





DEPARTMENT OF MECHATRONICS ENGINEERING

MECHAVERSE

Association Of Mechatronics Engineers(AME)

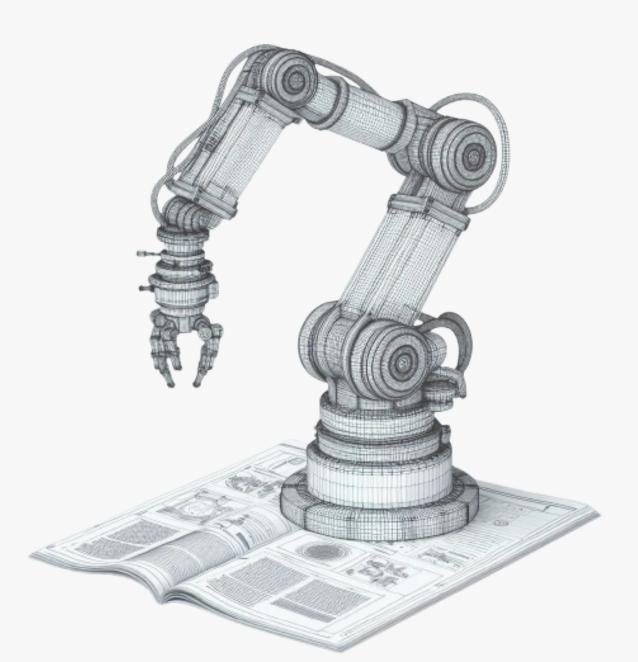
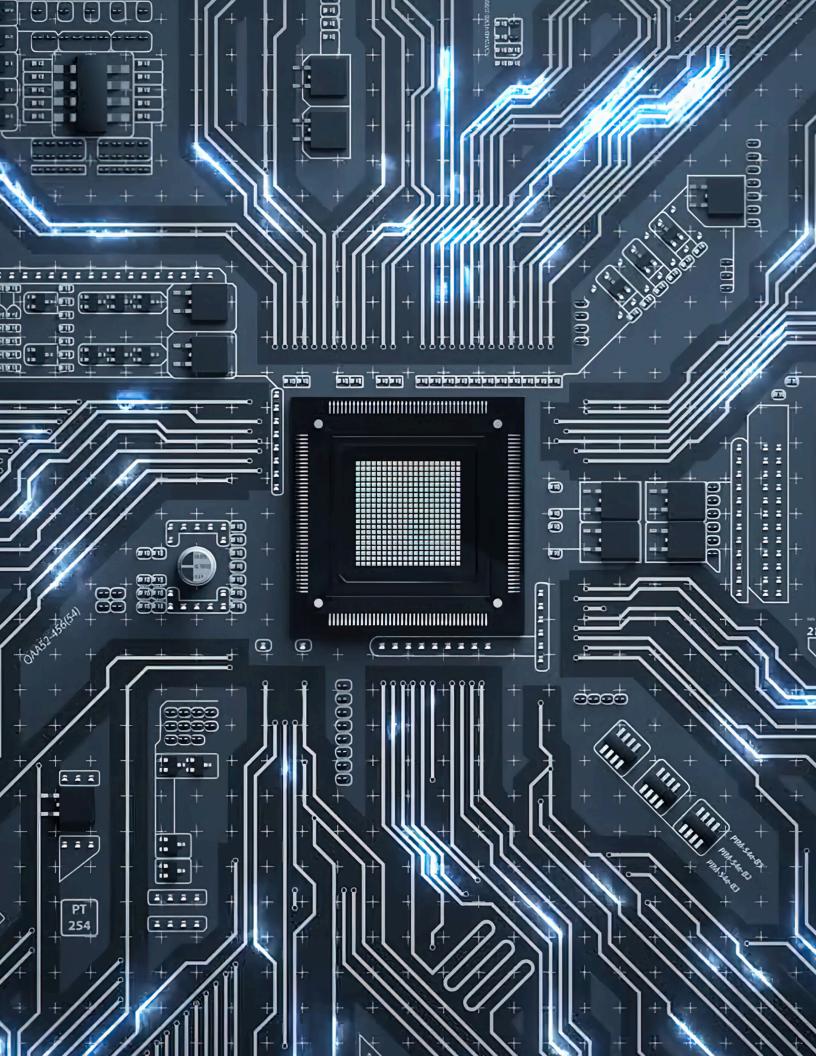


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Preface

Welcome to the second edition of the Department of Mechatronics Magazine. As we embark on this exciting journey, we invite you to delve into the vibrant world of mechatronics, where innovation converges with creativity, and technology blends seamlessly with craftsmanship.

On the further pages, you will witness various articles that narrates our department's activities followed by multiple events organized by our department and the Association of Mechatronics Engineers. Furthermore, you will be introduced to our department and its Association, Head of the Department, Convenor of the Association of Mechatronics Engineers. In this edition we will also see the placements of our students.

Our magazine also sheds light on the dedicated faculties who guide, inspire, and nurture our students' aspirations. Get to know the individuals who form the bedrock of our learning environment, fostering an atmosphere of collaboration, curiosity, and growth.

I invite you to be part of this journey as you read this magazine further. Welcome to the Department of Mechatronics, SRMIST.

Sincerely, EDITORIAL TEAM Association of Mechatronics Engineers.

About SRM



SRM Institute of Science and Technology is one of the top ranking universities in India with over 52,000 full time students and more than 3200 faculty across all 6 campuses – offering a wide range of undergraduate, postgraduate and doctoral programs in Six Faculties – Engineering & Technology, Management, Medicine & Health sciences, Science & Humanities, Law and Agricultural Sciences.

About the Department

The Department of Mechatronics Engineering at SRM Institute of Science and Technology, established in 2005 as the first private university program in India, focuses on delivering multidisciplinary skills in response to the growing demand for mechatronics driven engineers bν advancements robotics, automation, and Industry 4.0. The offers various programs department emphasizing experiential learning and is recognized for its state-of-the-art facilities and faculty. Equipped with laboratories featuring collaborative robots, autonomous mobile robots, and advanced control systems, the department supports simulation desian. analysis, and mechatronic systems. The diverse expertise of its faculty and a strong alumni network working globally in reputable organizations further contribute department's to the success.



About AME



The Association of Mechatronics Engineers (AME) at SRM University unites passionate Mechatronics students to create opportunities for their peers through events, research, and project support.

AME is organized into the following sub-domains:

- Core & Public Relations: Manages event logistics, including crowd and venue management, and promotions.
- Corporate Connect: Builds industry connections and manages communications with corporate experts.
- Editorial: Oversees official documentation and magazine design.
- Alumni Connect: Maintains relationships with department alumni.
- Social Service: Leads donation drives, awareness events, and community programs.
- Technical: Supports student projects, research, and funding efforts.

Together, these domains help foster a supportive, resourceful community for aspiring engineers.

Message from HOD

Dear Readers,

It is my pleasure to welcome you to the second edition of Mechaverse, a platform that highlights the impressive accomplishments of our Department of Mechatronics. As Head of Department, I am proud to oversee a community that is advancing engineering innovation through interdisciplinary collaboration.

In this issue, discover how our students and faculty are redefining the field through pioneering work across a wide range of mechatronics applications. we also cover the Placement details of our students after their completion of their course. I hope you find inspiration in their efforts.

Regards,

all:

Dr. Murali G HOD

Department of Mechatronics Engineering



Message from Convenor



Dear Readers,

It's my pleasure to introduce the second edition of Mechaverse. As the convenor of Association of Mechatronics the Engineers, I am proud to represent our community, which is advancing interdisciplinary innovation and excellence. This edition offers insights into the field of mechatronics, highlighting our department's accomplishments, activities, and a special focus on the details AutoDRIVE a powerful example mechatronics with integrated control systems, and decision-making algorithms.

My gratitude goes to the editorial team $\underline{\circ}$ and contributors for bringing this issue to life. Enjoy exploring the remarkable work within our department!

Regards,

Dr. K Sivanathan

Assistant Professor, SrG

Department of Mechatronics Engineering



28.09.2022 and 29.09.2022

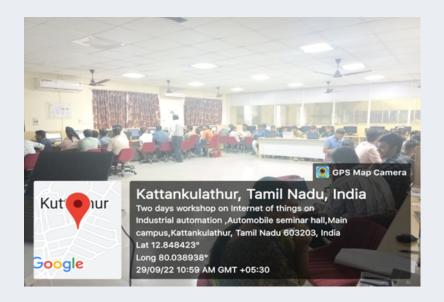
<u>Organized Two days' workshop on Internet of Things on Industrial</u> Automation

The Department of Mechatronics Engineering at SRM Institute of Science and Technology (SRMIST) organized a two-day workshop on "Internet of Things in Industrial Automation" on September 28-29, 2022, held in physical mode at the Automobile Design Lab (AU205). The workshop was convened by Dr. G. Murali, Professor and Head of the Department of Mechatronics Engineering, and coordinated by Dr. M. Santhosh Rani, Associate Professor, along with Dr. R. Gangadevi and Dr. S. Senthilraja, Assistant Professors.



The workshop began with registration on September 28 at the Automobile Seminar Hall. The first session was conducted by Mr. Mac Mohan Puthran, Senior Al Solutions Architect at Mindtree, who discussed the impact of IoT in mechatronics, covering IoT architecture, components, and their use in industrial applications, including various controllers and sensors.

The second session, led by Dr. P. Vetrivelan, Professor at VIT Chennai, focused on Artificial Intelligence (AI) and Cyber-Physical Systems (CPS) in Industry 4.0 and Industry 5.0. Dr. Vetrivelan elaborated on CPS as transformative technology managing interconnected physical and computational systems, highlighting key characteristics such as interoperability, decentralisation, and real-time capability. He also explored the synergy between AI, IoT, and CPS, providing insights into their applications in modern industry.



In the third session, Dr. G. R. Kanagachidambaresan, Research Associate Professor from Vel Tech Rangarajan Dr. Sagunthala R&D Institute, delivered a detailed presentation on two-layer PCB design and firmware programming for IoT-based front-end boards. The discussion encompassed hardware design using microcontrollers and platforms like RPi, Odroid, and BeagleBone, and explored technologies such as XBEE, MQTT, and Python programming for IoT devices, as well as Pixhawk communication with UAVs.

The final session on September 29 provided hands-on training, where participants gained practical experience interfacing with LDR, ultrasonic sensors, temperature/humidity sensors, and controlling servo motors and DC motors using Node MCU and Bluetooth modules.

The workshop provided a comprehensive learning experience, blending theoretical insights with practical training, and received positive feedback from the participants for its well-rounded approach to loT and its industrial applications.

Tech Snippet #01 - Robotic Exoskeletons:

Research into robotic exoskeletons is gaining momentum, with applications in rehabilitation and assistance for mobility-impaired individuals. These systems use mechatronic actuators and sensors to enhance human strength and endurance, providing support during physical therapy and everyday tasks.

27.08.2022 to 15.10.2022

Value added course on Automotive Mechatronics

The Department of Mechatronics Engineering at SRM Institute of Science and Technology (SRMIST), Kattankulathur, organised a "Value-Added Course on Automotive Mechatronics" for undergraduate, postgraduate students, and research scholars under the School of Mechanical Engineering. The course was conducted in physical mode from August 27 to October 15, 2022, at the Automotive Design Lab and Vehicle Dynamics Lab of the Automobile Department, Main Campus, SRMIST.

Course Overview:

The course featured 30 contact hours, consisting of 40% theory and 60% practical sessions. It was the first value-added course introduced within the School of Mechanical Engineering, designed to integrate the mechanical, electrical, electronics, and mechatronics aspects used in electric vehicles. Unlike elective subjects that cover individual components, this course offered a comprehensive understanding of electric vehicle technology, benefiting students from different engineering disciplines interested in this field.



Tech Snippet #02 - AI Powered Robot in Manufacturing:

integration of Al with The robotics is redefining manufacturing processes. Collaborative robots, or cobots, equipped with machine learning algorithms are now able to adapt changes in the to optimizing production line, workflow and improving efficiency while working alongside human operators.

The course content was structured to provide an overall understanding of electric vehicle technology, bridging gaps in the curriculum and enhancing students' employability and prospects for higher studies. Approval was obtained from the Dean of CET before the course commenced, and it contributed significantly to criterion 1 of NAAC accreditation.





The course announcement generated an overwhelming response, with 116 students expressing interest, including participants from various departments and campuses. However, due to resource limitations for hands-on sessions, the number of participants was capped at 44 students from the mechatronics, automobile, and mechanical engineering disciplines.

Offered free of cost by the Mechatronics Engineering Department, the course was inaugurated by the Dean of CET on August 27, 2022, and spanned eight Saturdays until October 15, with sessions running from 10 AM to 4 PM. Theory classes were held in the forenoon, while hands-on practical sessions took place in the afternoon at the designated labs, providing participants with a well-rounded and immersive learning experience.

Tech Snippet #03 - Swarm Robotics:

Inspired by natural phenomena like flocking birds and schooling fish, swarm robotics research is exploring the coordination of multiple robots to perform complex tasks. These systems are being tested for applications in environmental monitoring, search and rescue, and agriculture, showcasing scalability and flexibility.

TECH COVER STORIES

The Power of Virtual Prototyping with AutoDRIVE Simulator

AutoDRIVE Simulator serves as the digital twin of the Testbed, enabling developers to prototype and test algorithms in a virtual environment. Built atop the robust Unity game engine, it offers a Full HD simulation experience that allows researchers to focus on refining their code without being tied to hardware constraints. The simulator is lightweight yet powerful, making it suitable for both local testing on a single machine and distributed computing across networks. With support for Python, C++, and Robot Operating System (ROS), the flexibility of AutoDRIVE Simulator ensures that it can adapt to the unique needs of each project.



Tech Snippet #04- Autonomous Robotic Farming:

Robotics in agriculture is transforming traditional farming methods. Autonomous tractors, drones, and robotic arms equipped with AI are being used for planting, weeding, and harvesting, optimizing crop yields while reducing labor costs and environmental impact.

Sim2Real in Action: Case Studies and Real-World Deployments

AutoDRIVE has already proven its potential in various high-stakes environments. From intersection traversal to behavioral cloning, the platform allows for the safe testing of algorithms before real-world trials. The simulator's ability to integrate with the physical Testbed provides a seamless transition from virtual models to hardware deployment, embodying the "Sim2Real" promise. This capability is especially crucial for projects focused on smart city applications, where managing traffic flow and optimizing infrastructure must be rigorously tested before deployment in complex urban environments

Tech Snippet #05- Self-Healing Robots:

Inspired by biological systems, researchers are developing robots with self-healing capabilities. These robots use advanced materials that can repair themselves after damage, significantly improving their durability and lifespan in hazardous environments like space exploration or disaster response.

Awards and Recognition

- Best Paper Award for paper "AutoDRIVE Simulator: A Simulator for Scaled Autonomous Vehicle Research and Education" at CCRIS 2021
- <u>Best Project Award</u> for "AutoDRIVE An Integrated Platform for Autonomous Driving Research and Education" at National Level IEEE Project Competition 2021
- <u>Best Project Award</u> for "AutoDRIVE An Integrated Platform for Autonomous Driving Research and Education" at SRMIST Mechatronics Department 2021
- Gold Medal for paper "AutoDRIVE An Integrated Platform for Autonomous Driving Research and Education" at SRMIST Research Day 2021
- <u>Lightning Talk</u> of "AutoDRIVE Simulator: A Simulator for Scaled Autonomous Vehicle Research and Education" at ROS World 2020
- India Connect @ NTU Research Fellowship 2020 for "AutoDRIVE Simulator"

Team



Dr. Sivanathan Kandhasamy



Tanmay Vilas Samak



Chinmay Vilas Samak

For more info: https://autodrive-ecosystem.github.io/



Dr. S.Anitha Kumari, participated and completed successfully AICTE Training And Learning (ATAL) Academy Online FDP on "Control Systems & Sensors Technology" from 2021-02-01 to 2021-02-05 at National Institute of Technology, Calicut

G. Madhumitha, Assistant
Professor, has participated in
the One Day Workshop on
Sensory Perception for
Autonomous Driving on 12-022022 organized by the
Association of Mechatronics
Engineers (AME), Department
of Mechatronics Engineering,
SRM Institute of Science and
Technology, Kattankulathur





Dr. Ranjith Pillai R, has successfully completed 5 Days/10 Hours Online Self-Learning Programme on 'Industrial Automation Driving Industry 4.0' organized by IITD-AIA Foundation For Smart Manufacturing from 23rd Feb, 2022 to 27th Feb, 2022.

Tech Snippet #06 - Humanoid Robots for Social Interaction:

Robots like Sophia are designed to engage with humans in social settings, utilizing natural language processing and emotional recognition. These humanoid robots are being explored for applications in customer service, therapy, and companionship, raising interesting questions about human-robot relationships.

Dr. S.Vani, has successfully participated in IP Awareness/Training program classroom under National Intellectual Property Awareness Mission on March 18, 2022

G. Madhumitha, Assistant Professor of SRM INSTITUTE OF SCIENCE AND TECHNOLOGY has successfully participated in IP Awareness/Training program classroom under National Intellectual Property Awareness Mission on March 18, 2022.

Dr. Ranjith Pillai R, has participated in Faculty Development Program (FDP) on "Holistic Development and Outcome Based Education in the light of NEP-2020" from 13th to 19th June, 2022 organized by the University of Engineering & Management(UEM), Jaipur

Dr. K. Sivanathan received an Award of Appreciation for serving as the speaker at a workshop on Robotic Process Automation (RPA) held on January 28, 2022. The event was organized by the Department of Computational Intelligence, highlighting his expertise and contribution to this cutting-edge field.



S. Vasanth,

participated in the Six
Days Faculty
Development Program
on Virtual Reality
Development with
PYTHON during 18th to
24th June 2022
organized by Center for
Immersive Technologies
(CIT), SRM Institute of
Science and Technology,
Kattankulathur.





Certificate of Participation







Karun Ashok Kumar, first year student has presented a paper for **Research Day** held on 28th February 2022 at SRM Institute of Science & Technology, Kattankulathur, Tamil Nadu.

M Vijay Harish, first year student has presented a paper for **Research Day** held on 28th February 2022 at SRM Institute of Science & Technology, Kattankulathur, Tamil Nadu

Karun Ashok Kumar, first year student has won the Second Position (Hardware) in recognition of his moxie and knowledge in the "Defence Services Hackathon 2021", Organized by SRM Innovation and Incubation Center, SRMIST Kattankulathur held from 19th March 2021 to 21st March 2021.





Indrajith Remesh, second year student has won Best B-Plan & Cost Award in the Virtual Round (Static Event) of 7TH Season of Formula Imperial 2021 organized by ISIEINDIA held from 12th November to 14th November 2021.

Tech Snippet #07- Energy - Efficient Robotics:

Ongoing research is focused on developing energy-efficient robotic systems using bio-inspired designs. For instance, robotic fish and flying drones modeled after nature's efficiencies are being explored for their potential in conserving energy while maintaining high performance in various applications.



Placement Statistics

- Total Students Placed: [Number]
- Total Companies Visited: [Number]
- Highest Package: [Amount]
- Average Package: [Amount]
- Notable Recruiters: [List a few prominent companies]

On campus:

- Siddharth Ranganathan Climber Knowledge and careers Pvt. Ltd.
- Sushanth Reddy Infosys.
- Utthara Neelakantan Wipro.
- K V Sudharshana Gowtham Edupolis Technology Pvt Ltd.
- **B Gowtham** Infosys.
- Burhan Hamid Matta -The Climber.
- Karthik Easwar Infosys.
- Aniruth R R Infosys.
- Vignesh A Cognizant Technology Solutions India Private Limited.
- Yakama Kshatriya Kumar The climber.
- Susil Kummar V TCSL.
- S Dhanush TCSL.
- Swapnil Bhargava Hero.
- Lohith Roopesh Jain Titan.
- Nishit R Salvi Hero.
- Gundumalle Sushanth Vinjay FIAT India Automobiles.
- Nadar Gajendran Chandrasekar TCSL.
- Kevin Benny Dhobi G.
- Akash S M Cognizant Technology Solutions India Private Limited.
- S Gokul Quality Tutorials Pvt. Ltd. under the brand name: LIDO.
- Ajay Krishnaa Cognizant Technology Solutions India Private Limited.
- MD Nisar Raunaq Dhobi G.
- Kaiwlya Pradeep Bembde FIAT India Automobiles Pvt.Ltd.
- N Sandeep Kishore Stove craft limited.
- Sushant Vijay Patil Stove craft limited.
- Nabeel Ahmed Khazi Leadsquared.
- K Mithun Kumar Stove Craft Limited.
- Chandan Kumar Das Adhikari CEAT.
- Deepanshi Kacker Tata Passenger Electric Mobility Limited.
- Armaan Varma Hero.
- Navaneethan R TCSL.
- Leander Aravind M Dhobi G.

Entrepreneur:

- Jay P Jain, Founder of RATN silver.
- Karan Yerawar, Leucine Product Manager.
- **Shubham Devidas Gujar**, Worldomate (p) limited, incorporated as a Private Limited Company on 25-01-2022, is recognized as a startup by the Department for Promotion of Industry and Internal Trade. The startup is working in the "Internet of Things", "Industry and Manufacturing", and "Warehouse" sectors as self-certified by them.

Off campus:

- Radhakrishnan S Sopra Steria.
- Girija Kannan RAPTEE Energy.
- Karthik Balaji ISMO Bio-Photonics Pvt. Ltd.
- **Dhiraj Kumar T** Paranthaman exporters.
- Rithesh P BM e-Solutions.
- Rohan Thomas Amphenol omniconnect India (P) Ltd.
- Nethaji K QuEST Global Engineering Services Private Limited.
- Ashwath Prakash Paranthaman exporters.
- Pranav Jayaraaman BM e-Solutions.
- **Gopalakrishna M** Abinava Raizei (P) limited.
- Smrithi Srinivasan HOME FIRST FINANCE COMPANY INDIA LTD.
- Rayakota Manoj Mourya Mphasis.
- Thamil Selvan SL LUMAX.
- Thirukudanthai Raghavan Prasanna "Gabriel India Limited".
- Hariharan V GGS Information Services India Pvt. Ltd.
- Viral Panchal Nokia.
- Chanakya Chetan Pendse Mahle.
- Arsh BOSCH.
- R. Vijeshvar Oribay Group Automotive.
- Mohamed Ameen Javahar Core Illustrio.
- Y Malcommarshal Samhitha Crop Care Clinics India Pvt Ltd,
- Sireesh Sathyanarayanan Quest Global Engineering Services Private Limited.
- Anshuman Shandilya Tech Lateetud.
- **Giridhar T** AppviewX.
- Muhamed Azeem Tanishq A Strategi Automation Pvt.Ltd.
- Rishabh Negi KION India Private Limited.
- Hemanth Kumar A BA Continuum India Pvt. Ltd.Chennai.

- Yeduru Janaki Ram "EY Global Delivery Services India LLP".
- Saksham Bhadani Binani Technologies India Private Limited.
- Mudit Bhargava JNK India Pvt. Ltd.
- Adithya M N Virtusa Consulting Services Pvt Ltd, India.
- Tharun Prabhakar GGS Information Services India Pvt. Ltd.
- Subash R Analytics Vidhya.
- Arun S BA Continuum India Pvt. Ltd.Chennai.
- Arko Banerjee Kion Group.
- Thomas S Vettiyil BM e-Solutions.
- Mohamed Sheik Salique machines talk
- **Revanth Krishna** iOPEX Technologies Private Limited.
- Pradeep B Pratian Innovation Campus, Bangalore.
- Manicka Vinayak Sankar Analytics Vidhya.
- Manas Parwal SkillVertex Edutech. Bangalore.
- R Tejesshwar Paranthaman Exporters.
- Ravipati Sai Sesha Adarsh Unifo Solutions Pvt. Ltd.
- **Dhanish Arman Bankley** Linde South Asia Services Pvt Ltd, bangalore.
- Ashwin Paul Politecnica, Universidad Politécnica de Madrid.
- Aththen Premkumar Tredence Analytics Solutions Private Limited, Bangalore.
- Fazar N Siraj IGARASHI MOTORS INDIA LTD.
- Aditya Krishna K MAVEN ALPHA PRIVATE LIMITED.
- Jasmeet Singh Surfboard Payments India Private Limited.
- Mendu Vaishnavi Naidu Tata Electronics Private Limited.
- **Suman KM** Catnip Infotech Private Limited, Bangalore.
- Swetabh Shekhar Sinha Jindal Steel and Power Ltd.
- Lukade Aniket Avinash Tata AutoComp Systems Limited.
- Aniket Sahoo SRM Innovation and incubation center.
- Dinesh R OSCORP TECHNOLOGIES, Chennai.
- Sanjay K Cognizant Technology Solutions India Private Limited.
- Pramil Dev Panda L&T Defence.
- Varun Jain Analytics Vidhya.
- Rajkaran Singh Bhatia Fujitsu Consulting India Private Limited.
- Ashish JBPR SEDIN Technologies.
- Mantravadi Aditya Raja Sekhar BM e-Solutions.
- Akurathi Tirumala Sai Kumar Larsen & Toubro Infotech Ltd.
- Kannan Vidyadhar Consciente.
- Saravanan M Automotive Robotics India Pvt. Ltd.
- Gautam Viswanathan SmartSoC Solutions Pvt Ltd.
- Vaibhav Radhakrishnan Magna Automotive India (P) Ltd
- Anomitra Mukhopadhyay Capgemini.

- JASHWANTH SEOYON E-HWA AUTOMOTIVE ANANTAPUR PVT.LTD.
- Wasim Musharaf M IGARASHI MOTORS INDIA LTD
- Anish Bharadwaj R K Lite.
- Muvvala Sai Sashank Tata Consultancy Service Limited
- Rushal Arora Hind Terminal (P) limited
- Keshav Jha BM e-Solutions
- Bala Krishnan G Amazon Development Centre (India) Private Limited,
- Yashwanth Suresh Bosch Automotive Electronics India Pvt. Ltd.
- Meikandathevan K Paranthaman Exporters

Higher studies:

- Anirudh Anand EV Amity University.
- Vickramkarthick R Amity University.
- Edwin George Joseph University of California, Berkeley.
- Mohamed NAAJIM M Amity University
- N Dhanyashree Narayanan Manipal Academy of Higher Education.
- Sudhanv Apte National Taipei University of Technology.
- Navin Arul University of Roehampton, UK.
- Krishna Sayori Deb Stevens Institute of Technology, USA.
- Amardeep Singh Batra Conestoga College Institute of Technology and Advanced Learning.
- Santhosh V Ontario Tech University.
- Rahul Shroff Goa Institute of Management, Goa.
- Manojkumar S Università degli Studi di Roma "La Sapienza". Italy.
- Joseph Joel University at Buffalo, The State University of New York.
- Godla Navyatha SRM IST, Kattankulathur.
- Tanmay Samak Clemson University, USA.
- Chinmay Samak Clemson University, USA.
- Anupam Sanjay Tiwari NYU Tandon School of Engineering, USA.
- Kota Sri Anirudh BSE Institute Limited, Mumbai.
- Pathan Yaseen Khan VIT, Vellore.
- **TD Deepan Tarun** VIT, Chennai.
- Sahaj Koshiya Rajesh Conestoga College Institute of Technology and Advanced Learning.
- Achyuth Ashok The University of Sheffield, UK.
- **PU Magesh Sooraj** Tamil Nadu Physical Education and Sports University, Chennai.
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Editorial Team



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