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# THE SPARK

*Igniting Innovations*

DEPARTMENT OF  
ELECTRICAL AND ELECTRONICS  
ENGINEERING

JULY  
2025



UNIVERSITY COLLEGE OF ENGINEERING KAKINADA (A)  
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

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# ACHIEVEMENTS



- Prof. R. Srinivasa Rao, Professor of Electrical and Electronics Engineering, UCEK, has been appointed as Registrar (I/C), JNTUK Kakinada, in July 2025.

- Dr. N. Sumathi Associate professor have been appointed has Head of Renewable Energy Sources, Institute of Science and Technology, JNTUK in July 2025



*Congratulations!*

For getting placed in  
**Endava Solutions**



**P. Rohit Sai Teja**  
22021A0229  
CTC : 5LPA



**T. Sai Govind Krishna**  
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**M. Jai Surya**  
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## INTERNSHIPS M.Tech

### High Voltage Engineering



- MOSAM SANDEEP KUMAR, BYLAPUDI NARAYANARAO studying **Master of Technology-EEE (High Voltage Engineering) - Semester 1- 2**, in University College of Engineering Kakinada(A), JNTUK has done INTERNSHIP in Bharat Heavy Electricals Limited( BHEL) -Heavy Plates and Vessels Plant (HPVP), Visakhapatnam from 28-04-2025 to 21-06-2025.



- A.BHAVANI PRASAD (24021D0801) , K. SATHVIK BENAGAL (24021D0810) **Master of Technology-EEE (High Voltage Engineering) - Semester 1-2**, completed an internship at RISHA POWER SOLUTION & CONSTRUCTIONS they done work including electrical MCC, PCC, and APFC panel installation and upgradation works, He also participated in activities related to Power Quality and Harmonic Study, Thermography, Earth Resistance Value Testing, Lux Level Testing, and RCCB & ELCB testing electrical system design, equipment testing, maintenance, and power systems analysis from from April 28, 2025, to June 21, 2025.

# INTERNSHIPS M.Tech

## Advance Electrical Power Systems (AEPS)



- KARRI SUNANDA(24021D3401), KADAVALA ANITHA VEERA INDU (24021D3404), KADIRI VIJAY KUMAR REDDY(24021D3405), KARAGANA VENKATA RAM PRASAD (24021D3407), Marri Avinash (24021D3408), PATTA DIVYASRI(24021D3413)

**Master of Technology-EEE (Advanced Electrical Power Systems)-Semester 1-2**, UNIVERSITY COLLEGE OF ENGINEERING KAKINADA (A) J.N.T.U KAKINADA has successfully completed the internship in INDUS POWER SYSTEMS, Hyderabad from 28 APRIL '2025 to 21 JUNE '2025.



- DESAVATH HYMABA, CHINTADA PRAVALLIKA GANGA, BODDU JAHNAVI studying **Master of Technology-EEE (Advanced Electrical Power Systems)-Semester 1- 2**, in University College of Engineering Kakinada(A) JNTUK has done INTERNSHIP in BHEL-HPVP, Visakhapatnam from 28-04-2025 to 21-06-2025.



- KATUKA KARGI SHOWRYA TEJA (24021D3412) studying **Master of Technology-EEE (Advanced Electrical Power Systems)-Semester 1- 2**, has Successfully Completed Internship Programme in Physical Mode Titled "MATLAB" Organized by HMIeSS in collaboration with APSCHE from 28-04-2025 TO 21-06-2025



- SHAIK MOHAMMED HASSAIN (24021D3402) studying **Master of Technology-EEE (Advanced Electrical Power Systems)-Semester 1- 2**, has successfully completed the internship in SRI RUDRA CEMENT, Mega Industrial Hub, Koppaerthy, YSR Dist, A.P. from 28 APRIL 2025 to 21 JUNE 2025.



- BADI RAMANA (24021D3406), BONDALAPATI ANJANI KUMAR (24021D3415) studying in **Master of Technology-EEE (Advanced Electrical Power Systems)-Semester 1- 2**, has successfully completed The Internship in ERIDE E-MOBILITY COMPANY HYDERABAD T.G. from 28-04-2025 to 21-06-2025



- GUBBALA VIVEKA VENKATA JAYARAMAKRISHNA studying in **Master of Technology-EEE (Advanced Electrical Power Systems)-Semester 1- 2** has completed his internship at Rashtriya Ispat Nigam Limited-Visakhapatnam Steel Plant DISTRIBUTION NET WORK (DNW) Duration of internship/Project work: 8 Weeks (from 28-04-2025 to 21-06-2025)



- Kilari Ashutosh completed his internship on "Designing and Manufacturing of Advanced Closed Impeller". The duration of the internship was from 28-04-2025 to 21-06-2025.

## Power Electronics and Drives(PED)



- AMARLAPUDI KEERTHANANJALI, GEDELA LOKESH, SARIKI MOHAN SANTHOSH, KONA LOKESWARA REDDY, GADDALA RAJIV KALYAN KUMAR , INAPARTHI PRAVALLIKA, DADISETTY GOWTHAM SAI KARTHIK has studying Master of Technology-EEE(Power Electronics and Drives)Semester 1-2, UNIVERSITY COLLEGE OF ENGINEERING KAKINADA(A)J.N.T.U KAKINADA has successfully completed the internship in RASHTRIYA NIGAM LIMITED, Vishakapatnam from 28 APRIL 2025 to 21 JUNE 2025.

- DOODA SATYENDRA KUMAR(24021D5203), **Master of Technology-EEE (Power Electronics and Drives)-Semester 1-2**, UNIVERSITY COLLEGE OF ENGINEERING KAKINADA (A) J.N.T.U KAKINADA has successfully completed the internship in SRINIVASA ELECTRICALS, Kakinada from 28 APRIL 2025 to 21 JUNE 2025.



- SRAVANAM KABUGRACE (24021D520), MOHAMMAD GOUSE MOHIDDIN (24021D5208), NARRA AJAY (24021D5210), VANKA SREEJA (24021D5211), GUTTULA SHANMUKHA(24021D5213) Studying in Master of Technology-EEE(Power Electronics and Drives)Semester 1-2, UNIVERSITY COLLEGE OF ENGINEERING KAKINADA(A)J.N.T.U KAKINADA has successfully completed the internship in NSPH,NAGARJUNA SAGAR, Telengana from 28 APRIL 2025 to 21 JUNE 2025.

- VITHANALA SUMITH VENKAT AJAY, **Master of Technology-EEE (Power Electronics and Drives)-Semester 1-2**, UNIVERSITY COLLEGE OF ENGINEERING KAKINADA (A) J.N.T.U KAKINADA has successfully completed the internship in MSME Technology Centre, Visakhapatnam, from 28 APRIL 2025 to 21 JUNE 2025.

# INTERNSHIPS B.Tech

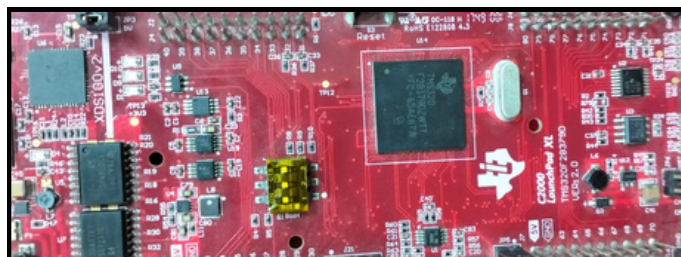


- Sahil (22021A0251) has successfully completed his internship at Coromandel International Pvt. Ltd., Kakinada, where he was exposed to the working of industrial electrical systems in a large-scale fertilizer plant. The training included practical learning about transformers, motors, drives, power distribution, and automation through PLCs and SCADA. He also gained knowledge of preventive maintenance, energy management, and industrial safety practices.

- B. Thulasi (22021A0248) successfully completed her 1 month internship at Steel Exchange India Ltd., L. Kota, Vizianagaram, where she was exposed to the functioning of industrial electrical systems in a steel manufacturing plant.



- Ch.Pragya (23021A0217) and G. Naveen Sai (23021A0224) has successfully completed thier internship at the Indian Institute of Technology, Bhubaneswar (IIT BBS), situated at Argul, Jatni in Odisha. The four-week internship, from 13th June 2025 to 10th July 2025, They worked on Texas Instruments (TI) C2000 LaunchPad XL development kit. Specifically, it is the TMS320F28379D LaunchPad XL (version 2.0) a development board for experimenting with real-time digital control systems, especially useful for power electronics and motor control projects. Under the guidance of Dr. Srinivas Bhaskar Karanki, Associate Professor, School of Electrical Sciences



**TMS320F28379D**



- L.Praneetha (22021A0216), Mantri Jai Surya (22021A0221), B.B.Deepika(22021A0222), G.Poornima (22021A0228), V.RamaKrishna (22021A0232), A.Meghana (22021A0236), G.Meghana (22021A0238), T.Usha Sree (22021A0241), J.Samson Naik(22021A0243), M.Tirupthai (22021A0244), P.Pavan Subhash (22021A0245), S.Moulica Revu(22021A0249), B.Kavya(22021A0250) successfully completed their 4 week internship at RINL, Visakhapatnam

# INTERNSHIPS

## Variations in an Industry Product

During my 4 weeks internship Program in Amara Raja E&M limited which is considered to be one of the top battery companies in India, Amara Raja Batteries Energy and mobility Limited is one of the most respected and trusted battery manufacturers in India, known for its innovation-driven approach and world-class production standards. Established in 1985 by Dr. Ramachandra N Galla, the brand's instant popularity was a testament to the company's commitment to quality, innovation, and customer satisfaction. AMARON quickly became a household name and helped redefine the Indian battery landscape. Headquartered in Tirupati, Andhra Pradesh, ARBL has its core manufacturing facility in Karakambadi.



In today's fast-paced and technology-driven world, batteries have become essential components of our daily lives. From powering small electronics like smartphones and laptops to serving as the backbone of electric vehicles and renewable energy storage systems, batteries play a vital role in ensuring uninterrupted power supply and mobility. In simple terms a battery is an electrochemical device that stores chemical energy and converts it into electrical energy when needed. This property makes it an indispensable part of systems where grid electricity is unavailable, unreliable, or impractical.

AMARAJA in Karakambadi has three major divisions they are: Industrial Battery Division (IBD), Automotive Battery Division (ABD), Small Battery Division (SBD)

I got chance to work in IBD, LVRLA plant (Large Valve Regulated Lead acid) with QPC team under Mr. Koteswariah.K (LVRLA Quality head). I decided to do my project on the capacity variations of the batteries with the title "Analysis of Capacity Variations in Industrial Lead-Acid Batteries in a Manufacturing Plant", in basic no two products manufactured in an industry are exactly the same there is certain amount of variation observed between any two products and talking about variations basically there are we can classify variations into two types in an industry 1. Chance Variation (Random Variation) and 2. Assignable Variation (Special Cause Variation). Chance Variation These are minor, natural fluctuations that occur due to unavoidable causes like ambient conditions, slight differences in material properties they cannot be fully eliminated but can be reduced through process standardization and automation, while coming to Assignable Variation is something where our job begins they are significant and traceable deviations caused by identifiable issues such as:

Equipment malfunction or human error, and main job of the QPC team is to reduce the variation as much as possible a true engineer is said to identify the assignable causes and try to find a solution to that one, through my experience in the industry errors can only be occurred because man, machine mistakes and one should identify the errors and eliminate them and at last if you people get a chance to work with an esteemed industry, don't miss the opportunity and I hope this helps someone in understanding how a project internship works.



**P. GOVIND SAIRAM SATHWIK,**  
IV B.Tech  
22021A0215

# GAAFET

The Transistor Reinvented for the Nano Age

## Dr. Fujio Masuoka

On a quiet day in Singapore, Dr. Fujio Masuoka — already known worldwide as the father of flash memory — officially announced the launch of Unisantis Electronics. Having stepped away from Toshiba, he unveiled a bold vision: a transistor unlike any the industry had seen before. Masuoka described his “Surrounding Gate Transistor,” later called the Gate-All-Around FET (GAAFET), a design where the silicon channel would be wrapped on all sides by the gate

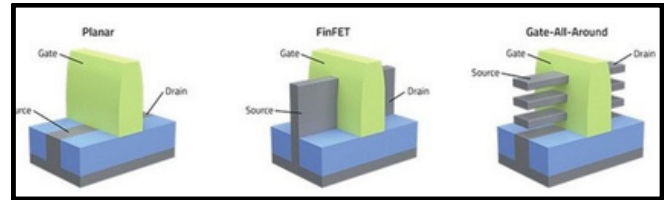


Credits: all about circuits

At the time, the semi-conductor industry was celebrating the dominance of FinFETs, hailed as the saviors of scaling. Many experts dismissed Masuoka’s prediction as premature, even speculative. Yet he warned: without reinventing transistor geometry, Moore’s Law would face an abrupt wall. His announcement in 2004 planted the first public seed of what is now seen as the next great shift in nanoscale logic.

## The Technical Leap

To appreciate the leap, consider the principle: in a FinFET, the gate controls current on three sides of a raised “fin” of silicon. But as channels shrink below 5nm, leakage grows and control weakens. GAAFET resolves this by encasing the channel entirely, like a hand gripping a wire from every angle. This improves electrostatic control, suppresses leakage, and allows narrower channels stacked vertically. Industry implementation has followed. Samsung introduced the world’s first 3nm GAA chips in 2022 using nanosheet structures. Intel has branded its approach “RibbonFET,” targeted for the 18A node (2024). TSMC is preparing to adopt GAAFET at its 2nm process in 2025–26. Each design pursues the same core goal: higher drive current, better power efficiency, and scalability into the angstrom era.

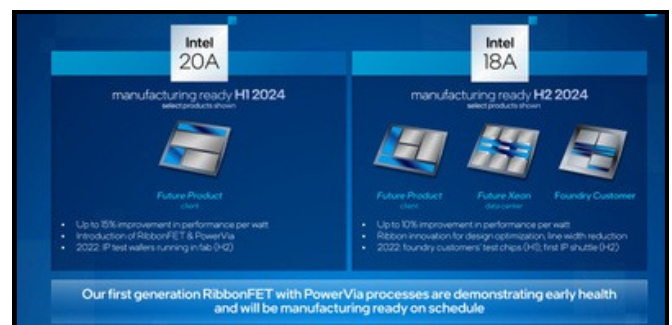


credits :semiconductor engineering

Another key strength of GAAFETs lies in their tunability. Engineers can stack multiple nanosheets of different widths, like arranging layers in a sandwich, to balance speed and power. Wider sheets allow higher drive current for performance-hungry processors, while narrower sheets save energy in mobile chips. This flexibility, unthinkable in rigid FinFET structures, makes GAAFETs a universal solution — adaptable across smartphones, AI accelerators, and high-performance computing.

## Timeline of GAAFET

- 2002–2004: Early academic demonstrations; Unisantis founded by Masuoka.
- 2010s: Widespread research prototypes in universities and R&D labs.
- 2022: Samsung begins mass production at 3nm GAA- A multi-bridge channel FET (MBCFET)
- 2024: Intel aims for RibbonFET in 18A process.
- 2025–26: TSMC prepares GAA at 18A.
- Beyond 2030: Industry roadmaps align around GAAFET as the successor to FinFET



credits :extremetech

Two decades later, the world is watching Masuoka’s quiet claim materialize. What was once an obscure announcement has transformed into tangible devices running inside smartphones, AI accelerators, and cloud servers. The discussion that began in Singapore is now embodied in every watt of efficiency squeezed from today’s chips. The GAAFET story proves that bold visions, however doubted at first, can redraw the trajectory of an entire industry.

Written by:

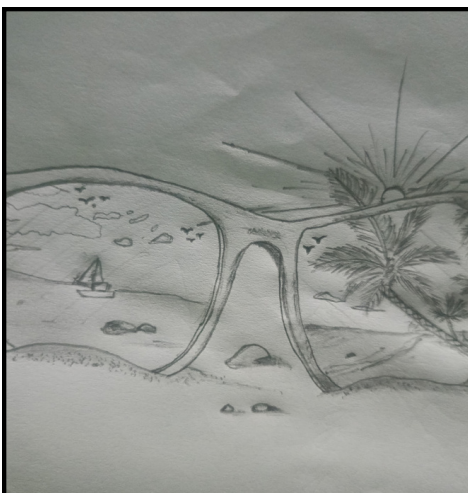
DURISETI RAJ GOPAL SAI  
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# EVENTS AND WORKSHOPS



- **Dr.K. Ravindra** professor and Director IQAC, **Smt. J. Jyothsna** Assistant professor(c), **Sri. N. Sagar Teja** Assistant professor(c) have attended IEEE Power Electronics Society sponsored Ph.D. Summer School on “Designing Reliable Control Circuits for Power Converters” between July 19th – July 23th , 2025 at IIT Hyderabad. Resource persons are **Dr. Rupesh Wandhare, Associate Professor**, Dept. of Electrical Engineering, Distinguished Guest Lecturer **Prof. Sanjib Kumar Panda**, Dept. of Electrical & Computer Engineering, National University of Singapore.
- Mr. Venkata Narayana Lakamana, Ms .Vijaya Bhanu Karri and Dr. Ajay Babu Bathula Assistant Professor (Contract) from the **University College of Engineering Kakinada, JNTUK**, participated in a 40-hour Online Faculty Development Program on “Emerging Trends in DC Microgrids: IoT Integration to Blockchain Technologies”. The program organized by the E & ICT Academy, NIT Warangal, in collaboration with **G. Narayanamma Institute of Technology & Science (for Women), Hyderabad**. Duration of FDP: 23rd June to 2nd July, 2025.
- All teaching faculty from EEE Dept., **University College of Engineering, Kakinada (A), JNTUK Kakinada**, participated in a 40-hour Offline Faculty Development Program on “Leveraging OBE for Continuous Quality Improvement in Engineering Education”. The program and organized by the **HUB E & ICT Academy, NIT Warangal**, in association with **Jawaharlal Nehru Technological University, Kakinada (Spoke Academy)**. Duration of FDP: 28th July to 2nd August, 2025.
- Dr. Shanmukha Naga Raju Vonteddu, University College of Engineering Kakinada (JNTUK), completed a Faculty Development Programme on “Foundations of Artificial Intelligence: Concepts, Techniques, and Applications” conducted by IIT Roorkee with GIET University, Odisha, from 9th–13th July 2025. The FDP covered fundamental AI concepts, practical tools, and emerging trends through interactive sessions and hands-on training. His active participation reflects both his dedication and the department’s commitment to advanced technological growth.

# ARTS AND CULTURALS



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B. Uday Lakshmi

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G. Lasya santhoshi

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# PHOTOGRAPHY



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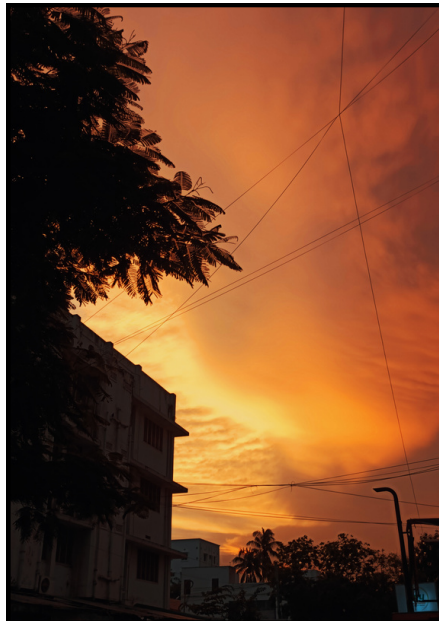
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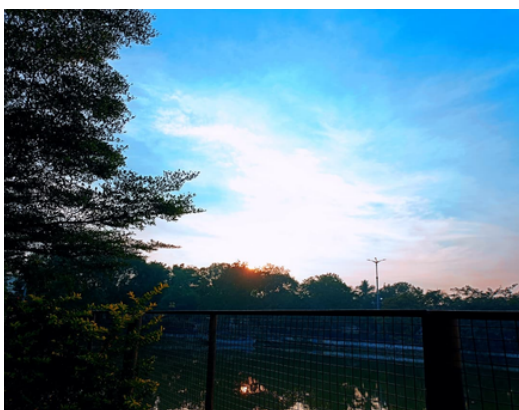
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# CREATIVE WRITING

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## MIRROR LIFE Part 2

Her texts grew shorter, her smile faded. She stopped staying back for painting. Amar was hurt and confused. He couldn't understand what had changed—until he heard from a colleague that Rama had found out his real identity and believed they were from “different worlds.”

Determined not to lose her, Amar spoke to his parents. He told them about Rama, how much she meant to him, and how she had changed his life. It took time, but they agreed to meet her. He also met her parents, who were surprised but saw the sincerity in his eyes.

Finally, Amar called Rama to the same terrace where they once sat and painted. There, Amar proposed her with a painting.

The painting portrayed two worlds within one frame. Above, a man stood surrounded by symbols of wealth and luxury, representing his rich lifestyle. Yet, in the calm waters below, his reflection transformed into a woman, radiating simplicity and contentment. Her world was humble, yet filled with happiness and peace. Together, the image contrasted riches with simplicity, showing that true beauty lies not in wealth, but in the joy of a contented heart. Even their names were reflections of each other—Amar and Rama. It wasn't written directly, but appeared only in the water's reflection, as if destiny had quietly painted her into his life.

Below the painting, a single line was written: “When mirror lives meet, they become one.” Amar turned to her and said, “You didn't just show me what life could be. You became the part I didn't know I was missing. This painting... it's us. Will you be with me, in every color, every season?”

Rama's eyes brimmed with tears. Slowly, she lifted her left hand—the one with her black band. Amar extended his right hand—the one where his black band had always rested. For years, they had unknowingly carried matching black bands on opposite hands. Now, as their fingers intertwined, the two bands finally touched—opposites uniting, completing the circle.

With a trembling smile, Rama whispered, “Yes.” Their families blessed the union, and soon, their lives truly became one—simple, colorful, and full of love.

Amar continued painting, this time with Rama always beside him—his best friend, his mirror, his forever. And on their hands, the two black bands still rested, no longer separate, but together—just like their souls.

**Mirror Life** — a story of two souls, living parallel lives, finally seeing their reflection in each other.

G. LASYA SANTOSHI  
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## Our Team,

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