



**SRM**  
INSTITUTE OF SCIENCE & TECHNOLOGY  
(Deemed to be University u/s 3 of UGC Act, 1956)

DEPARTMENT OF MECHATRONICS

# MECHAVEERSE

ASSOCIATION OF MECHATRONICS  
ENGINEERS

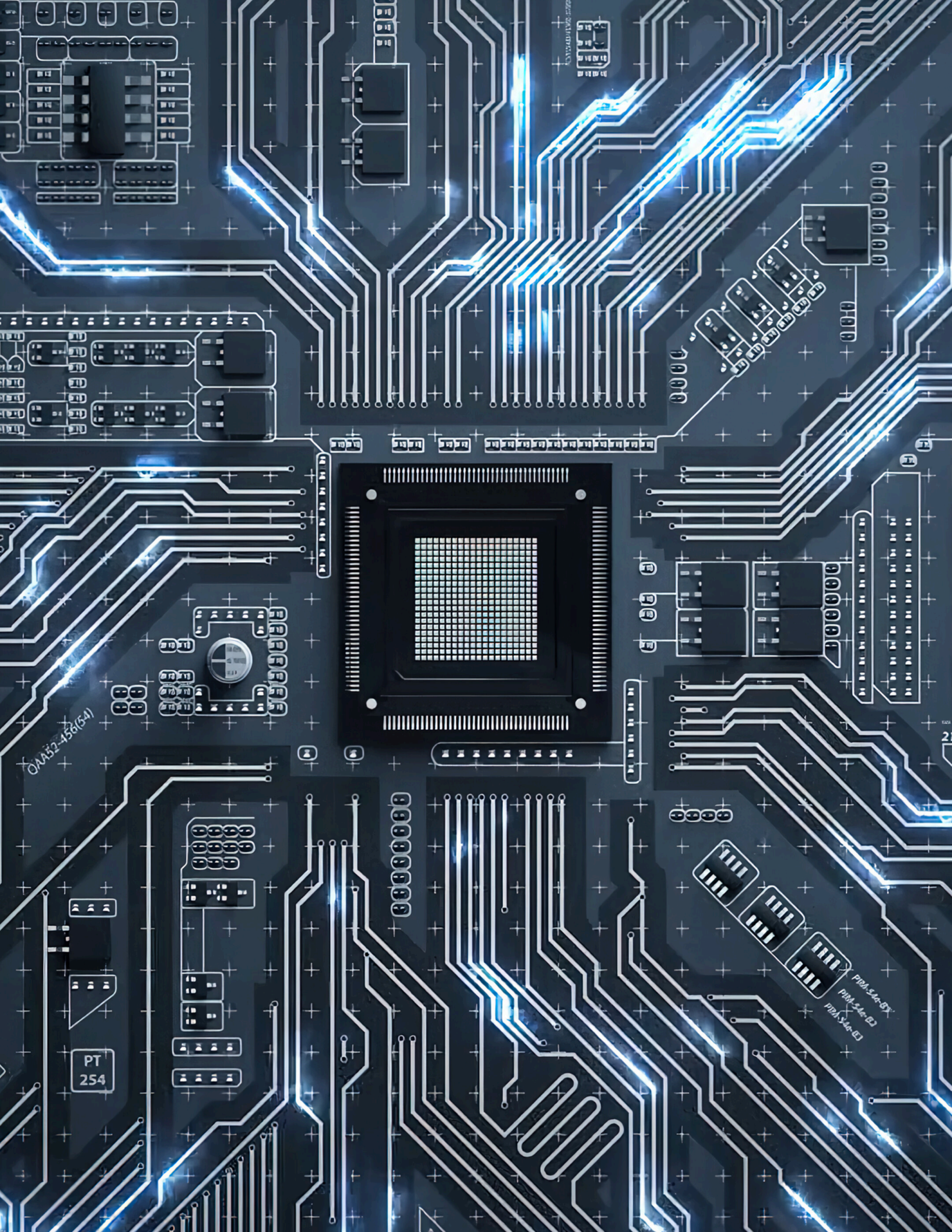
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# Preface

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 Engineers driven by advancements in robotics, automation, and Industry 4.0.

The department offers various programs emphasizing experiential learning and is recognized for its state-of-the-art facilities and diverse faculty. Equipped with modern laboratories featuring collaborative Robots, Autonomous Mobile Robots, and Advanced Control Systems.

The department supports design, analysis, and simulation of Mechatronic systems. The diverse expertise of its faculty and a strong alumni network working globally in reputable organizations further contribute to the department's success.





# About AME



The Association of Mechatronics Engineers is a group of Mechatronics Engineers from SRM University's Department of mechatronics. We are like-minded individuals who came together to create various opportunities for students by organizing numerous events and providing research and project assistances to the students of the department.

Our Association is divided into various sub-domains:

**Core and Public Relations:** Here various event organizing activities like crowd management, venue confirmation and promotional activities take place.

**Corporate connect:** Events which involves industrial assistance, communications with industrial experts and corporate connections are handled by them.

**Editorial:** Paper works for both official and unofficial purpose are done by this domain which includes designing this magazine too.

**Alumni Connect:** They concentrate on maintaining connections with the Alumni students of our department.

**Social Service:** This domain focuses on providing social services like donation drives, awareness camps and other events for betterment of the society.

**Technical:** They are responsible for handling project works, researches and fund management for the students and with the students.



# 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,



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 the Association of Mechatronics 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 concept of "BioRobotics" — a powerful example of integrated mechatronics with sensors, control systems, and Biologically inspired construction and control techniques.


My gratitude goes to the editorial team and contributors for bringing this issue to life. Enjoy exploring the remarkable work within our department!

Regards,

A handwritten signature in black ink, appearing to read 'K Sivanathan', written in a cursive style.

Dr. K Sivanathan  
Assistant Professor, SrG  
Department of Mechatronics Engineering





# DEPARTMENT HIGHLIGHTS



## Exploring the Fundamentals of Science and Robotics: A Dynamic Two-Day Bootcamp by AME

The Bootcamp started with a warm welcome ceremony where the chief guest and other resource persons were welcomed by the Principal of Parampara academy, followed by an introduction session given by the hon'ble chief guest Dr. Shivanathan, shedding light upon the agenda of the Bootcamp. The afternoon session started with a basic introduction to the components followed by hands-on practice where students worked on the projects “LED Blinker Program” and “IR reading” under the guidance of the mentors.



### Tech Snippet #01- Calculating Robots for Financial Modeling

Advanced robotic systems in finance and trading use mathematical algorithms for tasks like predictive analytics, risk assessment, and portfolio optimization. Examples include Kavout and BlackRock's Aladdin, which automate complex mathematical computations for investments.



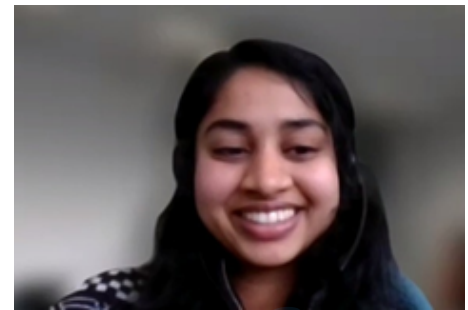
## Exploring Global Horizons in Education - Inspiring Talks by AME Alumni

In a captivating showcase of diverse educational journeys and exciting prospects, AME recently hosted an enlightening event featuring accomplished alumni who have ventured abroad for their higher studies.

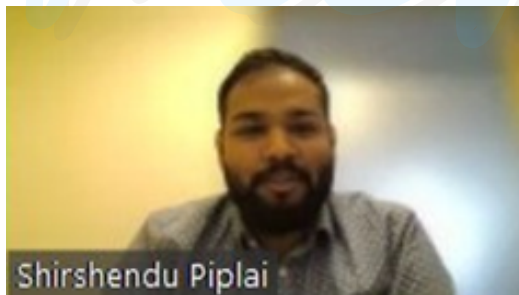
Guest Speakers:-

1. Amrutha Pattath Saseendran, Research Assistant at Cologne University
2. Shirshendu Piplai, Demand Planner at Henkel
3. Sibangi Bhowmick, Data Scientist at Siemens

**1. Amrutha Pattath Saseendran** - During the event, the speaker passionately discussed her educational journey and the diverse opportunities offered by colleges in the UK and Germany. She emphasized the importance of educational loans as a viable option to support aspiring students.



Additionally, the audience gained valuable insights into the promising placement prospects available upon completing studies in these countries.



**2. Shirshendu Piplai** - The speaker captivated the audience with his compelling life story, offering a glimpse into the enriching experience of living in Sweden. He highlighted the excellence of the Master's course at KTH University and provided valuable advice on preparing for higher

studies, including scholarship opportunities and necessary documents. Moreover, he shed light on the abundant placement opportunities available, inspiring aspiring students to embark on a promising academic journey.

**3. Sibangi Bhowmick** - The speaker eloquently shared her personal journey in the UK, providing valuable insights into life there and the unique experience at the University of Edinburgh. She emphasized the availability of scholarships to support aspiring students and discussed the exciting placement opportunities specifically tailored for mechatronics engineering students.





# TECH COVER STORIES

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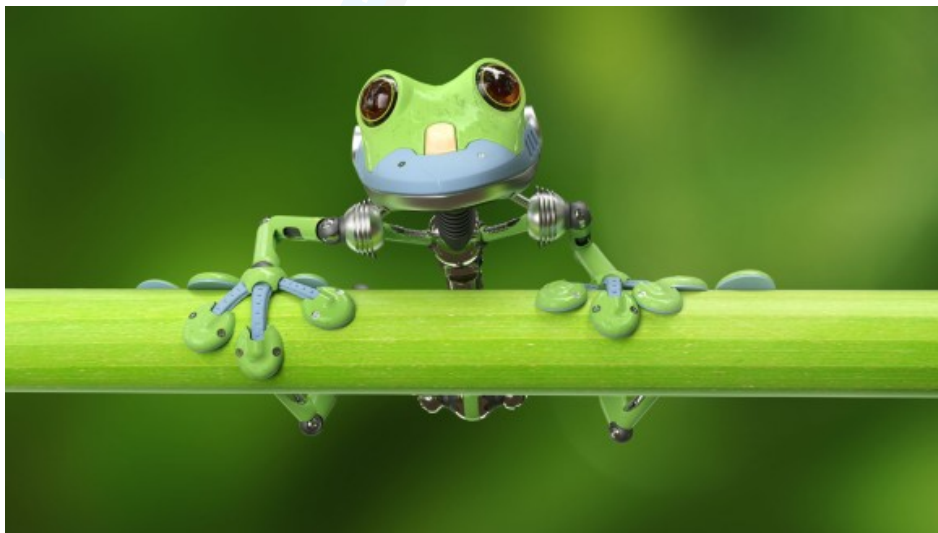
## Biorobotics: Bridging Biology and Robotics

Biorobotics: Interdisciplinary field of biology, engineering, and computer science for designing robotic systems inspired by biological entities. These robots replicate biological mechanisms to achieve functions like locomotion, sensing, or adaptation, making them suitable for applications ranging from healthcare to environmental monitoring. Biorobotics often involves the study of biomechanics, bio-inspired algorithms, and bio-hybrid systems.

### Concepts and Design Principles

#### Bio-inspiration:

Biorobotics draws inspiration from nature's optimized designs. Legged robots that mimic the gait of animals for efficient movement on uneven terrain are an example, and so is the bioinspired flight dynamics of birds or insects in drones.



Credit - Nature Magazine

### **Tech Snippet #02- Curiosity Rover (2012 - Present)**

The Curiosity rover, part of NASA's Mars Science Laboratory mission, has been studying the Martian climate, geology, and atmospheric conditions while providing valuable insights for future human missions.

### Bio-Hybrid Systems:

These systems incorporate living cells or tissues with synthetic elements. Robot powered by muscle cells or sensing devices utilizing bacterial biofilms are a few examples.

### Neuromechanics:

Key domains for the biorobotics include studying and duplicating the neural control of locomotion in animals. Neuromorphic computing and neural networks are also used in the simulation of biological decision-making.

### Soft Robotics:

Soft robotics was inspired by organisms like the octopus, as they are so flexible. In soft robotics, deformable materials make it possible to design robots capable of dynamic, adaptive movements.



The Octobot - Credit: Harvard University

## **Tech Snippet #03- The Sand Drawing Robot (Sisyphus)**

Sisyphus, created by Bruce Shapiro, uses mathematical algorithms to design intricate patterns in the sand. It visually demonstrates concepts of geometry, symmetry, and trigonometry in real-time.



## Applications

### Medical Robotics:

**Surgical Robots:** Such systems as Da Vinci surgical robot are used for performing minimally invasive surgeries.

**Rehabilitation Devices:** Exoskeletons work to enhance and restore limb-like movements for those experiencing mobility loss or impairment.

**Micro-robots** Inspired by micro-organisms, microscopic robots are deployed to swim the human body as drug delivery means or local intervention, for instance.

### Environmental Monitoring

**Bio-inspired drones:** Mitate bird or insect flight patterns; monitor ecosystems for aerial surveys.

**Robotic Fish:** Aquatic environment monitoring.

### Bio-hybrid Research

Lab-grown muscles have been used to power robots that swim or crawl autonomously, opening the way to more sustainable organic actuation mechanisms.



BionicSwift - Credit: Festo GmbH

## **Tech Snippet #04- Collaborative Industrial Automation:**

In modern factories, robots are increasingly collaborating with human workers. These cobots are equipped with sensors to ensure safe interaction and are designed to handle repetitive or dangerous tasks, enhancing productivity while reducing workplace injuries.

## Future Outlook

The future of biorobotics lies in advanced bio-hybrid designs, where living systems are seamlessly integrated with artificial components. Applications such as brain-machine interfaces could enable robots to respond to neural signals, revolutionizing prosthetics. Bio-inspired swarm robots may also find extensive applications in autonomous exploration and disaster response.

Advancements in both materials science and computational biology will give rise to the improved adaptability and robustness of biorobots. Ethical considerations about the use of living tissues within robotics will also determine the future of the field.



BionicFinWave - Credit: Festo GmbH

## Further Reading:

- <https://direct.mit.edu/books/edited-volume/4682/BioroboticsMethods-and-Applications>
- <https://en.wikipedia.org/wiki/Biorobotics>
- <https://www.sciencedirect.com/topics/engineering/biorobotics>
- <https://stem.festo.com/us/en/our-approach/bionics/bionic-projects-by-festo/index.html>

## Tech Snippet #05- Underwater Robotics for Exploration:

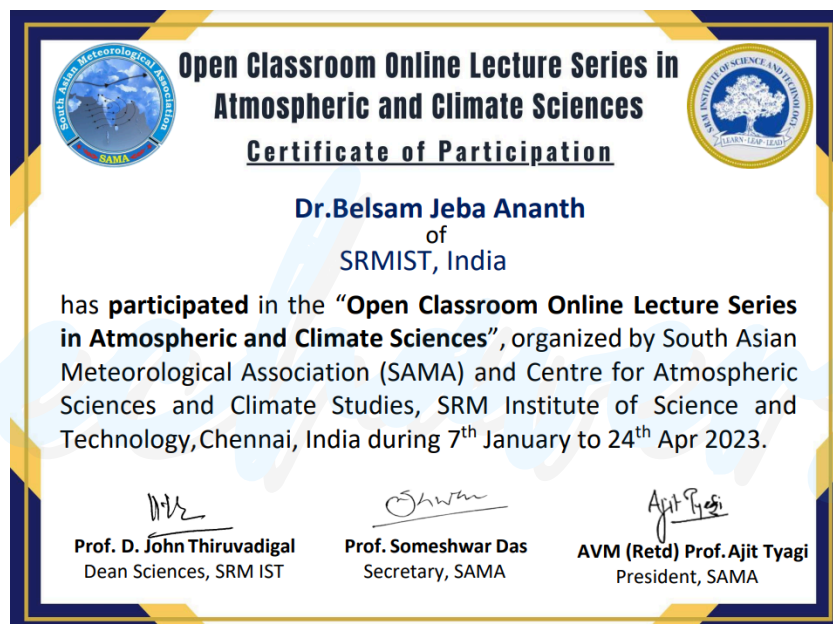
Underwater autonomous vehicles (UAVs) are being used for deep-sea exploration and environmental monitoring. These robots, equipped with high-resolution cameras and sonar systems, can navigate complex underwater terrains, providing valuable data for marine research and oil exploration.





# FACULTY ACHIEVEMENTS

**Dr. Belsam Jeba Ananth M**, has participated in the "Open Classroom Online Lecture Series in Atmospheric and Climate Sciences" organized by South Asian Meteorological Association (SAMA) and Centre for Atmospheric Sciences and Climate Studies, SRM Institute of Science and Technology, Chennai, during 7th January to 24th April 2023.



### **Tech Snippet #06- Smart Grippers in Robotics:**

New developments in robotic grippers, which use sensors and AI to adjust their grip strength and movement, are enabling robots to handle delicate objects such as fruits and glassware without causing damage, opening up new possibilities for automation in food and beverage industries.





# STUDENT ACHIEVEMENTS

**Aditya Agarwal**, second year student (secured third place in design challenge) on behalf of SRM Team Robocon, recognizing his outstanding contribution and exceptional results displayed throughout the SolidWorks workshop, held from 19th-21st of April, 2023.



**Vishal Rajeev, Kevin George** second year students have successfully completed three days national workshop on IoT using RaspberryPi an outreach workshop of Technex'23, IIT Varanasi delivered by Innovians Technologies (India) held at SRM Institute of Science & Technology, Kattankulathur from 26th Apr to 28th Apr, 2023.

### **Tech Snippet #07- Robotic Surgery with AI:**

Robotic surgical systems are evolving with the integration of AI, enabling predictive analytics and improved decision-making during procedures. These AI-powered robots assist surgeons in achieving greater accuracy in delicate operations, reducing complications and recovery times for patients.



A yellow industrial robotic arm is shown in a factory setting, positioned over a workbench. The arm is yellow with black joints and cables. The background is blurred, showing other industrial equipment and factory lights. The text "PLACEMENT DETAILS" is overlaid in white, serif font.

# PLACEMENT DETAILS

Issue 2022-23:

### 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:

- **KAARTHI G** - LARSEN & TOUBRO LTD.
- **ABHISHEK S** - L&T TECHNOLOGY SERVICES.
- **V NEHAA** - JOHN DEERE INDIA PVT LTD.
- **ANISH CHAUDHARY** - L&T TECHNOLOGY SERVICES.
- **AJITH SRIKANTH** - HERO MOTOCORP
- **S VENKATESH** - INFOSYS.
- **SUBHOJEET DAS** - WIPRO
- **BHARATH K** - SKILLMAX ACADEMY
- **RAHUL JAIN H** - ESCORTS LIMITED
- **M SANTHOSH** - SKILLMAX ACADEMY
- **APOORVAN R** - AVL TECHNICAL CENTRE PVT LTD
- **MOHAMMED ABDUL RAHEEL RAZA** - DENSO INTERNATIONAL INDIA PVT LTD
- **AASHRAY CHARY** - SKLR EDTECH PVT LTD
- **HARIHARAN V S** - MASTER LEARN
- **RISHIKESH RAMAKRISHNAN** - INSPIRISYS SOLUTIONS LIMITED
- **CHITTESH BALAJI** - UNIVERSITY OF BIRMINGHAM
- **TAMIZHMANI R** - FEDERAL BANK
- **NANDINI KRISHNAKUMAR** - DELOITTE PVT LTD
- **ROHAN PRASAD** - COGNIZANT
- **U. HARINI** - JOHN DEERE INDIA PVT LTD
- **ALOKEMOY SEN** - BYJU'S
- **KANUPARTHY SAKYA** - ANAND AUTOMOTIVE PVT LTD
- **VISHNU VARDHAN S** - L&T Technology Services
- **HARINI P** - FORD MOTOR LTD
- **SHRIMAN RAGHAV S** - HERO MOTOCORP
- **G. LOGESHWARAN** - TATA CONSULTANCY SERVICE LTD



- **ROHITH HARIDASAN NAIR** - AVL INDIA PVT LTD
- **YASH VARDHAN BAHETY** - ESCORTS LIMITED
- **CHITRARASAN K** - AVAY BIOSCIENCES PVT LTD
- **MEGH BHUSHAN BHATELE** - L&T TECHNOLOGY SERVICES
- **SHIVA KUMAR SUBBIAH ACHARIYAR** - COGNIZANT
- **LAKSHITH SARAN B G** - TVASTA
- **SAMYA DAS** - SOURCE ONE
- **SANITHA SANTHOSH** - AMAZON
- **SIDDHARTHA DE** - VARROC ENGINEERING PVT LTD
- **ADITYA SRINIVASAN** - PINEYARDS SOLUTION PVT LTD
- **SYED FARHAN DANISH** - SKILLMAX ACADEMY
- **NAVEEN ESWAR OMPRAKASH** - SKLR EDTECH PVT LTD
- **HARSHIT RATHORE** - JOHN DEERE INDIA PVT LTD
- **RAYALUVARI SRIGOWTHAM** - TATA CONSULTANCY SERVICE PVT LTD
- **BHES RAJ JAISHY** - TATA CONSULTANCY SERVICE PVT LTD
- **GAVIGATTU GOVARDHANV** - TATA CONSULTANCY SERVICE PVT LTD
- **KARTHIKEYAN BALASUBRAMANIAN** - COGNIZANT
- **PARTH SAXENA** - KPMG ASSURANCE AND CONSULTING SERVICES LLP
- **SIDDHARTH VENKATRAMAN** - VARROC ENGINEERING LIMITED
- **VASUDHA VISHWANATH MANU** - TATA ELECTRONICS PVT LTD
- **BALAJI R** - COGNIZANT
- **ASMITA BERA** - JOHN DEERE INDIA PVT LTD
- **NAINALA BHANU KARTHIKEYA NAIDU** - TATA CONSULTANCY SERVICE PVT LTD
- **SANNJAY B** - JOHN DEERE INDIA PVT LTD
- **P NAROTHAM REDDY** - IFB INDUSTRIES
- **RAMANUJAN G** - ANAND AUTOMOTIVE PVT LTD
- **G M JISNU** - GPI ENGINEERING INDIA PVT LTD
- **TEERTHESH JAIN** - COGNIZANT
- **RAM PRATIK AADITYAN S** - LTI
- **ARAVIND M A** - TATA MOTORS
- **MOHAN RAJ B** - COGNIZANT
- **NISHANT BILURKAR** - CAPGEMINI
- **DANNAPANENI REVANTH** - L&T TECHNOLOGY SERVICES
- **VISHNU PRASAD K M** - COGNIZANT
- **VIVIDH MISHRA** - MINDTREE LTD
- **GOKULA KRISHNAN L J** - L&T TECHNOLOGY SERVICES
- **PRATIK SHARMA** - ENGINEERING TECHNIQUE

- **ABISHEK K V** - COGNIZANT
- **GHANAMRUT VINAYAK MARATHE** - L&T TECHNOLOGY SERVICES
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- **DHARMARAJAN E** - ENGINEERING TECHNIQUE
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- **KEERTHIVASAN.B** - PANDOCORP PVT LTD
- **T J SRIDHAR** - L&T TECHNOLOGIES PVT LTD
- **ARUN KUMAR R** - INFOSYS LIMITED
- **THRILOCHAN N** - WIPRO LIMITED
- **KOMMIREDY VEERA BHASKAR** - THE TECHDESTINY
- **DASHPUTE NIRAJ SURYAKANT** - COGNIZANT TECHNOLOGIES
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- **ANNEBOINA PRANITH** - DIGIENT TECHNOLOGIES
- **K VAISHNAVI REDDY** - HINDISTAN UNILEVER LTD
- **RAJNARAYANAN M** - CAPGEMINI TECHNOLOGY SERVICES INDIA LIMITED
- **VIGNESH P** - PCBL (TN) LIMITED.
- **SARAN G** - MYCAPTAIN CLIMBER KNOWLEDGE AND CAREER PVY LTD
- **BHUVANESHWARAN.R** - COGNIZANT TECHNOLOGIES

#### **ENTREPRENEUR:**

- **M MELKISH CHANDAR** - MAZZAR INTERNATIONAL (PROPRIETOR)

#### **OFF CAMPUS:**

- **ABIJITH KRISHNA** - URJANET ENERGY SOLUTIONS
- **SIDDHANT SRIVASTAVA** - LOHMAN GMBH &CO. KG
- **DUGGI MANIDEEP** . - MAINI MATERIALS MOVEMENT
- **JAY CHAHAL** - THE HI-TECH ROBOTIC SYSTEM LTD
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- **PRANEESHKUMAR G A** - MASTERS LEARN
- **ARUN BONIFACE A** - MASTERS LEARN
- **PERI SAI SOMA SEKHAR** - URJANET
- **NAYAKAWADI ASIM NILAM** - TURING MINDS AI



- **DESAI YUGAM SAMIR** - TATA MOTORS
- **KATTIRI ANIL KUMAR** - TATA MOTORS
- **SAFRAZ MUZAMIL S** - DELOITTE TECHNOLOGIES
- **GOKUL A** - EDUPOLIS TECHNOLOGIES PRIVATE LIMITED,
- **T SURAJ KUMAR** - ALL E TECHNOLOGIES PVT. LTD. (ALLETEC)
- **SANIL SAHIL HARISHCHANDRA** - CHIDAKASHI TECHNOLOGIES PVT LTD
- **T RAGUL** - INDIAN RAILWAYS (SPORTS QUOTA)

#### HIGHER STUDIES:

- **KUNAL MAHESHWARI** - SYMBIOSIS INTERNATIONAL
- **ARSHIYA HASHMI** - CONCORDIA UNIVERSITY
- **MILTON ANTO A** - EDITH COWAN UNIVERSITY
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- **PARESH ROHAN S** - UNIVERSITY OF LIMERICK
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- **J SRIMANTH** - LOUGHBOROUGH UNIVERSITY
- **RUSHI PARESH SHAH** - NORTHEASTERN UNIVERSITY
- **DARSHANA ANIL HOSURKAR** - NORTHEASTERN UNIVERSITY
- **NAINISH SUDHIR BHUJBAL** - CAL STATE EAST BAY
- **KUSAM AKHIL** - UNIVERSITY OF BUFFALO
- **BENATTO B B** - KINGSTON UNIVERSITY
- **G SREERAM** - TU TECHNICHE UNIVERSITAT
- **HANIYARA HEEL NITESHBHAI** - UNSW SYDNEY
- **ARYAN DEY** - RWTH AACHEN UNIVERSITY

# Editorial Team



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