUITRY” of our department. This magazine is intended to bring out the hidden literary talents among the students leadership skills among them. I am sure it will be a source of inspiration for the budding poets and writers among the students and will direct their creativity to new dimensions of mature expression. I extend my sincere thanks to the editorial team for their constant effort and support in bringing out the magazine in the present form. I acknowledge my gratitude to our principal for their continuous support to prepare these issues of magazine. Last but not least; I am thankful to all the authors who have sent their articles.

# EDITORIAL BOARD

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# 01

## Technical Article

Awesome innovations  
in the future

# TOPICS

1. Development of a Smart Grid System for Renewable Energy Integration
2. Wireless Power Transmission Using Resonant Inductive Coupling
3. Design and Implementation of IoT-Based Smart Home Automation
4. Energy Harvesting from Ambient Sources for Low-Power Devices
5. Development of an AI-Powered Predictive Maintenance System for Industrial Equipment
6. Solar-Powered Electric Vehicle Charging Station
7. Advanced Power Electronics for Efficient Energy Conversion
8. Development of a Smart Wearable Health Monitoring System
9. Autonomous Drones for Environmental Monitoring and Data Collection
10. High-Efficiency LED Lighting with Smart Controls

## “Development Of Smart Grid System For Renewable Energy Integration”

01

The growing adoption of renewable energy sources necessitates the development of smart grid systems capable of efficiently managing the integration of these variable energy supplies. This project aims to design and implement an advanced smart grid system that utilizes real-time data analytics, advanced metering infrastructure (AMI), and automated control mechanisms to optimize energy distribution. The smart grid will incorporate demand response strategies to balance energy supply and demand, enhancing grid stability and reliability. By leveraging machine learning algorithms, the system can predict and mitigate potential issues before they affect grid performance. The integration of renewable energy sources such as solar, wind, and hydroelectric power into the grid will reduce dependence on fossil fuels, lower greenhouse gas emissions, and promote sustainable energy use.

## “Wireless Power Transmission Using Resonant Inductive Coupling”

02

The concept of wireless power transmission has the potential to revolutionize how we power electronic devices by eliminating the need for physical connectors. This project focuses on designing a wireless power transmission system based on resonant inductive coupling, which allows for efficient energy transfer over a distance. The system will include transmitter and receiver coils optimized for resonance at a specific frequency to maximize energy transfer efficiency. Applications for this technology include wireless charging of electric vehicles, powering remote sensors, and providing energy to devices in hard-to-reach locations. The project will address key challenges such as minimizing energy losses, ensuring safe operation, and mitigating electromagnetic interference. By advancing wireless power transmission technology, this project aims to provide a convenient and efficient alternative to traditional wired power delivery methods, potentially transforming numerous industries and applications

# 03

## ”Design and Implementation of IoT-Based Smart Home Automation”

With the proliferation of Internet of Things (IoT) devices, smart home automation has become increasingly feasible and attractive. This project aims to develop a comprehensive IoT-based smart home automation system that integrates various home appliances and systems for centralized control and monitoring. The system will utilize sensors, actuators, and microcontrollers to automate tasks such as lighting, heating, security, and appliance control. Machine learning algorithms will be implemented to learn user preferences and optimize energy usage, enhancing both convenience and efficiency. The project will also focus on developing a user-friendly mobile app or web interface for remote control and monitoring, as well as ensuring robust cybersecurity measures to protect against potential threats.

# 04

## ”Energy Harvesting from Ambient Sources for Low-Power Devices”

As the number of low-power electronic devices and sensors continues to grow, finding sustainable power sources for these devices becomes increasingly important. This project aims to design and develop energy harvesting systems that can capture and convert ambient energy from sources such as solar, thermal, and vibrational energy into electrical power. The focus will be on creating efficient energy conversion circuits and storage solutions to ensure a reliable power supply for low-power devices. Potential applications include self-sustaining IoT sensors, wearable electronics, and remote monitoring systems. By maximizing energy harvesting efficiency and miniaturizing components for integration into small devices, this project aims to provide a sustainable and long-lasting power solution for a wide range of applications. Overcoming challenges related to energy density, conversion efficiency, and storage capacity will be critical to the success of this project.

## ”Development of an AI-Powered Predictive Maintenance System for Industrial Equipment”

05

Industrial equipment often requires regular maintenance to prevent unexpected failures and downtime, which can be costly and disruptive. This project aims to develop an AI-powered predictive maintenance system that uses sensor data from industrial machinery to predict equipment failures before they occur. By employing machine learning algorithms to analyze vibration, temperature, and other operational data, the system can identify patterns indicative of impending malfunctions and provide early warnings to maintenance personnel. The project will involve designing and implementing the necessary hardware and software components, as well as developing a user-friendly interface for real-time monitoring and alerts. By reducing downtime and maintenance costs, this predictive maintenance system can significantly improve operational efficiency and extend the lifespan of industrial equipment.

## ”Solar-Powered Electric Vehicle Charging Station”

06

The increasing adoption of electric vehicles (EVs) necessitates the development of sustainable charging solutions to support their widespread use. This project aims to design and build a solar-powered charging station for EVs, leveraging renewable energy to provide a clean and independent power source. The system will include photovoltaic panels to capture solar energy, energy storage solutions to store excess energy, and power management electronics to ensure efficient charging of EVs. The project will address challenges such as maximizing solar energy capture, optimizing energy storage capacity, and ensuring fast and reliable EV charging. By promoting the use of renewable energy for EV charging, this project aims to reduce reliance on grid electricity, lower the carbon footprint associated with EV charging, and contribute to the development of sustainable transportation infrastructure.

## “Advanced Power Electronics for Efficient Energy Conversion”

07

Efficient energy conversion is critical for optimizing the performance of various electrical systems, including renewable energy systems and electric vehicles. This project focuses on developing advanced power electronics systems to improve the efficiency of energy conversion processes. This includes designing high-efficiency inverters, converters, and motor controllers that utilize modern semiconductor materials and innovative circuit topologies. By achieving higher power density, reducing energy losses, and enhancing thermal management, the project aims to create more efficient and compact power conversion solutions. The project will also explore the integration of power electronics with renewable energy sources to improve the overall efficiency and reliability of these systems.

## “Development of a Smart Wearable Health Monitoring System”

08

Wearable health monitoring devices have the potential to revolutionize personal health management and remote patient monitoring. This project aims to develop a smart wearable health monitoring system equipped with various sensors to continuously track vital health parameters such as heart rate, blood pressure, and oxygen levels. The device will use wireless communication to transmit data to a smartphone app or cloud-based platform for real-time analysis and alerts. The project will focus on sensor accuracy, battery life, user comfort, and data security to ensure the device's effectiveness and reliability. By providing continuous health monitoring and early detection of potential health issues, this project aims to enhance personal health management, support remote patient monitoring, and improve overall health outcomes.



## “Autonomous Drones for Environmental Monitoring and Data Collection”

09

Autonomous drones equipped with advanced sensors can significantly enhance environmental monitoring and data collection capabilities. This project aims to develop autonomous drones capable of mapping air quality, detecting pollution sources, monitoring wildlife, and assessing natural disasters. The drones will be designed with hardware and software components for navigation, obstacle avoidance, and data processing. The project will involve developing algorithms for real-time data analysis and decision-making, enabling the drones to operate independently and efficiently in various environments. By providing a versatile and efficient tool for environmental scientists and researchers, this project aims to improve large-scale and real-time data acquisition, ultimately enhancing environmental monitoring and management practices.

## “High-Efficiency LED Lighting with Smart Controls”

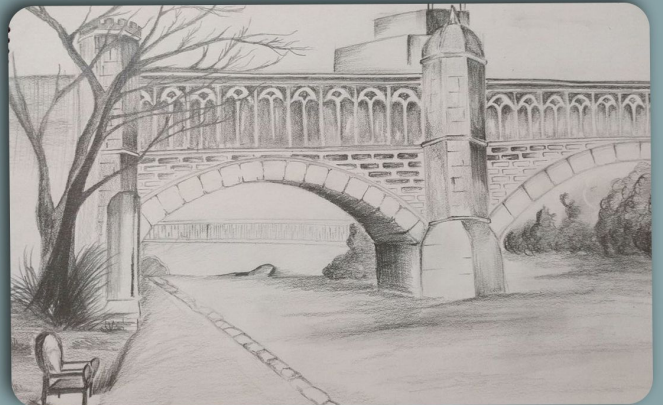
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LED lighting systems offer significant energy savings compared to traditional lighting solutions, and integrating smart controls can further enhance their efficiency and convenience. This project focuses on designing high-efficiency LED lighting systems with smart controls for optimized lighting management. The system will use sensors and microcontrollers to adjust brightness based on occupancy, daylight availability, and user preferences, implementing energy-saving algorithms and wireless control technologies. The project will also develop user-friendly interfaces for controlling and monitoring the lighting system. By improving lighting efficiency, reducing energy consumption, and enhancing user comfort, this project aims to promote sustainable lighting practices in residential, commercial, and industrial settings. Additionally, the project will explore the integration of renewable energy sources and smart grid compatibility, contributing to the development of sustainable energy infrastructure.

# 02

## Drawings

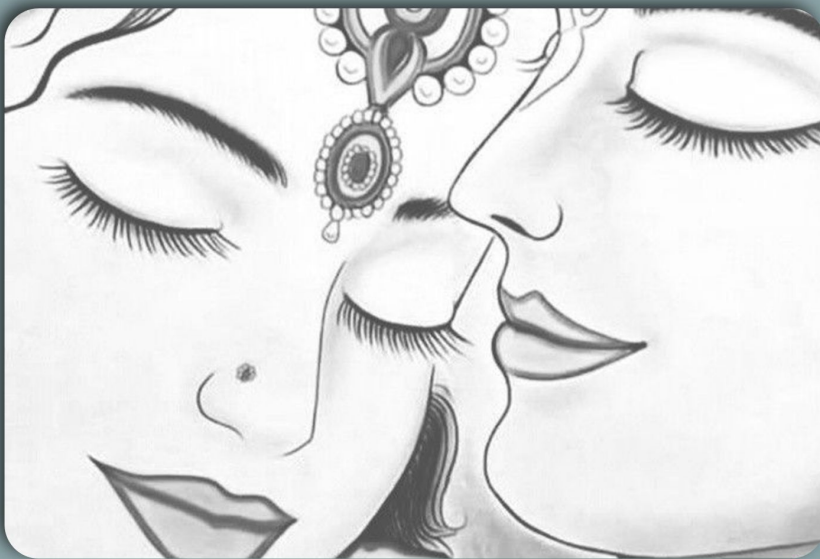
Capturing Moments in  
Lines and Shades



**RV MYTHILI**  
IV/EEE

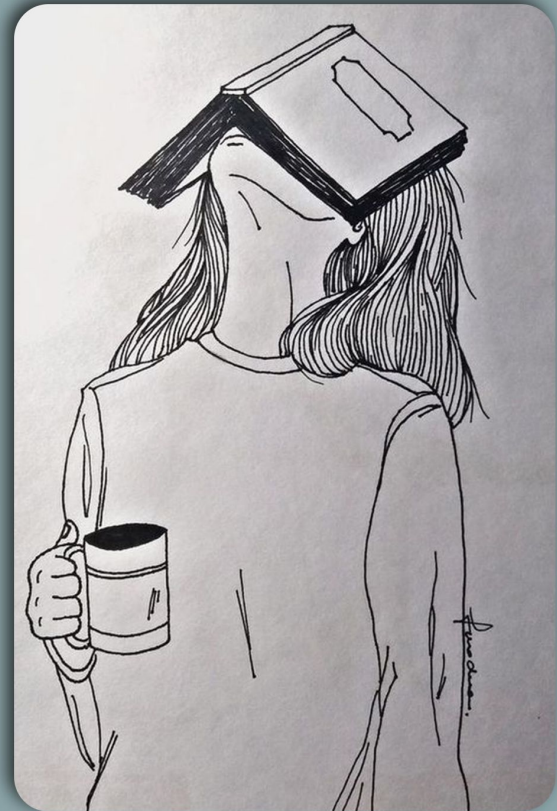
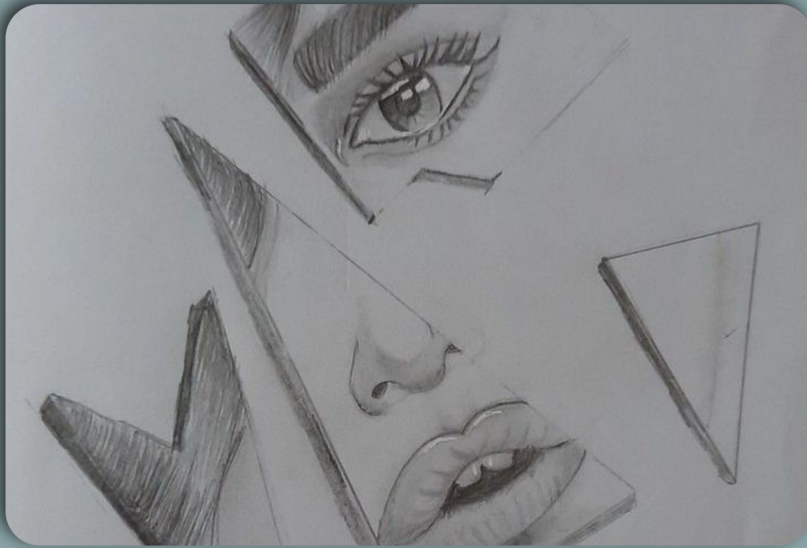
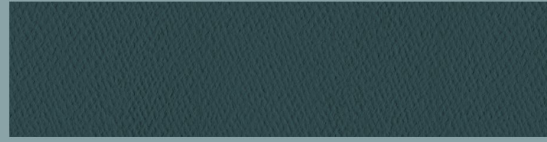


B Sowbarnigha  
III/EEE





Nandhini K  
II/EEE



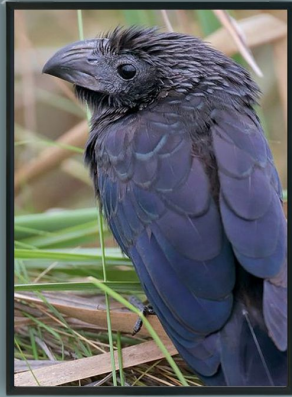
# Capturing Moments in Lines and Shades



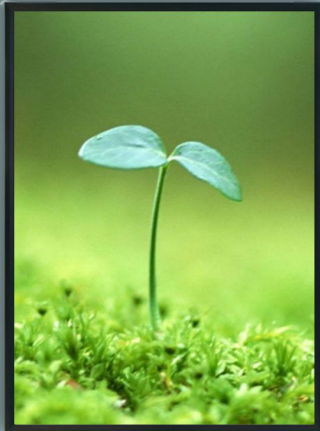
# 03

## Photo Gallery

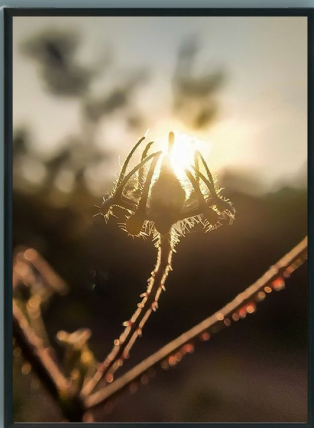
Moments Frozen in Time: A Photo Journey



Aravinth Kumar A  
II / EEE



Dhanush KR  
II / EEE



Keerthivasan A  
II / EEE

# 04

## Poetry

### Poetic Imagery: A Photographic Tale

Eneya Sri. C  
III/EEE



#### FAITH

As deep as the ocean,  
and without limits as the sky;  
although people believe in it,  
and still ask why?

"the outcome should be good", as expected  
by a layman or a sage;  
but if it takes more time for the result,  
then 'to have faith', needs courage;

However, the power of it can't be underestimated  
if determined can move mountains;  
and lack of it, can do nothing,  
even if it is destined;

And a believer somehow achieves,  
- trust, love, support, hope;  
but an atheist does not receive,  
those values due to scarcity of it;

Lastly, with the support of Almighty,  
and having faith in ourselves,  
we could prove without being guilty,  
the existence of 'faith' in every soul :)



# L



Dhivyasri V  
I / EEE

அத்தனை கோடி கண்ணீர்  
மண் மீது விடுந்து கிடுக்கும்  
அத்தனை கண்ட பிள்ளும்  
பூமி கிங்கு பூ பூக்கும்.

நல்லவன் யார் கெடவன் யார்  
கடைசியில் அவனை சிறுவு செய்வான்  
படி போடும் உலகம் கிங்கை?  
பலியான உயிர்கள் எங்கை?

உலகத்தின் ஒரு நின்று  
அத்தனையும் பார்க்கிறுப்போம்  
நம்பகை நாடகமென்று நாசும் கேள்நீது  
நடித்திருப்போம்.....

ஒரு நாளில் வாழ்க்கை...

க

# 05

## Sports

Elevate Your Game,  
Dominate Your Field.



**LOGENDRAN M**  
IV/EEE



CM TROPHY



JCI ROLLING TROPHY



# 06

## Did you Know?

### Uncover the Unexpected

- Did you know that electrical engineers helped create the first mobile phones?
- Did you know that electrical engineers develop the technology behind renewable energy sources like wind turbines and solar panels?
- Did you know that electrical engineers are working on making electric cars more efficient and affordable?
- Did you know that electrical engineers design the sensors and systems used in smart home devices, like smart thermostats and security cameras?
- Did you know that electrical engineers are creating new ways to charge devices wirelessly, eliminating the need for cables?
- Did you know that electrical engineers design and improve the power grids that deliver electricity to your home?





**THANK  
YOU**

