EESA

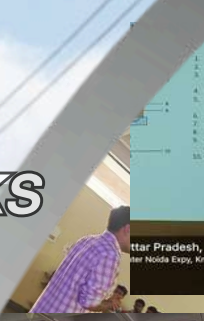
DEPARTMENT OF ELECTRIAL ENGINEERING

SESSION 2023-24

AABSHAAR

THE GRID GAZETTE

ALUMNI TALKS



INDUSTRIAL VISIT

EXPO MART VISIT

OUR MENTORS

Mr. Dhruv Galgotia
CEO

Mohd. Asim Qadri
DIRECTOR

Mr. Danish Equbal
HOD

Message from the CEO

Mr. Dhruv Galgotia

"WITHOUT CONTINUAL GROWTH AND PROGRESS, SUCH WORDS AS IMPROVEMENT, ACHIEVEMENT, AND SUCCESS HAVE NO MEANING" ~ BENJAMIN FRANKLIN GALGOTIAS COLLEGE OF ENGINEERING AND TECHNOLOGY HAS ALWAYS TAKEN A KEEN INTEREST IN RETAINING HIGH ACADEMIC STANDARDS AS WELL AS IN THE HOLISTIC EVOLUTION OF STUDENTS, DELIVERING THEM NUMEROUS OPPORTUNITIES FOR SELF-DEVELOPMENT. IT GIVES ME IMMENSE CONTENTMENT TO NOTE THAT THE DEPARTMENT OF ELECTRICAL ENGINEERING IS BRINGING OUT THE SIXTH VOLUME OF ITS DEPARTMENTAL MAGAZINE “THE GRID GAZETTE”. I AM SURE THIS MAGAZINE WILL ENCOURAGE THE STUDENTS TO EXPRESS THEIR INNOVATIVE IDEAS AND HARNESS THEIR LITERARY SKILLS OF THE STUDENTS. I EXTEND MY BEST WISHES TO ALL ASSOCIATED WITH THE PUBLICATION OF THIS MAGAZINE.

Message from the Director

Mohd. Asim Qadri

GALGOTIAS COLLEGE OF ENGINEERING AND TECHNOLOGY HAS ALWAYS ASPIRED TO CULTIVATE AN ECOSYSTEM CONDUCIVE TO PERTINENT TO LEARNING AND TEACHING WHILE ALSO ENCOURAGING STUDENTS TO EXPLORE THEIR TALENTS TO THE FULLEST. I AM DELIGHTED TO KNOW THAT THE DEPARTMENT OF ELECTRICAL ENGINEERING IS RELEASING THE SIXTH VOLUME OF ITS DEPARTMENTAL MAGAZINE “THE GRID GAZETTE”. I AM SURE THIS MAGAZINE WILL REFLECT THE ACADEMIC AND CULTURAL ACTIVITIES OF THE DEPARTMENT AND WILL PROVIDE A PLATFORM FOR THE STUDENTS TO REALIZE THEIR LITERARY ATTRIBUTES. MY BEST WISHES ARE WITH THE EDITORIAL BOARD.

FROM PRESIDENT'S DESK

Dear Readers,

I am filled with immense pride and excitement as I greet all the readers of our esteemed magazine. As the Head of the Electrical Engineering Department, it is my pleasure to share the various developments and accomplishments we have achieved. Our department is dedicated to fostering a dynamic and innovative atmosphere where both students and faculty can excel. We are unwavering in our commitment to teaching excellence, pioneering research, and community engagement, as we continuously seek to expand the frontiers of knowledge and technology.

The recent period has witnessed significant progress in domains such as renewable energy, smart grids, and sophisticated communication systems. Our students and faculty have played a pivotal role in these areas, driving innovative research and forming valuable industry partnerships. These successes reflect the tireless effort and commitment of our entire team. We take great pride in the diverse and inclusive community we have built. Our department embraces students from varied backgrounds, promoting a rich exchange of ideas and viewpoints. This diversity not only enhances our academic environment but also equips our students for global success.

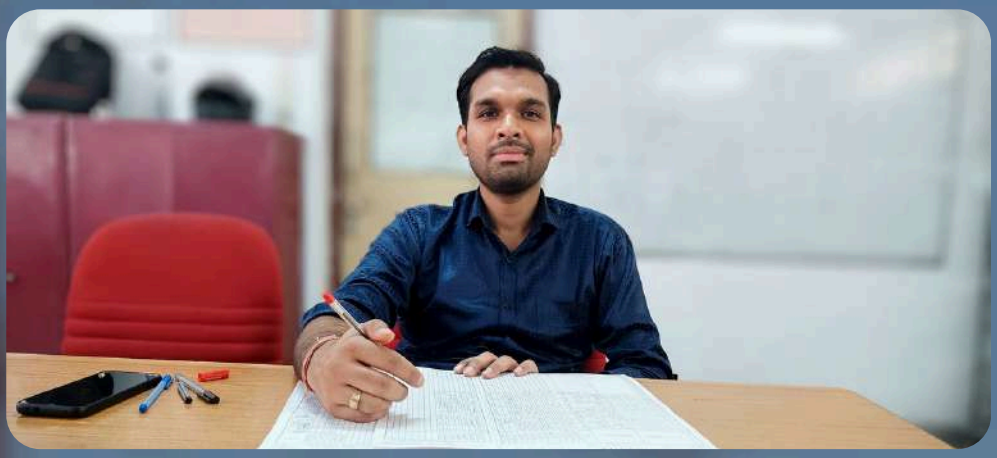
Looking forward, we are enthusiastic about the prospects that await us. We are devoted to arming our students with the necessary skills and knowledge to address the challenges of the future. Our focus is on fostering creativity, critical thinking, and a zeal for continuous learning.

I wish to express my sincere gratitude to our faculty, students, alumni, and industry partners for their steadfast support and contributions. Together, we are sculpting the future of electrical engineering and positively influencing society.

Thank you for your ongoing interest in our department. I trust you will find our latest initiatives and accomplishments engaging.
Warm regards,

Dr. Md. Danish Equbal
Head of the Department
Electrical Engineering.
President of EESA Club.

FROM VICE PRESIDENT'S DESK



Dear Readers,

As we continue to push the boundaries of innovation and excellence in the field of electrical engineering, I am thrilled to present to you our latest edition of magazine "The Grid Gazette." This magazine is not just a publication; it is a testament to our collective passion, expertise, and commitment to sharing knowledge within our community.

As we move forward, I encourage each of you to embrace the challenges and opportunities that lie ahead. Whether you are working on smart grid technologies, renewable energy integration, or the next generation of electric vehicles, your work is vital. It is through our collective efforts that we will solve the most pressing issues of our time and create a better world for generations to come.

"The Grid Gazette" is designed to be a beacon of insight, a platform for discussion, and a repository of cutting-edge research and developments in electrical engineering. Each article, interview, and feature within its pages has been carefully curated to provide our readers with a comprehensive understanding of the latest trends, technologies, and thought leadership in our field.

I encourage you all to read, reflect, and engage with the content of "The Grid Gazette." It is through the sharing of knowledge and the fostering of dialogue that we will continue to advance our field and make a lasting impact on the world.

Thank you for your continued dedication to electrical engineering and for being a part of this vibrant community. Here's to the power of knowledge and the bright future it illuminates for us all.

Let us harness the collective brilliance of our department, for it is in our shared vision and collaborative efforts that transformative change is realized.

Warm regards,

Mr. Thakur Ankit Krishnakumar
Electrical Engineering
Vice President of EESA Club

VISION

To become a pioneer department in producing competent, innovative and socially responsible electrical engineers.

MISSION

DM1 To provide quality education through continuous upgradation of facilities and mentoring conducive to the department.

DM 2 To promote research and innovative practices focussing on the needs of industry.

DM3 To transform students into socially cognizant professionals and entrepreneurs with amicable interpersonal and communication skills.

FACULTY INTRODUCTION

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Professor

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Professor

Dr. Pinki Yadav
Professor

Dr. Mohd. Shahid
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Ms. Preeti Dhiman
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Mr. Thakur Ankit Krishnakumar
Assistant Professor

Dr. Nitesh Kumar Singh
Assistant Professor

Dr. Bhuvnesh
Assistant Professor

Mr. Dinesh Prasad
Assistant Professor

Mr. Manoj Saini
Assistant Professor

Ms. Lipika Datta
Assistant Professor

FROM GENERAL SECRETARY'S DESK

Dear Readers,

As the General Secretary of the Electrical Engineering Club, it is my pleasure to share the exciting developments and accomplishments of our vibrant community. Over the past year, our club has thrived, embracing innovation, collaboration, and academic excellence.

Our members have engaged in various projects, from designing energy-efficient systems to participating in various competitions, showcasing their technical prowess and creativity. We have also hosted several workshops ,alumni talk ,seminars, inviting industry experts to share their insights and inspire the next generation of engineers.We do not limit ourself to only that we encourage our member to develop their interests and provide them various opportunities to inculcate them with technical aspect.

The dedication and enthusiasm of our members have been truly inspiring. Their relentless pursuit of knowledge and passion for electrical engineering continue to drive our club forward, fostering a spirit of camaraderie and intellectual growth.

As we look ahead, we remain committed to providing a platform for students to explore their interests, develop their skills, and contribute to the ever-evolving field of electrical engineering. We are excited about the future and the opportunities it holds for our club and its members.

Thank you for your continued support, and we look forward to another year of innovation and achievement.

Sincerely,

Shaswat Chaudhary
General Secretary
Electrical Engineering Club

THE CORE MEMBERS OF EESA CLUB

Shashwat Chaudhary
General Secretary

Ashish Yadav
Secretary

Divya
Joint Secretary

Shirshak Chauhan
Treasurer

Shurbhi Sharma
Creative Head

Unnati Pandey
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Aditya Kumar Gupta
Management Head

Akshat Bajpai
Sport Head

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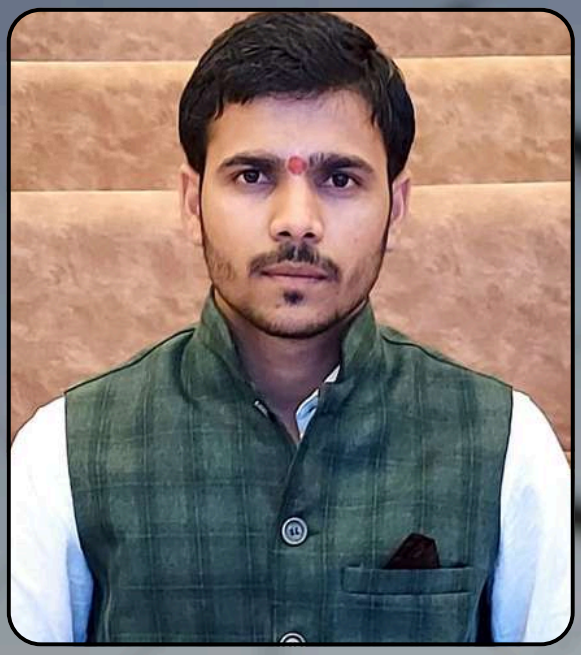
Surbhi Sharma
Guide

Chetan Verma
Chief Editor



Prashant Pal
Editor

Gauri Sharma
Editor

Deepti Arya
Editor

Ujjwal Singh
Editor

FROM CHIEF EDITOR'S PEN

Dear Readers,

Welcome to the latest edition of "The Grid Gazette," the official magazine of the Electrical Engineering Student Association (EESA) at Galgotias College of Engineering and Technology. This edition celebrates the dynamism of our Electrical Engineering department through inspiring stories and insightful articles.

In "Alumni Talk," our distinguished graduates share their professional journeys, highlighting the robust education they received here. The "Guest Lectures" section features sessions from industry experts and academic leaders, bridging the gap between theory and practice.

Our "Visits and Events" chronicle the diverse activities organized by EESA, from industrial visits to national conferences, offering our students invaluable experiential learning and networking opportunities.

I extend my heartfelt gratitude to all contributors and readers. Your support makes "The Grid Gazette" a true reflection of our community's achievements and aspirations.

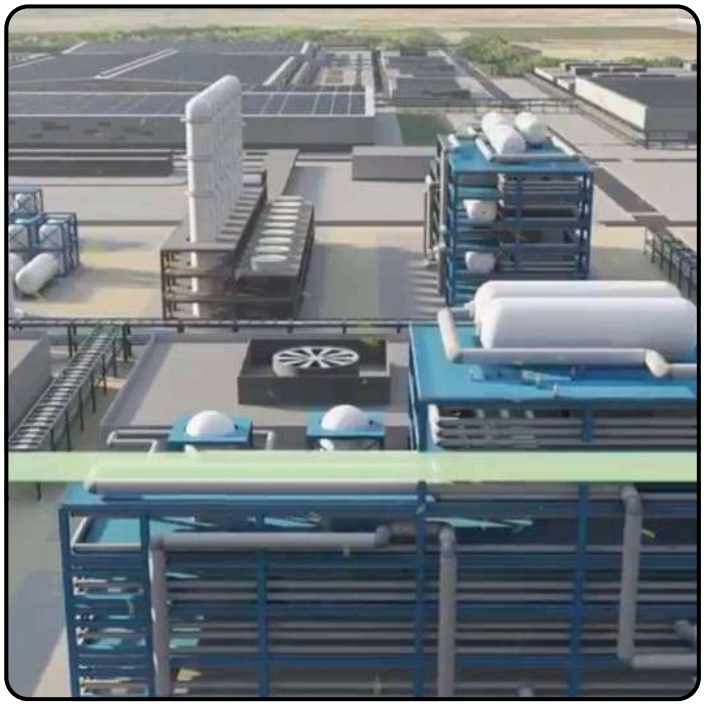
Happy reading!

Warm regards,

Chetan Verma
Chief Editor
The Grid Gazette
Electrical Engineering Student Association (EESA)
Galgotias College of Engineering and Technology
Greater Noida, Uttar Pradesh

JAMNAGAR SOLAR POWER PLANT

THE FUTURE OF THE SOLAR POWER OR JUST A GIMMICK?



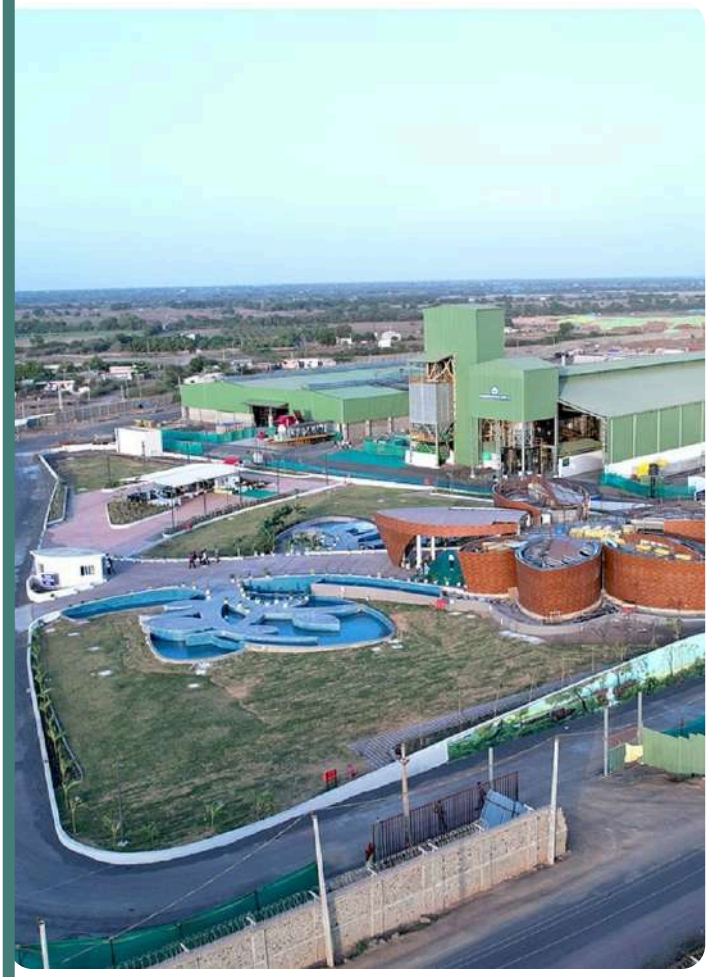
The factory is situated in Jamnagar, India. It boasts a production capacity of 10GW for solar cells and modules.

Vertical Integration: The facility represents a pioneering “quartz-to-module” factory, set to produce components ranging from quartz to metallurgical silicon, polysilicon, ingots/wafers, and subsequently integrate these into cells and modules.

Technology: The factory will utilize heterojunction technology (HJT) to create highly efficient solar PV cells and modules, catering to both utility-scale and rooftop power generation.

Reliance Industries: Spearheaded by Reliance Industries, this Indian conglomerate has set its sights on expansive green energy production and hydrogen generation. Furthermore, Reliance is on a mission to establish a 20GW solar capacity by 2025 to support its continuous green hydrogen production. Image courtesy of REC Group.

By 2024, the Indian conglomerate Reliance Industries is set to commence production at its 10GW solar cell and module factory in Jamnagar, India.



The facility will be a complete "quartz-to-module" vertical integration, manufacturing every stage of the supply chain within the same plant, including polysilicon, ingots, wafers, cells, and modules. The annual capacity is projected to double to 20GW by 2026, utilizing REC Solar's technology, which was acquired by the Indian conglomerate last year, as PV Tech reported. Upcoming Event: PV Cell Tech USA 2024 will take place on 8 October 2024 in the San Francisco Bay Area, USA. Since its inception in 2016, the PV CellTech Conference has become an annual event. The 2024 conference, scheduled for 8-9 October, will focus on the U.S. manufacturing sector. Following the success of the 2023 event, the 2024 conference aims to bring together key stakeholders in PV manufacturing, equipment/materials, policy-making, strategy, capital equipment investment, and related downstream channels and third-party entities, with the objective of outlining the future of PV manufacturing in the U.S. until 2030 and beyond.

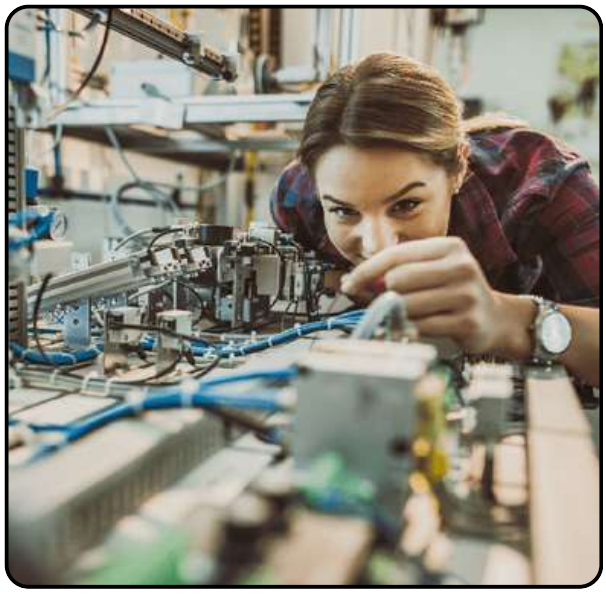
-PRASHANT PAL(2ND YEAR)

THE FUTURE OF ROBOTICS AND ELECTRICAL ENGINEERING

Electrical engineering stands as a pioneering field that has played a significant role in shaping the course of modern technology (Sugawara H, 2003). From the advent of electricity to the complex systems we rely on today, electrical engineers have been at the forefront of innovation, revolutionizing the way we live, work, and interact with our world. As we venture further into the 21st century, the field of electrical engineering continues to evolve at astounding pace, driving ground-breaking advancements that hold the potential to transform industries and propel us into the future.

. In this article, we will delve into some of the recent advancements in electrical engineering and explore their far-reaching implications (Oinn T, 2004). These advancements span diverse areas, including power electronics and renewable energy, the Internet of Things (IoT), artificial intelligence (AI) and machine learning, robotics and automation, as well as integrated circuit (IC) design and nanotechnology (Hoon S, 2005). Each of these areas represents a technological frontier, pushing the boundaries of what is possible and paving the way for unprecedented advancements in various sectors.

Power electronics and renewable energy have become increasingly vital as the demand for clean and sustainable energy sources continues to surge Electrical engineers are spearheading the development of efficient power conversion systems, allowing for the integration of renewable sources such as solar and wind into the power grid. This not only ensures a reliable and stable power supply but also reduces the environmental impact associated with traditional energy generation (Wilkinson MD, 2002). The Internet of Things (IoT) has emerged as a transformative force, connecting countless devices and systems through networks of sensors and actuators.



Electrical engineers are actively engaged in designing and implementing efficient communication protocols, energyefficient devices, and robust security systems to facilitate seamless IoT integration. The applications of IoT are vast and diverse, ranging from smart homes and cities to industrial automation, healthcare monitoring, and transportation systems (Smedley D, 2009). Artificial intelligence (AI) and machine learning are reshaping the landscape of electrical engineering by enabling advanced control systems, autonomous vehicles, intelligent energy management solutions, and predictive maintenance systems. These technologies empower electrical engineers to analyze immense volumes of real-time data, make informed decisions, and optimize complex processes, thereby enhancing efficiency, reliability, and performance (Vaquero LM, 2009) Robotics and automation are experiencing remarkable advancements, thanks to electrical engineering innovations. Engineers are leveraging cutting-edge control systems, sensor integration, and machine vision to create highly capable robotic systems that can perform intricate tasks with precision..

This revolution in robotics has broad implications, ranging from industrial settings and healthcare to agriculture and disaster response scenarios (Kottmann R, 2008). Furthermore, integrated circuit (IC) design and nanotechnology are pushing the limits of miniaturization and performance. Electrical engineers are exploring novel techniques such as nanofabrication, quantum computing, and emerging materials to develop smaller, faster, and more energy-efficient ICs. These advancements are paving the way for transformative developments in computing, communications, and sensor technologies. In conclusion, electrical engineering stands at the forefront of transformative advancements that are shaping the future of technology (Lapins M, 2008). Through advancements in power electronics, renewable energy, IoT, AI, robotics, and nanotechnology,

electrical engineers are redefining the boundaries of what is possible. As they continue to push the envelope, the future promises a world driven by sustainable energy, intelligent systems, and interconnected devices, holding profound implications for our quality of life and addressing global challenges such as climate change and automation.

Electrical engineers are contributing to the field of robotics and automation, enabling the development of advanced robotic systems that can perform complex tasks with precision. Through advancements in control systems, sensor integration, and machine vision, robots are becoming more versatile, agile, and capable of working alongside humans in industrial settings, healthcare, agriculture, and disaster response scenarios. - GAURI SHARMA (2ND YEAR)

CBG POWER PLANT -BADAUN

The newly inaugurated facility is in line with the government's objective to diminish reliance on imported fossil fuels. This plant boasts a daily processing capability of 100 tonnes of rice straw, yielding 14 tonnes of Compressed Biogas (CBG) and 65 tonnes of solid manure. Hindustan Petroleum Corporation Limited (HPCL) has undertaken this project with an investment of 133 crore rupees, extending over approximately 50 acres. The Minister announced plans to establish over 100 similar biogas plants in the state.

Once production stabilizes, the Badaun CBG plant is expected to significantly reduce stubble burning across 17,500 to 20,000 acres, leading to an annual CO2 emission reduction of 55,000 tonnes. This development is anticipated to create direct employment for about 100 individuals and indirect employment for approximately 1,000.

Aligned with the National Biofuel Policy of 2018, this venture aims to cut down import dependency by 10 percent, emphasizing the development of second-generation bio refineries and CBG plants.

The project encompasses various components, including the receipt and storage of raw materials, the CBG processing section, necessary utilities, a CBG cascade filling shed, and facilities for the storage and packaging of solid manure.

Praj Industries, based in Pune, has provided the licensed technology for CBG production, and the design of the digester is optimized for maximum yield. The plant is designed with a Zero-Liquid Discharge system that is sensitive to pollution, complying with the strict regulations of the Fertilizer Control Order.

CHALLENGES & FUTURE OF AI IN ELECTRICAL ENGINEERING

Despite the remarkable strides artificial intelligence (AI) has made in electrical engineering, several challenges still remain. One significant concern is data privacy and cybersecurity. As AI systems rely heavily on data, safeguarding this information becomes crucial. Ensuring that sensitive data, such as energy consumption patterns or grid vulnerabilities, is protected from unauthorized access or cyberattacks is a pressing challenge.

Instances of AI algorithms being manipulated to exploit vulnerabilities in electrical systems emphasize the need for robust cybersecurity measures.

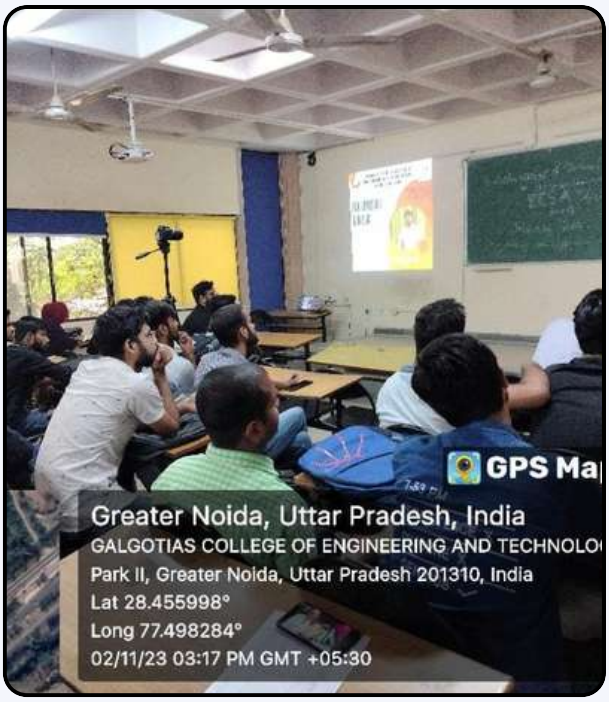
However, the future of artificial intelligence in electrical engineering seems promising and dynamic. Advancements in AI algorithms are set to enhance electrical systems' accuracy and efficiency further. These algorithms are getting increasingly optimized for real-time decision-making, which is crucial for optimizing energy distribution and managing the grid effectively.

Moreover, integrating AI with robotics and the Internet of Things (IoT) is set to redefine how we interact with electrical systems. Statistics project significant growth in AI adoption in the energy sector, with an estimated annual investment of over $70 billion by 2030.

AI-driven systems continuously monitor and analyze data from electrical devices, anticipating failures before they occur. This proactive approach minimizes downtime, extends the lifespan of equipment, and ensures optimal performance, saving time and resources in the long run.

ALUMNI TALK: CAREER OPPORTUNITIES IN PSUS IN INDIA

On the 2nd of November 2023 , the Electrical Engineering Department in association with EESA Club had the privilege of hosting an insightful alumni talk focused on career opportunities in Public Sector Undertakings (PSUs) in India. The event, held in B-112 featured Mr. Kuvendra Singh, a distinguished alumnus of our Electrical Engineering Department 2017 Batch who achieved AIR 59 in GATE and an executive engineer at ONGC.



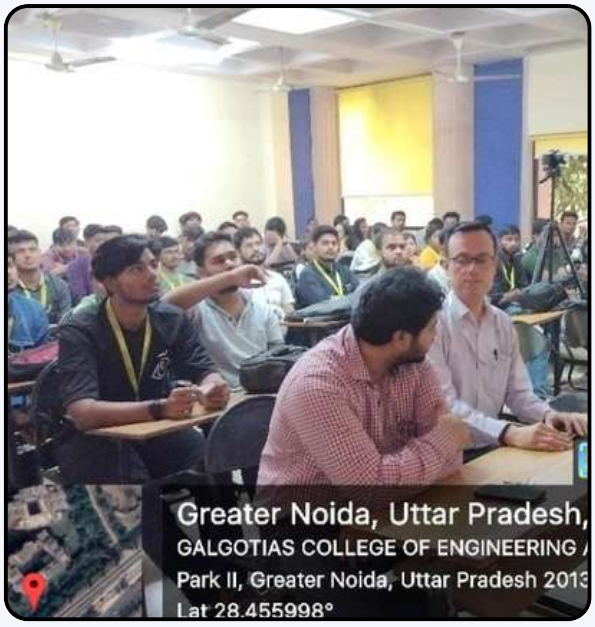
Mr. Singh began the session by sharing his journey from being a student at our college to securing a coveted position in a leading PSU. He highlighted the various stages of preparation and the rigorous selection process involved, providing the attendees with a clear roadmap to achieve similar success.

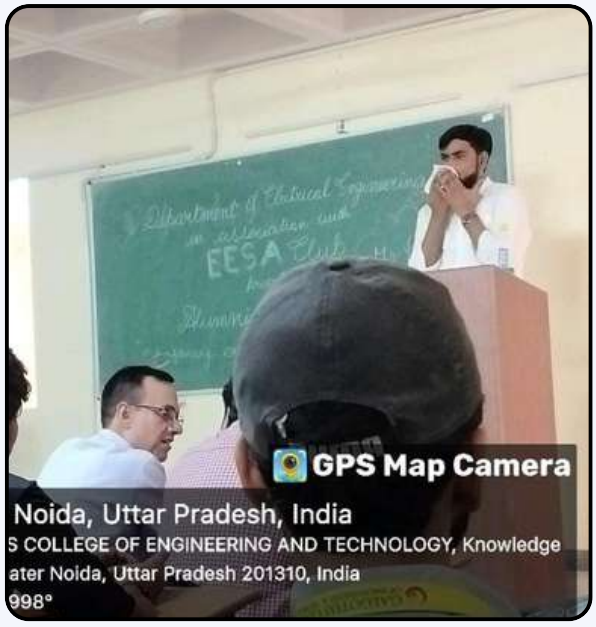
The talk covered several key areas:

Overview of PSUs: Mr. Singh explained the structure and functioning of PSUs in India, emphasizing their importance in the national economy. He detailed the different types of PSUs, including Maharatna, Navratna, and Miniratna companies, and their respective eligibility criteria and benefits.

Career Prospects: He elaborated on the diverse career opportunities available within PSUs for electrical engineers, ranging from project management and operations to research and development. He also discussed the long-term career growth and stability offered by these organizations. Preparation Strategies: A significant portion of the talk was dedicated to guiding students on how to prepare for PSU recruitment exams such as GATE (Graduate Aptitude Test in Engineering). Mr. Singh provided valuable tips on time management, study resources, and the importance of consistent practice.

Work-Life Balance: The speaker shared his personal experiences about the work culture in PSUs, highlighting the balance between professional and personal life. He emphasized the employee-friendly policies and the emphasis on continuous learning and development. Q&A Session: The session concluded with an interactive Q&A segment, where students had the opportunity to ask specific questions about the recruitment process, career growth.





and the day-to-day responsibilities of an engineer in a PSU. Mr. Kunvendra Singh addressed each query with detailed and practical advice. The talk was highly engaging and informative, leaving the attendees inspired and better informed about the potential career paths in PSUs.

The Electrical Engineering Department and EESA extends its heartfelt thanks to Mr. Kunvendra Singh for taking the time to share his knowledge and experiences. We also express our gratitude to the faculty and organizing team for their efforts in making this event a success.

We look forward to organizing more such enlightening sessions in the future to benefit our students

ALUMNI TALK: STRATEGIES FOR VERTICAL GROWTH IN THE SOFTWARE INDUSTRY

On the 13th of October 2023 , The EESA Club in association with Electrical Engineer in Department had the privilege of hosting an insightful talk by our esteemed alumni, Mr Arijit Nigam , who has made remarkable strides in the software industry. The session was part of our ongoing series aimed at providing current students with valuable industry insights and career guidance. Mr Arijit Nigam graduated from our institution in 2016 with a degree in Electrical Engineering. Over the years, they have transitioned into the software sector and currently holds the position of Senior Service Engineer at WINGFY.

Their journey from an entry-level engineer to a senior executive was nothing short of inspiring, offering a wealth of knowledge on navigating career advancements.

Key Takeaways from the Talk

Continuous Learning and Skill Developments:
Mr Arijit Nigam emphasized the importance of staying updated with the latest technologies and trends. They encouraged students to invest time in learning new programming languages, frameworks, and tools.

Continuous education, through online courses, certifications, and workshops, was highlighted as a crucial element for professional growth.

Building Strong Professional Networks:Building Networking was identified as a pivotal factor in career advancement.Mr Arijit Nigam shared their experience of how connections with colleagues, mentors, and industry professionals opened doors to new opportunities and collaborations. Attending conferences, participating in industry forums, and engaging in community events were recommended to build a robust professional network.

Gaining Diverse Experience: Working on a variety of projects and taking on different roles within the organization was another strategy discussed.Mr Arijit Nigam mentioned that exposure to different aspects of the business, such as project management, product development, and customer interaction, can significantly enhance one's skill set and make them more versatile and valuable to the organization. Leadership and Soft Skills:Technical expertise alone is not sufficient for vertical growth. Mr Arijit Nigam stressed the importance of developing leadership qualities and soft skills, such as communication, teamwork, and problem-solving.

They shared personal anecdotes on how effective communication and team leadership were instrumental in their career progression.

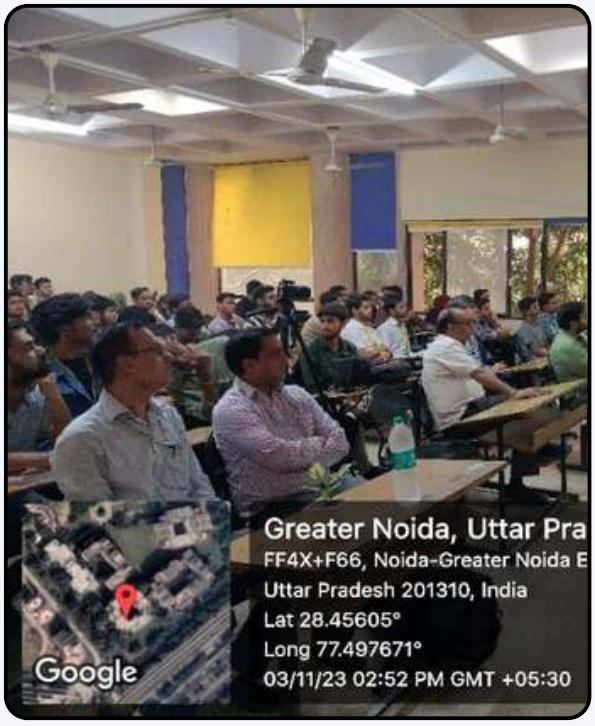
Mentorship and Guidance:Seeking mentorship from experienced professionals was another crucial aspect discussed. Mr Nigam spoke about the benefits of having a mentor who can provide guidance, feedback, and support. They encouraged students to seek mentors both within and outside their organization to gain diverse perspectives and advice.

The talk concluded with a vibrant Q&A session where students had the opportunity to ask questions and seek advice on their specific career aspirations. The insights shared by Mr Nigam were not only motivational but also provided practical strategies for achieving vertical growth in the competitive field of software engineering.

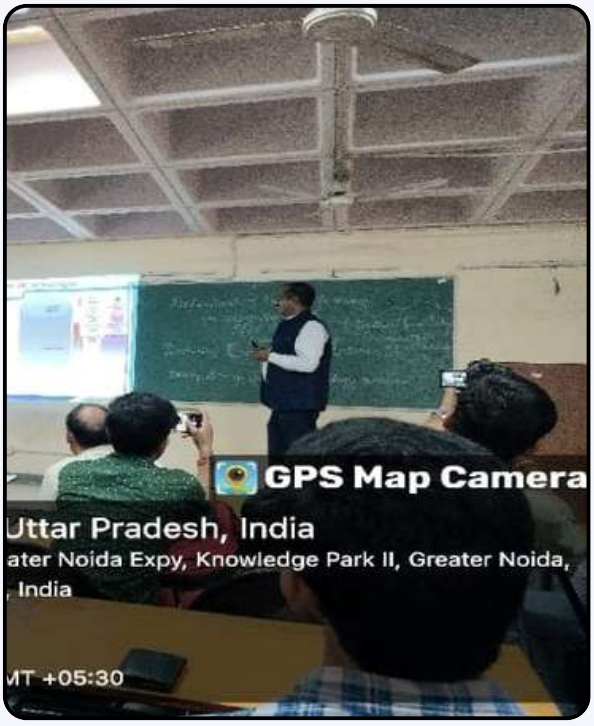
We extend our heartfelt gratitude to Mr Arijit Nigam for taking the time to share their experiences and wisdom. The Electrical Engineering Club remains committed to organizing such enriching events for the benefit of our students.

Guest Lecture: Energy Storage Systems: Technology Overview

On the 3rd of November, 2023, the Electrical Engineering Department in association with EESA Club had the honor of hosting a distinguished guest lecture on the topic of "Energy Storage Systems: Technology Overview." The session was conducted by ,Dr. Manoj Kumar Pandey Head (RED)in Arhiant Electricals. Dr. Pandey's lecture provided an in-depth exploration of the various types of energy storage systems, their applications, and the latest advancements in the technology. The key points covered during the lecture included:



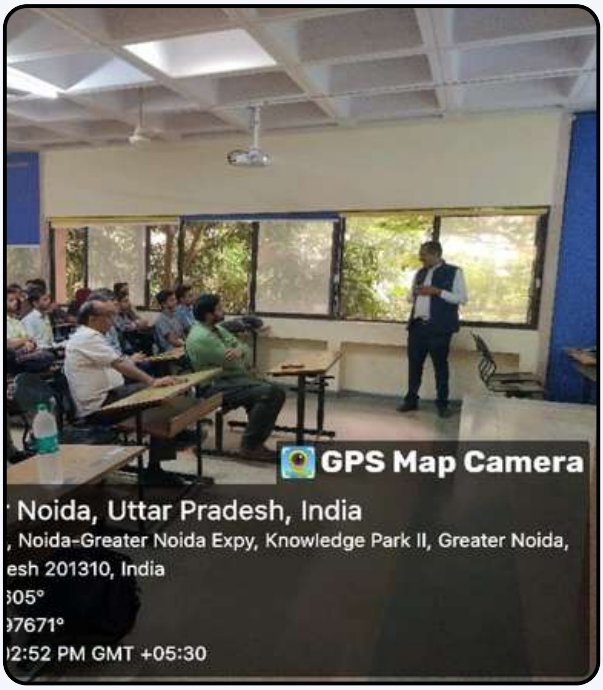
Introduction to Energy Storage Systems: Dr. Pandey began by explaining the fundamental principles of energy storage and its critical role in modern power systems. He emphasized the importance of energy storage in balancing supply and demand, enhancing grid stability, and integrating renewable energy sources.



Types of Energy Storage Technologies:
The lecture detailed several major energy storage technologies, including:
Batteries: Various types such as lithium-ion, lead-acid, and emerging solid-state batteries.
Pumped Hydro Storage: The most mature form of large-scale energy storage.

Thermal Energy Storage: Using materials to store and release heat energy.
Flywheels: Mechanical devices that store kinetic energy.
Compressed Air Energy Storage (CAES): Utilizing compressed air to store energy.
Advancements and Innovations: Dr. Pandey highlighted recent advancements in battery technology, focusing on improvements in energy density, charging speed, and longevity. He also discussed the potential of next-generation technologies such as flow batteries and their applications in grid-scale energy storage.

Applications and Case Studies: The lecture included case studies of successful energy storage implementations worldwide. Examples ranged from residential solar energy storage systems to large-scale projects supporting grid stability and renewable integration. Challenges and Future Directions:Dr. Pandey addressed the current challenges facing energy storage systems, including cost, efficiency, and scalability. He also shared his insights on the future direction of research and development in this field, highlighting the potential for breakthroughs in materials science and system integration.

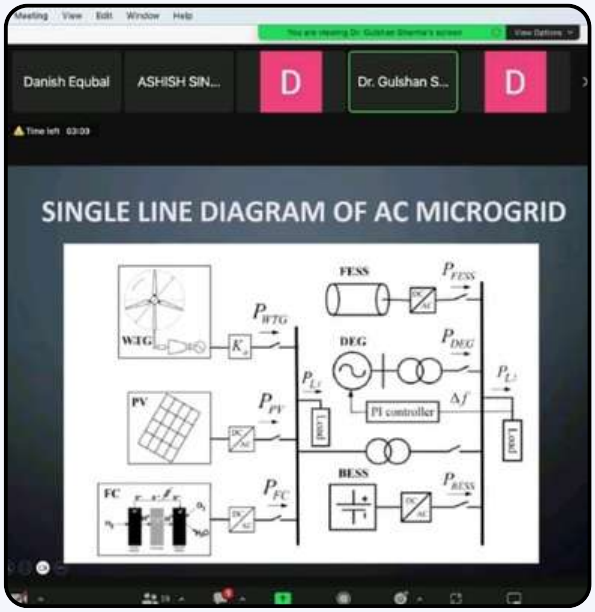


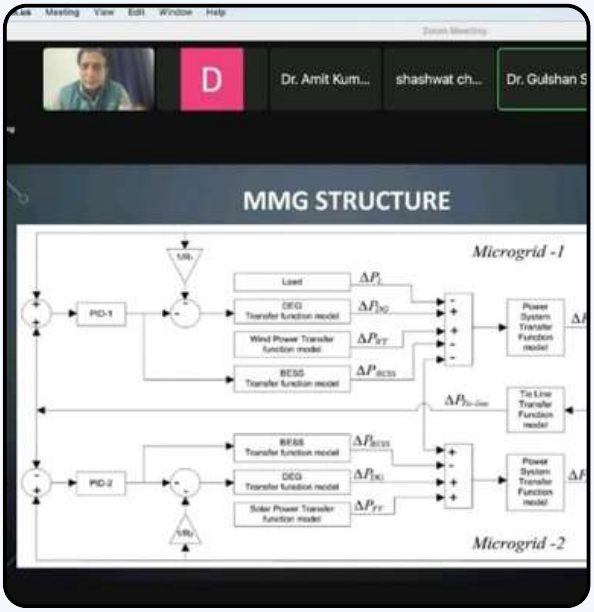
The session concluded with an engaging Q&A segment, where students and faculty had the opportunity to discuss various aspects of energy storage technologies with Dr. Pandey. The lecture was well-received, and attendees gained valuable knowledge on the critical role of energy storage in the transition to a sustainable energy future.

The Electrical Engineering Department and EESA Club extends its heartfelt thanks to Dr. Manoj kumar Pandey for his enlightening presentation and looks forward to organizing more such informative sessions in the future.

THE GUEST LECTURE ON MICROGRID CONCEPT AND ASSOCIATED CONTROL STRATEGIES FOR SMG AND MMG

Speaker Profile: The keynote speaker, Dr. Gulshan Sharma, serves as a Senior Lecturer in the Department of Electrical Engineering Technology at the University of Johannesburg, South Africa. Dr. Sharma's expertise lies in microgrid systems and their control strategies. Microgrid Overview: A microgrid is a self-contained energy system capable of operating autonomously or in conjunction with the main power grid. It encompasses various distributed energy resources (DERs), including solar panels, wind turbines, batteries, and backup generators. Microgrids play a pivotal role in bolstering grid resilience, elevating energy efficiency, and facilitating the integration of renewable energy.





Control strategies for Standalone Microgrids (SMGs) are pivotal as they operate autonomously from the central grid. These strategies focus on:

- The optimal dispatch of power, which ensures the efficient utilization of Distributed Energy Resources (DERs), meets the load demand, and minimizes costs.

Control Strategies for Multi-Microgrids (MMGs): Multi-microgrids link several SMGs, creating an extensive network. The complexities in MMGs involve:

- Synchronizing voltage and frequency across the network of microgrids.
- Managing optimal power flow between individual microgrids and the primary grid.
- Coordinating DERs within the collective microgrids to ensure streamlined operations.

THE EXPERT LECTURE ON POWER SUPPLY DISTRIBUTION IN METRO SYSTEMS:

Speaker Profile: The presentation was delivered by Mr. Anurag Gupta, who holds the position of Assistant Manager in the Traction division at Noida Metro Rail Corporation Ltd.
Overview of Discussion: Mr. Gupta provided an insightful overview of the operational facets of metro rail systems, with a focus on the Noida Metro Rail as a case study.
Topics Addressed: Single Line Diagram: An elucidation of the metro rail network's single line diagram was presented.
Power Supply: The session included a detailed discussion on the power supply mechanisms of metro systems.
- Substation Switchyard: In-depth information was shared about the substation switchyard, a critical component in the power distribution network.

Key Attributes of the Metro Rail Electrical System:
- Redundancy: The electrical system is designed to ensure safety, reliability, and stability of power. To guarantee continuous operation, redundancy is incorporated at every level of the power distribution network.
- Standby Equipment: All stations are equipped with standby generators to support essential services in the event of a normal power supply disruption.

Power Necessities:
The operation of the metro system relies on electricity for a multitude of functions, including the propulsion of trains, station operations (such as lighting, elevators, escalators, signaling, telecommunications, fire safety measures), and the maintenance facilities within the metro premises.

REPORT ON ALUMNI TALK: CAREER OPPORTUNITIES IN THE IT SECTOR

On 30th April, 2024, the Electrical Engineering Club had the privilege of hosting an insightful alumni talk on "Career Opportunities in the IT Sector." The event featured Ms. Aditi Paliwal , a distinguished alumnus of our department who currently serves as a Senior ERP Specialist at NTT Data.

Ms. Paliwal began his talk by sharing his professional journey, emphasizing the importance of continuous learning and adaptability in the ever-evolving IT industry. She highlighted how her background in electrical engineering provided a strong foundation for his transition into the IT sector, showcasing the versatility and broad applicability of engineering skills.

Throughout the session, Ms. Paliwal covered a range of topics, including:

Emerging Trends and Technologies: She discussed the latest advancements in artificial intelligence, machine learning, blockchain, and cloud computing, illustrating how these technologies are shaping the future of the IT landscape.

Skill Set Requirements: Ms.Paliwal outlined the essential technical and soft skills required to succeed in the IT sector. She stressed the importance of proficiency in programming languages, problem-solving abilities, and effective communication skills.

Career Paths and Opportunities: The talk provided an overview of various career paths within the IT industry, such as software development, cybersecurity, data analysis, and IT consulting. Ms.Paliwal also shared insights into the job market, highlighting the high demand for IT professionals and the vast array of opportunities available.

Networking and Professional Growth: Ms. Paliwal emphasized the significance of networking and building professional relationships. She encouraged students to participate in internships, attend industry conferences, and engage in online communities to expand their professional network.

Q&A Session: The talk concluded with an engaging Q&A session, where students had the opportunity to ask Ms. Paliwal questions about his experiences, industry trends, and career advice. The interactive discussion provided valuable insights and personalized guidance for aspiring IT professionals.

The event was a tremendous success, with students leaving inspired and equipped with a better understanding of the IT sector's potential. The Electrical Engineering Club extends its heartfelt gratitude to Ms. Aditi Paliwal for her time and invaluable contributions.

VISIT TO SARVOCH INDIA CORPORATION, BULANDSHAR - 22 DECEMBER, 2023.

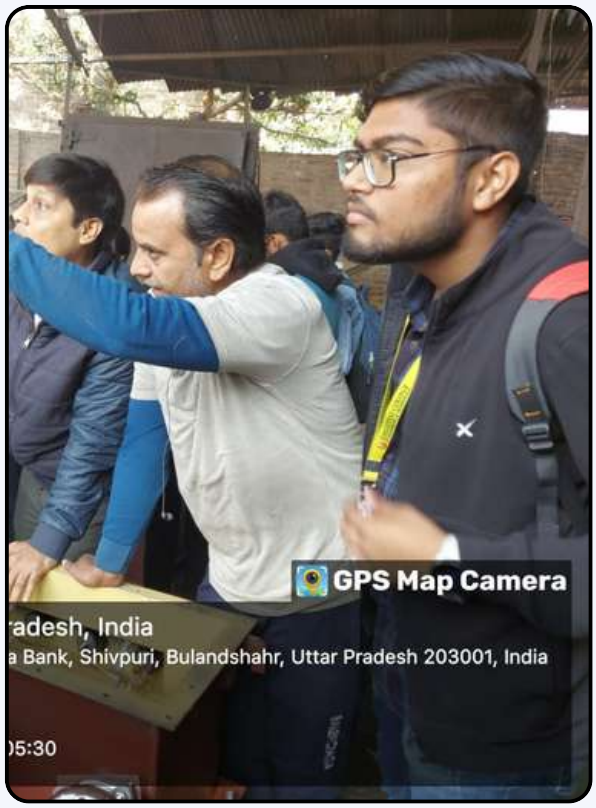
On December 22, 2023, under the expert guidance of Mr. Dinesh Prasad, a distinguished figure in the Electrical Engineering department, the second-year students visited Sarvaoch Pvt Ltd in Bulandshahr, a company that manufactures transformers, isolators, and other essential equipment for power transmission. Guided by Mr. Prasad's profound knowledge, we observed the intricate process of transformer manufacturing. The junior engineers and employees engaged with our queries attentively, providing detailed answers and a comprehensive tour of the facility. The sight of the colossal tanks destined to house the 3-phase transformers was particularly striking. It was a moment of awe to see and touch the structures that, until then, we had only encountered in textbooks.

Every component, from the tank to the insulating oil and the cooling strips, was crafted with meticulous attention to detail. The core manufacturing of the transformer was carried out manually, offering employment opportunities to locals who performed their tasks with commendable dedication, and the winding process was equally impressive.

The coils, which are wrapped around the core, were also crafted by the same hands. As Electrical Engineering students, the concepts we learn from textbooks, which appear straightforward, are in fact quite intricate in practice.

The mathematics, construction, and precision that seem effortless on paper are, in reality, complex and laborious. This realization was both humbling and enlightening. The supervisor was generous and guided us through various products they manufactured, including Isolators and Starters. Mr. Prasad provided us with a wealth of knowledge regarding their operation and applications. He addressed all our questions with patience and allowed us ample time to explore.

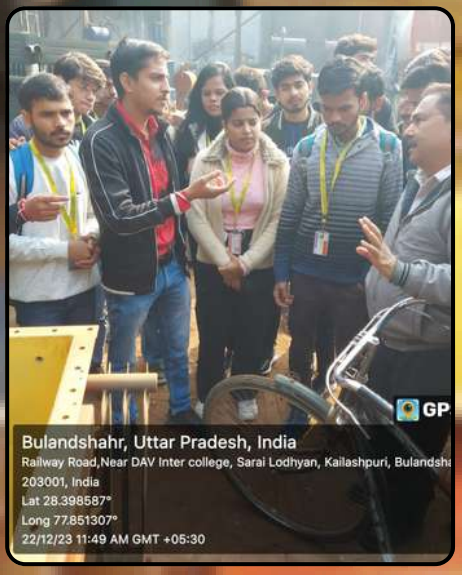
Just when we thought our visit was concluding, we were pleasantly surprised by the senior engineer and owner's presence. They offered insights into the company's market position and engaged us in a discussion about our observations from the visit. Furthermore, they demonstrated the rigorous testing each transformer undergoes before shipment.

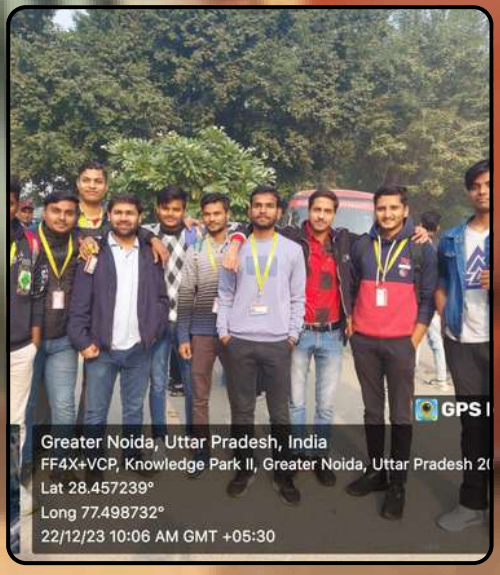


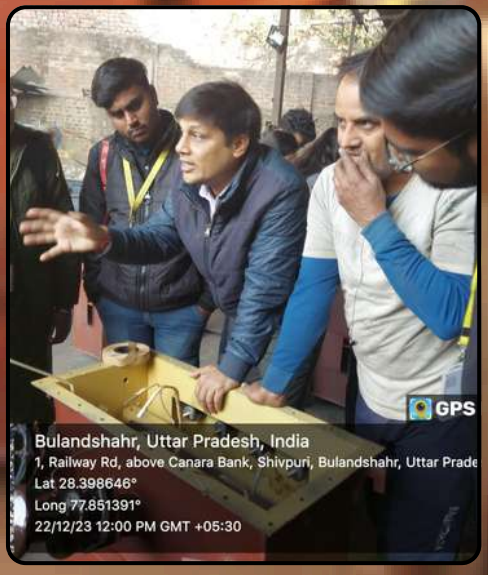
The visit was an overwhelmingly informative and grounding experience.

The trip broadened our perspective and knowledge, and we are thankful to our Head of Department for organizing it. We extend our gratitude to Dinesh for his invaluable guidance and support, which were crucial for the trip's success. Additionally, we appreciate Sarvoach Pvt Ltd for their hospitality and the opportunity to observe some of the finest machinery, as well as for engaging with our interests and questions.

An Enlightening Trip To Bulandshar...







RENEWABLE ENERGY INDIA EXPO OCT2023

The Renewable Energy India Expo, widely known as REI, marked its 16th anniversary of collaboration with the industry in October 2023. REI stands out as Asia's premier B2B expo, offering a comprehensive platform for domestic and international manufacturers, traders, buyers, and professionals within the renewable energy sector. The expo specializes in Solar Energy, Wind Energy, Bio-Energy, Energy Storage, Electric Vehicles, and charging infrastructure. The upcoming 17th edition of the REI Expo, scheduled for September 3-5, 2024, is poised to draw in excess of 800 exhibitors, 40,000 trade visitors, and distinguished policy-makers, decision-makers, influencers, technical experts, and professionals.

Participation in this event presents an unparalleled opportunity to showcase your brand to a vast audience of over 40,000 visitors and more than 700 exhibitors. The REI Expo 2023 is a highly anticipated event, spotlighting the latest innovations in solar, wind, biomass/fuel, energy efficiency, and energy storage within the burgeoning renewable energy sector.

This exclusive exhibition is not merely a platform for networking with top professionals and respected scientists; it is also a gateway to potentially exponential growth for your organization in the fast-growing renewable energy market. Seize this opportunity to invest in the future and play a pivotal role in the renewable energy revolution.

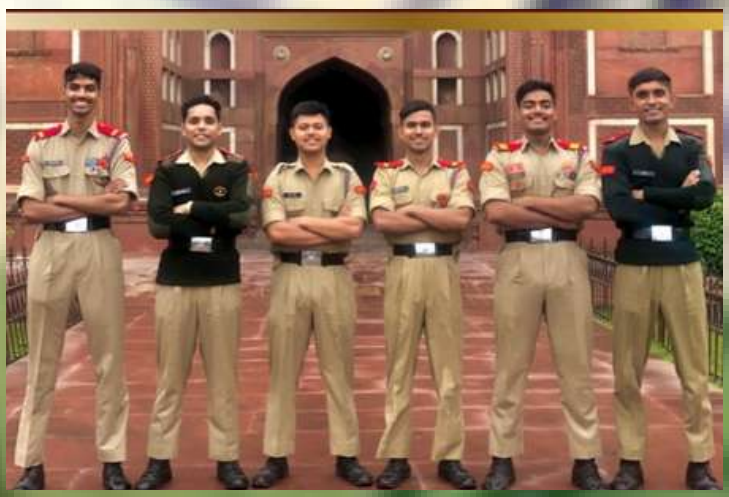
VISIT TO RENEWABLE ENERGY INDIA EXPO

With immense pride the Electrical Engineering Department would like to congratulate Udit Saxena for showing immense talent and calibre at NCC camps

Advanced Leadership Camp

Sgt. Udit Saxena

"THE REPRESENTATIVES FROM NCC, ALONG WITH CADETS FROM THE DELHI & UTTAR PRADESH DIRECTORATE OF NCC, WERE PARTICIPANTS IN ALC-IV HELD AT AGRA."



ADVANCE LEADERSHIP CAMP

An advanced leadership camp is an exhilarating journey. It pushes boundaries, challenges perspectives, and fosters growth through immersive activities. Engaging with diverse minds and perspectives, it refines leadership skills, nurtures teamwork, and sharpens decision-making abilities. The experience encourages stepping outside comfort zones, embracing challenges, and learning from setbacks. It's a transformative space where individuals gain profound insights, build lasting connections, and leave equipped with a renewed sense of purpose, fortified leadership capabilities, and a network of like-minded individuals ready to make an impact.

~ SGT. UDIT SAXENA

Our heartiest Congratulations to your great success,

ADVANCE LEADERSHIP CAMP-IV AGRA-2023

CERTIFICATE OF PARTICIPATION

ALC - IV (AGRA)- 02 NOV TO 30 NOV 2023

This is to certify that Regt. No. DL/22/SDA/283836 Rank CDT
Name Udit Saxena Unit 2DBN
Group HQ DELHI 'B' NCC Directorate DELHI participated and completed Advance Leadership Camp - IV (AGRA) - 2023 held at Anand Engineering College, Keetham, Agra, conducted by NCC GP HQ Agra under the aegis of NCC Dte Uttar Pradesh, Lucknow. His/Her conduct during the Camp has been Satisfactory / Good / Very Good / Exemplary.

Place : Agra
Date : 30 NOV 2023

Camp Commandent ALC
Camp Comdt
NCC Group HQ
Agra

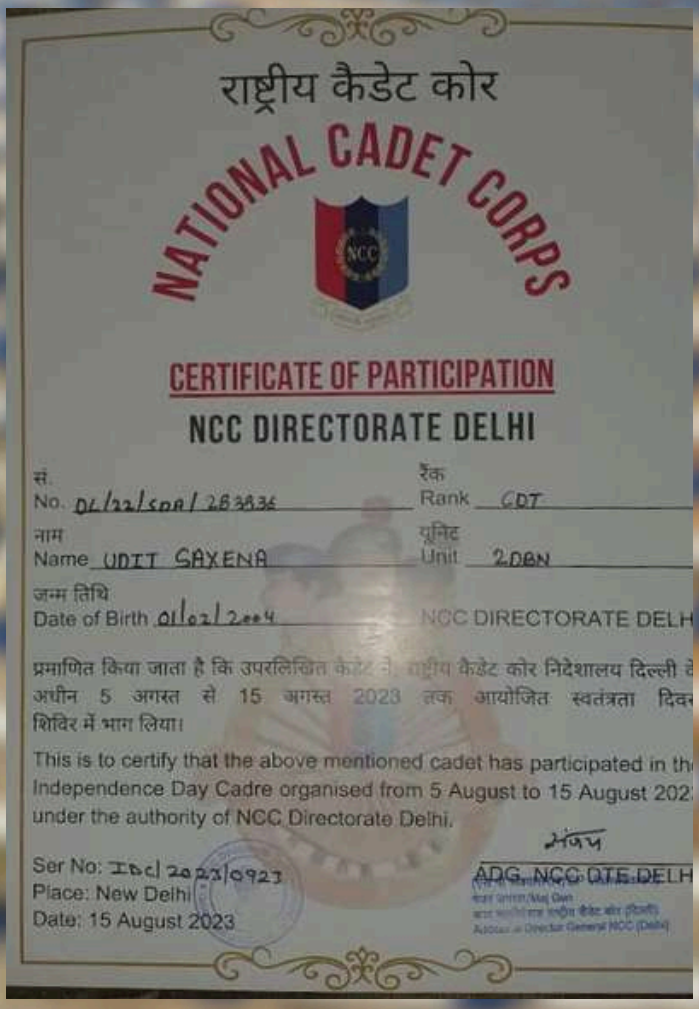
प्रमाण-पत्र

प्रमाणित किया जाता है कि .....
एन.सी.सी. निदेशालय के .....
ने दिल्ली में 15 अगस्त, 2023 को लाल किले पर आयोजित स्वतंत्रता दिवस समारोह के अवसर पर देश भक्ति के सामूहिक गान एवं राष्ट्रीय गान में भाग लिया।

निदेशक (समारोह)

Certificate

Certified that DL/22/SDA/283836 CDT
UDIT SAXENA of 2DBN
DELHI N.C.C. Directorate participated in the choir singing of patriotic songs and the National Anthem on the occasion of the Independence Day Ceremony at Red Fort on 15th August, 2023.



राष्ट्रीय कैडेट कोर

NATIONAL CADET CORPS

CERTIFICATE OF PARTICIPATION

NCC DIRECTORATE DELHI

सं. No. DL/22/SDA/283836
रैंक Rank CDT
नाम Name UDIT SAXENA
यूनिट Unit 2DBN
जन्म तिथि Date of Birth 01/02/2004
NCC DIRECTORATE DELH

प्रमाणित किया जाता है कि उपरलिखित कैडेट ने राष्ट्रीय कैडेट कोर निदेशालय दिल्ली के अधीन 5 अगस्त से 15 अगस्त 2023 तक आयोजित स्वतंत्रता दिवस शिविर में भाग लिया।

This is to certify that the above mentioned cadet has participated in the Independence Day Cadre organised from 5 August to 15 August 2023 under the authority of NCC Directorate Delhi.

Ser No: Ind/2023/0923
Place: New Delhi
Date: 15 August 2023

ADG, NCC DTE DELHI

Truly proud of your accomplishments

Vaibhav Ujjwal a Meritorious Student represented our department and college in debate competition and B plan and secured
2nd and 1st rank respectively.

Truly proud of your accomplishments

Excellence in the field of academics by our students

Galgotias College of Engineering & Technology
Department of Electrical Engineering

Second Year (Batch 2025)

Shashwat Chaudhary
SGPA 8.91

Ashish Kumar Yadav
SGPA 8.32

Galgotias College of Engineering & Technology
Department of Electrical Engineering

Third Year (Batch 2024)

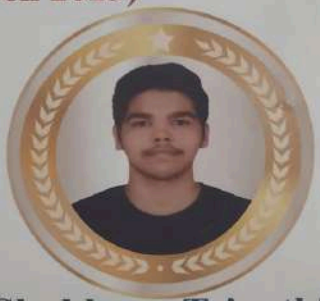
Aditya Sagar
SGPA 8.82

Abhinav Tripathi
SGPA 8.68

Galgotias College of Engineering & Technology
Department of Electrical Engineering

Final Year (Batch 2023)

Jatin Sharma
SGPA 9.33
1st Division with Distinction



Shubhang Tripathi
SGPA 9.17
1st Division with Distinction

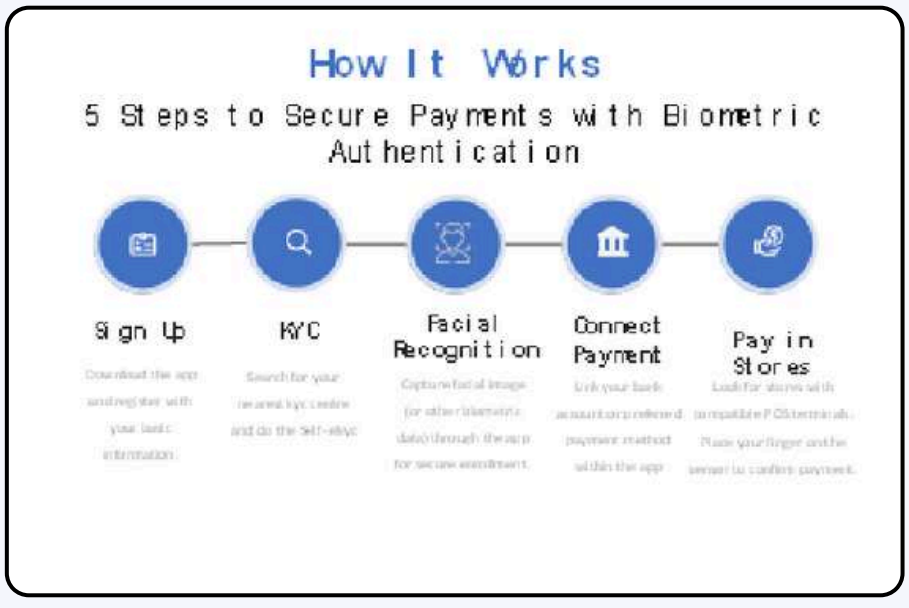
INGENIOUS IDEAS AND WELL-ACCOMPLISHED PROJECTS BY STUDENTS OF ELECTRICAL ENGINEERING

Project Title 1: 2-D Biometric Payments System

Students Name: Aditya Raj, Daivanshu Saxena, Shipra Singh, Shivangi Singh, Vaibhav Ujjwal

Abstract:

To preserve the identity of users in the digital payments landscape which is fast developing,a strong security solution is required. A valid user verification is easily viewed as a perfectfit by Facial recognition because it utilizes an individual's distinctive facial characteristics and therefore provides secure and easy access to systems. The examples of traditional ways such as codes or personal identification numbers are not very efficient forthe validation purposes of a user due to problems like forgetfulness, phishing, or sharing.



Improved data security is provided by the systems that use Facial Recognition Technology and is more robust and easier to use. Authentication acts as the foundation or fundamental concept of information security; which is a way for providing authorized access and protecting sensitive information or data. Highly developed algorithms such as Facial Recognition are used for such types of authentication to enable systems to accurately identify their users which prevents unauthorized access.

. And this also removes any risk related to stolen or lost passwords or hacked PINs which affects the financial stability of the user. The application of Facial Recognition technology in digital payment systems is examined in this report. By utilizing unique features present on people's faces as identities, Facial Recognition enhances security unlike normal methods which are used by many people

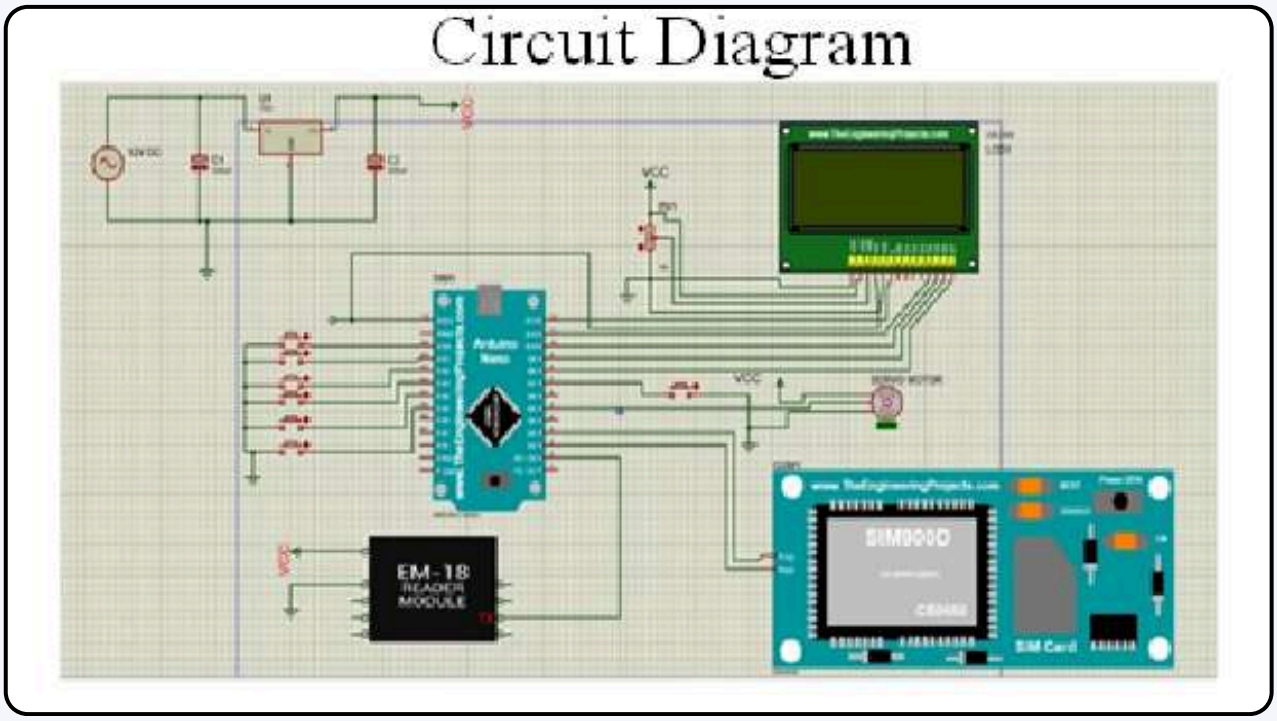
Project Title 2: IoT Based Medication Dispensing Machine for Healthcare Enhancement

Students Name: Aditya Sagar, Akash Yadav, Ankit Yadav,Keshant

Abstract:

Medicine dispensing machines have become indispensable tools in both rural and urban healthcare environments. These sophisticated systems are designed with a cutting-edge digital interface that mandates Aadhaar card authentication via GSM technology. This requirement enables the seamless retrieval of a patient's historical and medical records, ensuring that healthcare providers have immediate access to comprehensive patient information. The dispensation of medications is managed with exceptional efficiency, thanks to the GSM technology that facilitates real-time transmission of information.

This ensures that all data regarding the dispensed drugs is accurate and promptly updated, thereby enhancing the reliability of the system. To further improve accessibility, particularly for individuals who may not be digitally literate, these machines feature disease-specific symbols. This intuitive design allows users to easily select the appropriate icons to dispense their required medication. Once an icon is selected, a roller mechanism is activated, which automatically administers the correct dosage of the medication. This automation not only simplifies the process for the user but also ensures precision in dosage administration.



In addition, the integration of a voice processor significantly elevates the user experience. This feature provides pre-approved audio announcements about the drugs being dispensed, offering clear and understandable information to the user. This is especially beneficial for users who may have difficulty reading or understanding written instructions. The holistic approach embodied by these medicine dispensing machines not only streamlines the medication access process but also standardizes it, delivering numerous socio-economic benefits.

By incorporating advanced technologies, these systems strive to make healthcare services more accessible and user-friendly for all demographics. The innovative accessibility features and the integration of voice data are poised to revolutionize the healthcare industry, making it more efficient, inclusive, and capable of meeting the diverse needs of the population. The potential for these advancements to transform healthcare delivery is immense, promising a future where medical services are within reach for everyone, regardless of their location or level of digital literacy.

CREATIVE SECTION

प्रियालाल जू से प्रेम का अनुरोध

तरसत जिन्ह नैना देखन को,
तिन्ह ढोलत ब्रज भूमि ,
धन्य धन्य ब्रज भूमि पावनी,
धन्य वृंदावन धाम तिन्ह विचरत संग प्रिया जू प्यारो श्याम।
नूपुर मधुर कलरव करत,
जब लजकत चलत कमरधनी करत रसमय गान,
ऐसे प्रीतम की बांकी छवि पर नित नित जाऊ बलिहार ,
किंतु बांको चित्त तब बसे जब वाम खड़ी श्री लाड़ली जू महराज ।।
प्रिया लाल जू चंद्र चित्त चक्षु चकोर,
नित हिय ठाकुर ठकुरानी के दर्शन को तरसे,
जलत वियोग के दवानल में ,
मिलू तो देऊ अश्रू से पंद पंकज पखार।।
हो अगर प्रसन्न दास पर तो दे दो दरस तुमहार,
नित चिंतन भजन ,करूँ तुम्हार यश गान,
ना तो धूरा ब्रज की किजो,
चूमू नित चरण तुम्हार,
चूमू नित चरण तुम्हार।।

by - Gauri sharma

जननी

ललाम आनन पर वेदना सा छाया था,
जैसे चंद्रमाँ की काली घटाओं ने छुपाया था,
आँखें ओझल हृदय मे पीर थी,
वर्तमान में किसी अपने के घाव गंभीर थे।

देखकर मुझको वह ममता की मूरत बोली,
बनकर मैने यशोदा तुम सब को पाला है,
निर्मम ऋतु में तपस्या कर जीवनदान तुमको दे डाला है,
अतीत बनाकर अपना मुझे कही भूल जाते हो।

अपनी आकांक्षाओं से निर्मम होकर मुझे कही दूर छोड़ जाते हो,
जो यहाँ रह जाते हैं वह मुझसे से चोरी कर कर खाते हैं ,
लेकीन में इन्हें छोड नही सकती, ममता के बंधन तोड़ नही सकती ।
दुनीया जीत कर मैं अपने बच्चों से हार जाती हूँ।

एक दिन जमाने के गलयारों में मुझे तू भी कही छोड़ जायेगा,
बस उतना कहकर माँ सिक्क पड़ी,
माई कि हालत देखकर मेरा धीरज डोल गया,
लहू मेरा गरम अंगारों सा खोल गया।

सुनो माई,
तेरे आँसू का कर्जा में उपने कतरे- कतरे से चुकायूँगा ,
कह तो दे माँ मैं यू हि तेरे चरणों में न्योछावर हो जाऊँगा,
मेरे अंदर के राम जगा में अपने मन के रावण को मार गिराउँगा,
घोर तपस्या कर मैं तेरे वैभव को लौटाऊंगा।

तन मेरा तिरंगा हो, लहू लहु मेरा भारत हो,
मेरे मन मंदिर में, माँ, बस तेरी ही मूरत हो,
समाज को छोड़ ,जननी , मैं तेरे लिए कुछ कर दिखाऊंगा ,
अंत में तुझको पाकार, मैं धन्य धन्य हो जाऊँगा ।

सुनकर माँ का हृदय प्रेम उमंग से उमड़ गया ,
आशीर्वाद कि जगह लेकिन अर्जुन के तीरों की बौछार हुई ,
राहे तू सोचता है वह आसान नहीं,
सर पर छत, पेट में भोजन नही कितनी दूर तक तू जायेगा ?

असफलता कदम-कदम पर होगी।
तुझे अपने लोग ही नोच नोच कर खाएँगे ,
समय की मार से तू भी टूट जायेगा,
तब तू भी मुझसे रूठ जायेगा, मुझसे कहीं दूर छूटजायेगा।

माते मुझे तेरी दोहाई है ,
मै तेरा श्रवण कहलाऊगाँ,
मंजील अगर तू होगी, तो उत्साह से आगे मैं बढ़ जाऊँगा।
मैया मैं तेरा दर्पण बन जाऊंगा,
तेरी लिए कष्ट क्या, मृत्यु भी सह जाऊँगा।

जब में तोड़ा रूट जाऊँ , जब मे तोड़ा टूट जाऊँ ,
तो कहानी अपने वीरों की सुना देना ,
मुझको थोड़ी याद अपने अतीत की दिला देना,
माते मैं तेरे शेखर का चंद्र बन जाऊंगा,
मैं तेरा लाड़ला लाल कहलाऊँगा ।

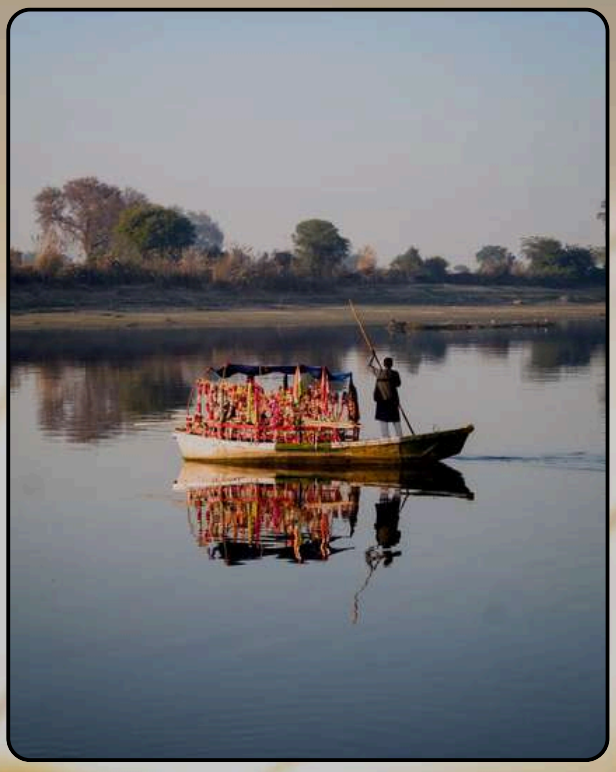
जब भूख लेगेगी मुझको, तेरी बातो से भूख मिटालूँगा ,
सर पर छत न हो तो अपने आँचल से ढक लेना ,
आँच भी आए मुझपर तो तू काली का रूप रख लेना।
गर्व हो मुझ पर तो मुझे अपने माथे का चंदन बना लेना।

अधरों पर तेरे मैं मुस्कान बनकर चमकूँगा ,
तुझे सोच-सोच असफलता से सफलता कि ओर बड़ जाऊँगा .
सफल तो मैं तब होऊगों जब मै भारत -भारत कहलाऊंगा।
सफल तो मैं तब होऊगों जब मै भारत -भारत कहलाऊंगा।

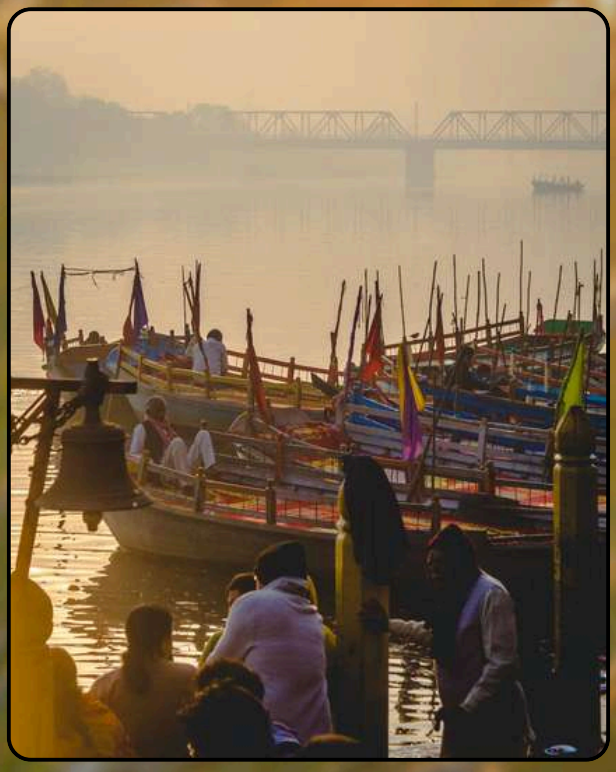
by - Gauri Sharma

Captured Brilliance

NATRAAJ - THE COSMIC DANCER



GHATS OF KAILASH MANDIR



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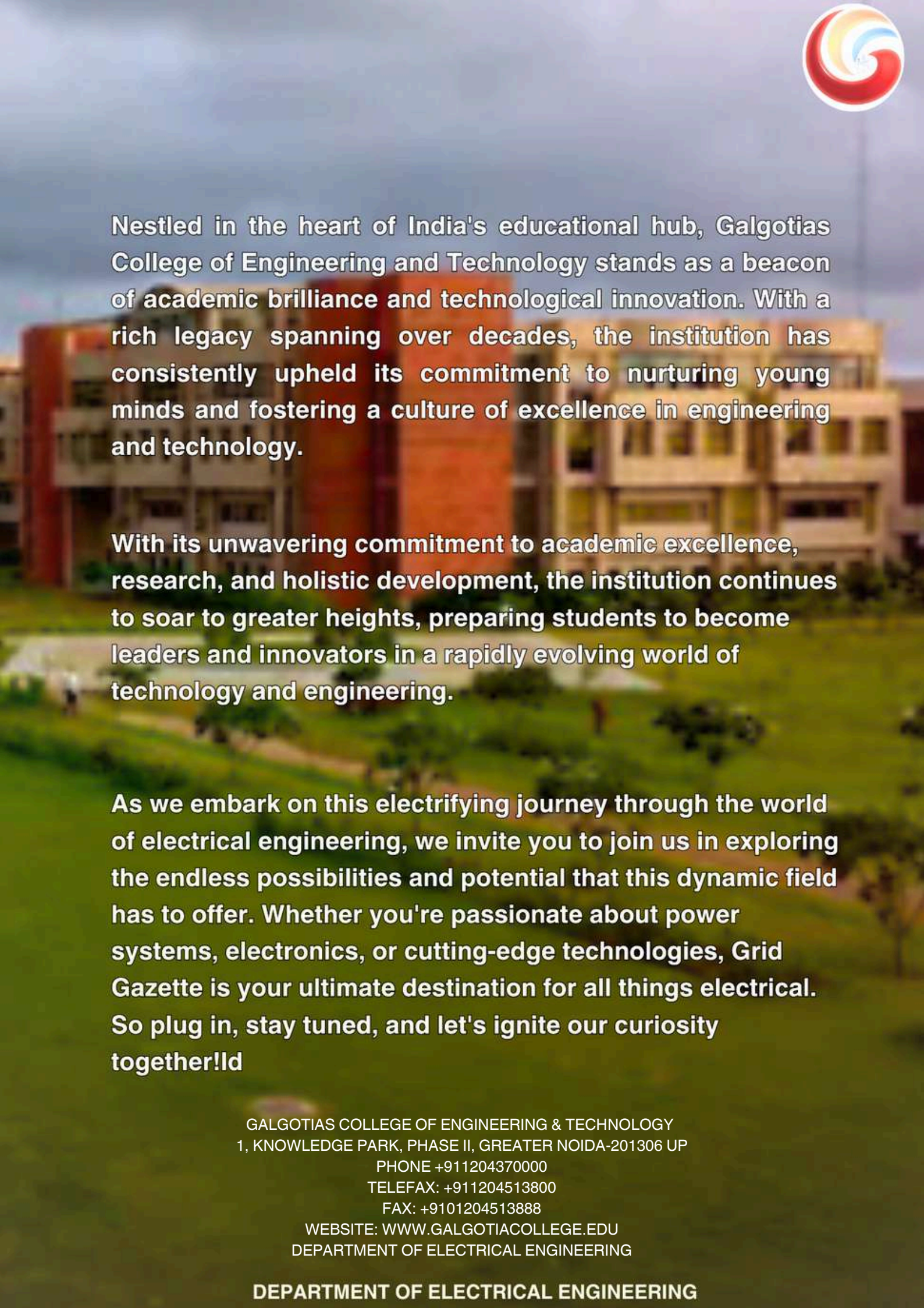
ELECTRICAL ENGINEERING STUDENT ASSOCIATION
WE EMPOWER THE WORLD

EESA also referred to as the Electrical Engineering Student Association has completed 6 years. EESA is the dedicated society of the Electrical Engineering Department and in the past expedition of our society, we have pushed our members off their limits and showed them the right guidance to show the skills required to achieve the goals they had the potential for. In addition to that we every year launch an annual magazine marking the extra-curricular done by the members of our esteemed society throughout the year



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With its unwavering commitment to academic excellence, research, and holistic development, the institution continues to soar to greater heights, preparing students to become leaders and innovators in a rapidly evolving world of technology and engineering.

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