B N M Institute of Technology

An Autonomous Institute under VTU

IEEE Robotics and Automation Society (RAS)

Approval Code: SBC14831B

Date of Establishment: 19 July 2022

List of Events Organized during 2023-24 & 2024-25

Sl. No.	Event Name	Event date	Number of Participants
1.	Rig-Solder	18 February 2026	53
2.	RoboSoccer 2025	15 October 2025	25
3.	Induction 2025 – TinkerCAD & Arduino Workshop	23–29 September 2025	~600
4.	ROS Nexus Hackathon	3 September 2025	40
5.	Industrial Visit – M/s Robo Manthan Pvt. Ltd	23 July 2025	60
6.	Industrial Visit – Bangalore Metro Rail Corporation Limited (BMRCL)	11 July 2025	~120
7.	14-Day Internship on Advanced Robotics Using ROS	02 June 2025 to 20 June 2025	60
8.	HydroVision	26 March 2025	16
9.	Terrain Xtreme	21 March 2025	22
10.	BalloonPop RoboDuel	21 March 2025	40
11.	Chakravyuha RoboMaze – The Navigation Challenge	16 October 2024	40
12.	Workshop on Fundamentals of Robotics with Robomanthan	15–16 October 2024	50
13.	Introduction to IoT and Robotics (Induction 2024)	September 2024	600

Office Bearers 2026-2027

Sl. No	Name of the Office Bearer	Position Held
1	Dr. Rekha P	Faculty Advisor
2	Shriniketana Kalale	Chair
3	Shreesh Purandarvittal Tadas	Treasurer
4	Subramanya D	Secretary
5	Tarini P	Vice-Chair
6	Poorvi Dambal	Web-Master

B N M Institute of Technology

An Autonomous Institute under VTU

1. Rig-Solder

Title of the Event: Rig-Solder
Date: 18 February 2026
Venue: B.N.M Institute of Technology (Autonomous), Bengaluru
Organized by: IEEE Robotics and Automation Society (RAS) – BNMIT Student Branch Chapter
Participants: 53

Overview

The event **"Rig-Solder"** was organized by the IEEE Robotics and Automation Society (RAS) Student Chapter at BNMIT to focus on one of the most fundamental yet critical skills in electronics and robotics development—**soldering**. Soldering is an essential technique used in assembling electronic circuits and hardware systems, making it an important skill for students involved in electronics, embedded systems, and robotics engineering.

The event attracted **53 participants**, who took part in a hands-on challenge designed to test their precision, efficiency, and understanding of electronic circuit assembly. Rig-Solder provided students with an opportunity to improve their practical electronics skills while working in a competitive environment.

Event Proceedings

The event began with a brief orientation session where participants were introduced to the objectives of the competition and the evaluation criteria. The organizers also emphasized safety guidelines related to the use of soldering irons and electronic components.

Participants were provided with electronic components and printed circuit boards that needed to be assembled through proper soldering techniques. The challenge required students to carefully solder components onto the circuit board while ensuring correct placement and electrical connectivity.

Judges evaluated the participants based on the quality of solder joints, accuracy of component placement, circuit functionality, and the time taken to complete the task. The competition required participants to demonstrate precision and attention to detail, as improper soldering could lead to circuit malfunction.

Throughout the event, participants were able to observe the techniques used by other competitors and learn from their approaches. The event also served as a valuable learning opportunity for students who were new to hardware development.

Objective

The objective of the Rig-Solder event was to enhance students' practical skills in electronics assembly and circuit fabrication. The competition aimed to encourage precision, patience, and technical accuracy in hardware development while promoting interest in electronics and robotics engineering.

Conclusion

The **Rig-Solder** event successfully highlighted the importance of practical hardware skills in engineering education. Participants gained valuable experience in soldering and circuit assembly, which are essential skills for building reliable electronic and robotics systems.

B N M Institute of Technology

An Autonomous Institute under VTU

2. RoboSoccer 2025

Title of the Event: RoboSoccer 2025
Date: 15 October 2025
Venue: B.N.M Institute of Technology (Autonomous), Bengaluru
Organized by: IEEE Robotics and Automation Society (RAS) – BNMIT Student Branch Chapter
Participants: 25

Overview

The event **"RoboSoccer 2025"** was organized by the IEEE Robotics and Automation Society (RAS) Student Chapter at BNMIT as an exciting robotics competition that combined engineering innovation with the dynamics of a soccer game. The competition required participants to design and control robots capable of playing soccer by maneuvering a ball and scoring goals within a designated arena.

RoboSoccer competitions are widely recognized as an effective way to demonstrate the capabilities of robotic systems in terms of mobility, control, and strategic coordination. The event attracted **25 participants**, who formed teams to develop robotic systems capable of navigating the playing field and interacting with the soccer ball.

Event Proceedings

The event began with a briefing session where participants were informed about the competition rules, arena layout, and scoring system. Each team was required to design a robot capable of moving across the arena, controlling the soccer ball, and scoring goals in the opponent's goalpost.

Teams implemented various design strategies to enhance the performance of their robots. Some robots were designed with specialized mechanisms to push or capture the ball, while others focused on high-speed maneuverability to gain an advantage during gameplay. The robots were typically controlled using wireless controllers, allowing participants to guide their robots strategically during the match.

The competition was conducted in multiple rounds where teams competed against each other in timed matches. The robots demonstrated impressive maneuverability as they navigated the arena and attempted to score goals while defending against opposing teams. The event created an energetic and competitive environment that attracted the attention of students and spectators.

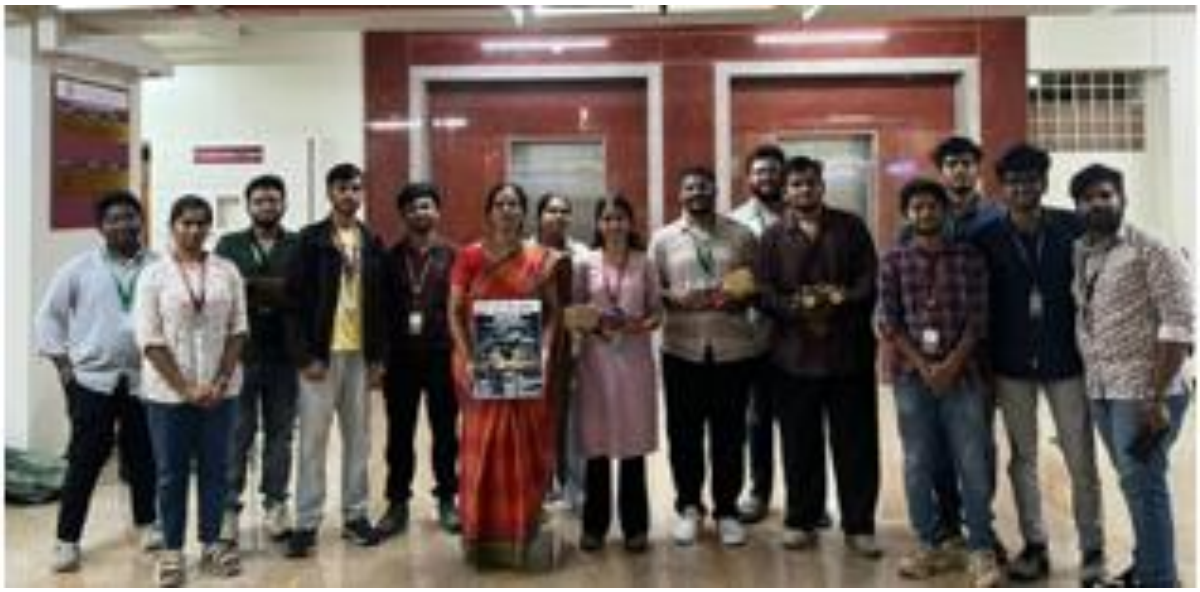
Judges evaluated the teams based on factors such as robot design, gameplay strategy, control precision, and overall performance. Participants were also encouraged to analyze the designs and strategies used by other teams, fostering a collaborative learning environment.

Objective

The objective of RoboSoccer 2025 was to encourage students to develop robotic systems capable of performing coordinated movements and strategic actions. The event aimed to enhance students' skills in robot control, mechanical design, and teamwork while promoting interest in robotics competitions.

Conclusion

The **RoboSoccer 2025** event successfully combined engineering innovation with an engaging competitive format. Participants gained valuable experience in designing and controlling robotic systems while enjoying a dynamic and interactive robotics competition.



B N M Institute of Technology

An Autonomous Institute under VTU

3. Induction 2025 – TinkerCAD & Arduino Workshop

Title of the Event: Induction 2025 – TinkerCAD & Arduino Workshop
Date: 23–29 September 2025
Venue: B.N.M Institute of Technology (Autonomous), Bengaluru
Organized by: IEEE Robotics and Automation Society (RAS) – BNMIT Student Branch Chapter
Participants: Approximately 600

Overview

The **Induction 2025 – TinkerCAD & Arduino Workshop** was organized by the IEEE Robotics and Automation Society (RAS) Student Chapter at B.N.M Institute of Technology with the aim of introducing newly admitted students to the fundamentals of embedded systems, electronics, and robotics prototyping. The week-long program served as an induction activity to familiarize students with the technical initiatives conducted by the IEEE RAS chapter and to encourage early involvement in robotics and automation projects.

The workshop focused on two important platforms widely used by beginners in robotics and electronics: **TinkerCAD** and **Arduino**. TinkerCAD is a powerful simulation environment that allows students to design and test electronic circuits virtually, while Arduino provides a simple yet powerful platform for developing embedded systems and robotics applications. With participation from **approximately 600 students**, the event became one of the largest technical induction programs organized by the IEEE RAS BNMIT chapter.

Event Proceedings

The event began with an introductory session where students were welcomed and given an overview of the IEEE Robotics and Automation Society and its role in promoting robotics innovation worldwide. The organizing team introduced the activities conducted by the BNMIT RAS chapter, including workshops, competitions, hackathons, and technical training programs.

The technical sessions began with an introduction to **basic electronics and embedded systems**, explaining fundamental concepts such as voltage, current, resistance, sensors, actuators, and microcontrollers. Participants were then introduced to the TinkerCAD simulation environment, where they learned how to create and test electronic circuits virtually. Using the simulation platform, students experimented with basic circuit designs involving LEDs, switches, and sensors.

Following the simulation sessions, participants were introduced to the **Arduino platform**, which is widely used for building embedded systems and robotics applications. Students learned how to write simple programs to control electronic components such as LEDs, buzzers, and sensors using Arduino boards. The workshop demonstrated how Arduino can be used as the central controller for robotics systems.

The event also included interactive sessions where students worked in small groups to design simple projects using TinkerCAD simulations and Arduino programming. These activities helped participants understand how theoretical electronics concepts are translated into functional systems.

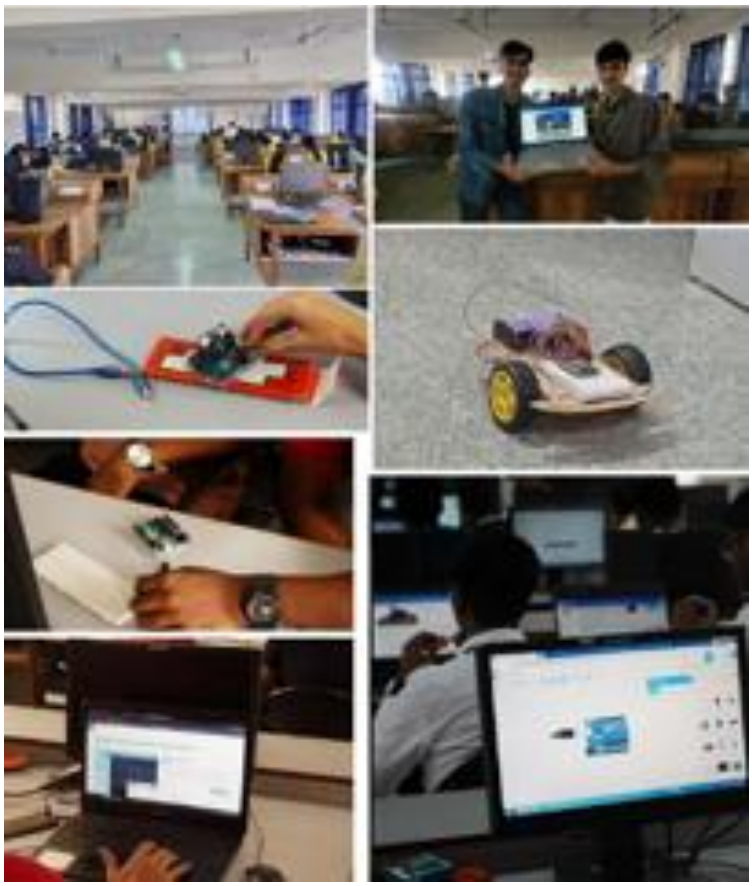
Throughout the week, mentors and student organizers provided guidance and assistance to participants, ensuring that even beginners with no prior electronics experience could successfully complete the exercises. The workshop concluded with a discussion session where students shared their learning experiences and expressed interest in participating in future robotics projects organized by the IEEE RAS chapter.

Objective

The objective of the Induction 2025 workshop was to introduce students to the fundamentals of electronics, embedded systems, and robotics prototyping using accessible tools such as TinkerCAD and Arduino. The event aimed to build a strong foundation for students who are interested in pursuing robotics projects and technical innovation.

Conclusion

The **Induction 2025 – TinkerCAD & Arduino Workshop** successfully provided participants with an engaging introduction to electronics and embedded systems development. The event encouraged students to explore robotics technologies and inspired many participants to actively participate in future IEEE RAS activities and technical projects.



B N M Institute of Technology

An Autonomous Institute under VTU

4. ROS Nexus Hackathon

Title of the Event: ROS Nexus Hackathon
Date: 3 September 2025
Venue: B.N.M Institute of Technology (Autonomous), Bengaluru
Organized by: IEEE Robotics and Automation Society (RAS) – BNMIT Student Branch Chapter
Participants: 40

Overview

The **ROS Nexus Hackathon** was organized by the IEEE Robotics and Automation Society (RAS) Student Chapter at BNMIT to encourage innovation and collaborative problem solving in robotics software development. Hackathons provide an excellent platform for students to apply their technical knowledge in a competitive environment while working on real-world challenges.

The event focused on developing robotics solutions using the **Robot Operating System (ROS)**, a widely used software framework for building robotic applications. The hackathon brought together **40 participants** who formed teams to design and develop innovative robotics solutions within a limited time frame.

Event Proceedings

The hackathon began with an introductory briefing where participants were informed about the rules, evaluation criteria, and themes of the competition. Teams were encouraged to develop robotics applications using ROS that addressed practical challenges related to automation, robot navigation, and intelligent control systems.

Participants spent several hours brainstorming ideas, designing algorithms, and implementing robotics solutions using ROS tools and simulation platforms. The collaborative nature of the hackathon encouraged participants to share knowledge, experiment with new ideas, and rapidly develop functional prototypes.

Mentors and technical experts provided guidance to participants throughout the event, helping them troubleshoot technical challenges and refine their project ideas. The teams presented their solutions to a panel of judges who evaluated the projects based on innovation, technical implementation, and potential real-world impact.

The hackathon created a dynamic environment where students were able to experiment with robotics technologies and develop creative solutions within a limited timeframe.

Objective

The objective of the ROS Nexus Hackathon was to encourage students to develop innovative robotics solutions using ROS while promoting teamwork and creative problem solving. The event aimed to strengthen students' skills in robotics software development and inspire them to pursue advanced robotics research and projects.

Conclusion

The **ROS Nexus Hackathon** successfully fostered creativity and innovation among participants. The event provided students with an opportunity to apply their robotics programming skills in a challenging environment and encouraged them to explore new ideas in robotics and automation.

B N M Institute of Technology

An Autonomous Institute under VTU

5. Industrial Visit – RoboManthan Pvt. Ltd.

Title of the Event: Industrial Visit – RoboManthan Pvt. Ltd.
Date: 23 July 2025
Venue: RoboManthan Pvt. Ltd., Bengaluru
Organized by: IEEE Robotics and Automation Society (RAS) – BNMIT Student Branch Chapter
Participants: 60

Overview

The IEEE RAS BNMIT Student Chapter organized an **industrial visit to RoboManthan Pvt. Ltd.**, a company specializing in robotics training, product development, and research activities. The objective of the visit was to provide students with exposure to the professional robotics industry and to help them understand how robotics technologies are developed and implemented in commercial and industrial environments.

Industrial visits to robotics companies are particularly beneficial for engineering students because they provide practical insights into the design, testing, and manufacturing processes involved in robotics product development. A total of **60 students** participated in the visit, gaining valuable knowledge about robotics applications and industry practices.

Event Proceedings

The visit began with an introductory presentation by the RoboManthan technical team, who explained the company's work in robotics development and training programs. Participants were introduced to various robotics platforms developed by the company and were given an overview of the technologies used in robotics systems.

Students were then taken on a guided tour of the facility where they observed different stages of robotics development, including mechanical design, electronic circuit integration, and programming of control systems. Engineers demonstrated various robotic prototypes and explained how these systems are designed to perform tasks such as automation, object detection, and intelligent navigation.

The visit also included interactive sessions where students discussed robotics development techniques with industry professionals. Participants learned about the challenges faced by engineers while designing robotic systems and how innovative solutions are developed to overcome these challenges.

The engineers also emphasized the importance of interdisciplinary knowledge in robotics engineering, highlighting how mechanical engineering, electronics, and computer programming work together to create functional robotic systems.

Objective

The objective of the industrial visit was to provide students with an understanding of how robotics technologies are developed and implemented in the industry. The visit aimed to

expose participants to professional engineering environments and help them gain insights into robotics product development and innovation.

Conclusion

The **Industrial Visit to RoboManthan Pvt. Ltd.** provided students with valuable industry exposure and helped them understand the practical aspects of robotics engineering. The visit served as an important learning experience that connected academic knowledge with real-world technological applications.

B N M Institute of Technology

An Autonomous Institute under VTU

6. Industrial Visit – Bangalore Metro Rail Corporation Limited (BMRCL)

Title of the Event: Industrial Visit – Bangalore Metro Rail Corporation Limited (BMRCL)
Date: 11 July 2025
Venue: Bangalore Metro Rail Corporation Limited (BMRCL), Bengaluru
Organized by: IEEE Robotics and Automation Society (RAS) – BNMIT Student Branch Chapter
Participants: Approximately 120

Overview

The IEEE Robotics and Automation Society (RAS) Student Chapter at BNMIT organized an **Industrial Visit to Bangalore Metro Rail Corporation Limited (BMRCL)** to provide students with valuable exposure to real-world automation technologies used in large-scale transportation systems. Industrial visits are an essential component of engineering education as they help students understand how theoretical concepts are applied in practical engineering environments.

The Bangalore Metro is one of the most advanced urban transportation systems in India, incorporating sophisticated automation technologies, communication networks, and safety systems. The visit allowed students to observe how automation and control systems play a crucial role in ensuring efficient and reliable metro operations. Approximately **120 students participated** in the visit, making it one of the largest industrial exposure programs organized by the IEEE RAS chapter.

Event Proceedings

The visit began with a briefing session conducted by engineers and technical staff at BMRCL, who provided an overview of the metro rail system and its operational infrastructure. Students were introduced to the various technological components involved in metro rail operations, including signaling systems, train control mechanisms, communication systems, and safety monitoring technologies.

Participants were guided through different sections of the metro facility where they observed how automated control systems manage train movement, scheduling, and passenger safety. Engineers explained the importance of advanced signaling technologies that enable real-time monitoring of train positions and ensure safe distances between trains operating on the same track.

Students also learned about the integration of control centers, communication networks, and automated monitoring systems that ensure smooth operation of the metro rail network. The visit highlighted the importance of automation and robotics principles in large-scale infrastructure systems.

During the interaction sessions, students had the opportunity to ask questions and gain deeper insights into the engineering challenges involved in managing a complex transportation

network. Engineers shared their experiences and explained how interdisciplinary engineering teams work together to maintain and improve metro operations.

Objective

The objective of the industrial visit was to provide students with real-world exposure to automation technologies used in modern transportation systems. The visit aimed to help students understand how robotics and automation principles are applied in large-scale infrastructure projects. It also sought to inspire students to explore career opportunities in transportation engineering, automation systems, and industrial technology.

Conclusion

The **Industrial Visit to BMRCL** proved to be an enriching learning experience for students. The visit helped participants understand how automation technologies contribute to efficient and safe transportation systems. By observing real-world engineering operations, students gained valuable insights that complemented their academic learning.

B N M Institute of Technology

An Autonomous Institute under VTU

7. 14-Day Internship on Advanced Robotics Using ROS

Title of the Event: 14-Day Internship on Advanced Robotics Using ROS
Date: 02 June 2025 – 20 June 2025
Venue: B.N.M Institute of Technology (Autonomous), Bengaluru
Organized by: IEEE Robotics and Automation Society (RAS) – BNMIT Student Branch Chapter
Participants: 60

Overview

The **14-Day Internship on Advanced Robotics Using ROS (Robot Operating System)** was organized by the IEEE Robotics and Automation Society (RAS) Student Chapter at B.N.M Institute of Technology with the aim of providing students with in-depth exposure to modern robotics software frameworks and development environments. Robotics today relies heavily on powerful software architectures that enable robots to communicate, process information, and perform complex tasks efficiently. ROS has emerged as one of the most widely used open-source platforms in robotics research and industry, enabling developers to design modular and scalable robotic systems.

This internship program was designed to introduce students to the architecture and capabilities of ROS while providing practical training through hands-on exercises and guided projects. A total of **60 participants** enrolled in the program, demonstrating strong interest in learning advanced robotics technologies. The internship served as an excellent opportunity for students to explore the integration of robotics hardware with advanced software frameworks used in real-world robotics development.

Event Proceedings

The internship began with an introductory session that familiarized participants with the fundamental concepts of robotics software systems and the role of ROS in robotics research and industrial applications. Participants were introduced to the ROS ecosystem, including its modular structure that allows different software components to communicate with each other using message-passing mechanisms.

The technical sessions covered essential ROS concepts such as **nodes, topics, services, and message communication**, which form the foundation of ROS-based robotic systems. Participants learned how different ROS nodes interact to perform tasks such as sensor data processing, robot navigation, and decision-making. The instructors also explained the importance of ROS packages and libraries that simplify the development of complex robotic applications.

A major component of the internship involved practical training sessions where students worked with ROS simulation tools and robotics development environments. Participants were guided through exercises that involved creating ROS nodes, publishing and subscribing to topics, and implementing communication between different modules of a robotic system.

These practical sessions allowed students to experience how ROS enables robots to process data from sensors and execute commands in real time.

In the later stages of the internship, participants worked on **mini-projects** that required them to apply the concepts learned during the training. These projects involved implementing robotic navigation algorithms, sensor integration techniques, and simulation-based robot control systems. Students collaborated in teams to design and test their projects, encouraging teamwork and knowledge sharing among participants.

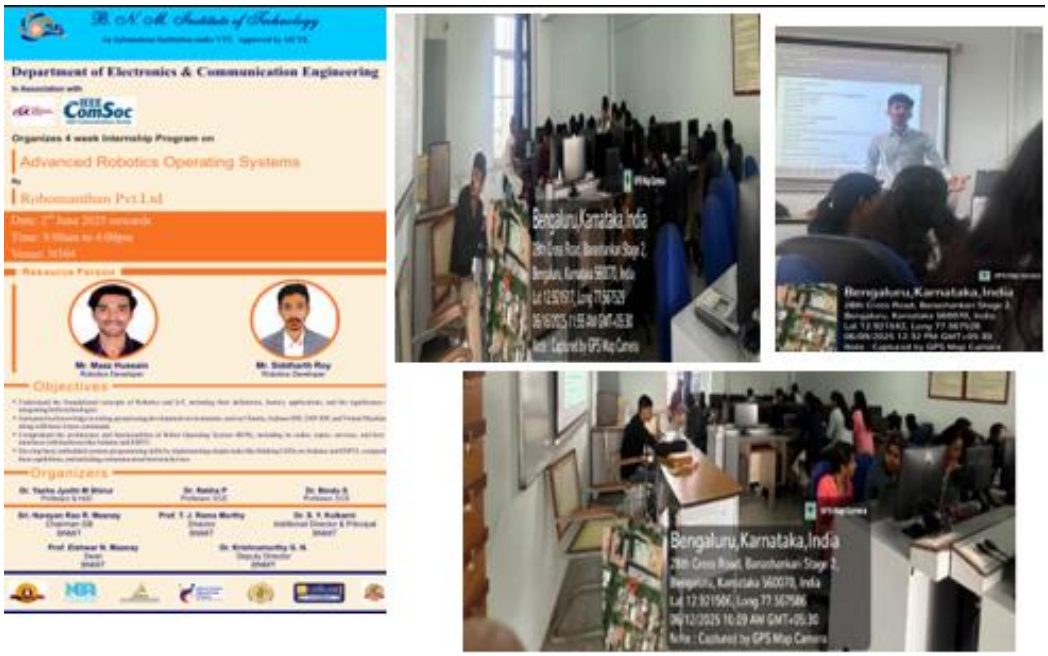
Throughout the program, instructors provided continuous guidance and mentorship, helping students understand the challenges involved in robotics software development. The internship also included discussions on career opportunities in robotics research, automation engineering, and robotics software development.

Objective

The primary objective of the internship was to provide students with comprehensive training in robotics software development using ROS. The program aimed to equip participants with the skills necessary to design and implement advanced robotic systems. Another important objective was to bridge the gap between academic learning and industry requirements by introducing students to tools and technologies widely used in robotics research and development.

Conclusion

The **14-Day Internship on Advanced Robotics Using ROS** was a highly successful training program that provided participants with valuable exposure to modern robotics development tools. The internship enhanced students' understanding of robotics software architecture and enabled them to gain hands-on experience in developing ROS-based robotic systems. With active participation and dedicated mentorship, the program significantly contributed to strengthening robotics knowledge and technical skills among students at BNMIT.



B N M Institute of Technology

An Autonomous Institute under VTU

8. HydroVision

Title of the Event: HydroVision
Date: 26 March 2025
Venue: B.N.M Institute of Technology (Autonomous), Bengaluru
Organized by: IEEE Robotics and Automation Society (RAS) – BNMIT Student Branch Chapter
Participants: 16

Overview

The **HydroVision** event was organized by the IEEE Robotics and Automation Society (RAS) Student Chapter at BNMIT to encourage students to explore innovative robotics solutions related to aquatic environments. Robotics technology has found increasing applications in underwater exploration, marine research, environmental monitoring, and water resource management. HydroVision aimed to inspire students to think creatively about how robotics can be used to address challenges associated with water-based environments.

The event brought together **16 participants** who presented ideas, prototypes, and conceptual designs related to water-based robotic systems. The competition provided students with a platform to demonstrate their innovative thinking and technical knowledge in developing robotics solutions for aquatic applications.

Event Proceedings

The event began with an introduction explaining the importance of aquatic robotics and its role in modern scientific research and industrial applications. Participants were encouraged to think about real-world challenges related to underwater exploration, marine conservation, and water pollution monitoring.

Teams presented their project ideas and prototypes that demonstrated how robotics systems could be used to perform tasks in aquatic environments. Some participants focused on developing floating robotic platforms capable of monitoring water quality and environmental parameters, while others proposed underwater robotic systems designed for exploration and inspection tasks.

Each team explained the working principles of their proposed systems, including the sensors, control mechanisms, and structural designs used in their models. Judges evaluated the projects based on criteria such as innovation, technical feasibility, practicality, and potential real-world impact.

The event also encouraged discussions on the future of aquatic robotics and the role engineers can play in developing technologies that help protect marine ecosystems and improve water resource management.

Objective

The objective of HydroVision was to encourage students to explore new and innovative applications of robotics in aquatic environments. The event aimed to promote creativity and interdisciplinary thinking by combining robotics engineering with environmental and marine science challenges.

Conclusion

The **HydroVision** event successfully inspired participants to think beyond conventional robotics applications and explore innovative solutions for water-based challenges. The event highlighted the potential of robotics technology in addressing environmental issues and demonstrated the creativity and technical capabilities of the participating students.

B N M Institute of Technology

An Autonomous Institute under VTU

9. Terrain Xtreme

Title of the Event: Terrain Xtreme
Date: 21 March 2025
Venue: B.N.M Institute of Technology (Autonomous), Bengaluru
Organized by: IEEE Robotics and Automation Society (RAS) – BNMIT Student Branch Chapter
Participants: 22

Overview

The **Terrain Xtreme** robotics competition was organized by the IEEE Robotics and Automation Society (RAS) Student Chapter at BNMIT with the aim of challenging students to design and build robots capable of navigating complex and uneven terrains. Robotics systems are increasingly being used in environments that are difficult for humans to access, such as disaster zones, mining areas, and planetary exploration missions. This event was designed to simulate such challenging conditions and encourage students to develop robots that can operate effectively in rugged environments.

The event attracted **22 participants** who formed teams to develop robots capable of traversing a specially designed terrain track. The competition emphasized mechanical robustness, efficient motor control, and intelligent navigation strategies. Participants were required to carefully consider factors such as wheel design, torque generation, weight distribution, and structural stability while designing their robots.

Event Proceedings

The Terrain Xtreme competition featured a specially designed track that included multiple obstacles such as ramps, uneven surfaces, bumps, and narrow pathways. These obstacles were carefully arranged to test the capabilities of the robots in handling difficult environmental conditions. The track was designed to simulate real-world challenges that robots might encounter during exploration or rescue missions.

Each team was given a chance to demonstrate their robot's ability to navigate the terrain. Robots were evaluated based on their ability to successfully overcome obstacles, maintain stability, and complete the course within the shortest possible time. Participants implemented a variety of design approaches to tackle the terrain challenges. Some teams focused on powerful motors and large wheels to improve traction, while others designed suspension mechanisms to absorb shocks and maintain stability.

During the competition, students had the opportunity to observe different design strategies used by other teams. This encouraged knowledge sharing and collaborative learning among participants. Judges also provided insights into how mechanical design and motor control systems influence the performance of robots in difficult environments.

The event not only tested the technical capabilities of the robots but also required participants to think critically and adapt their strategies based on the challenges presented by the terrain.

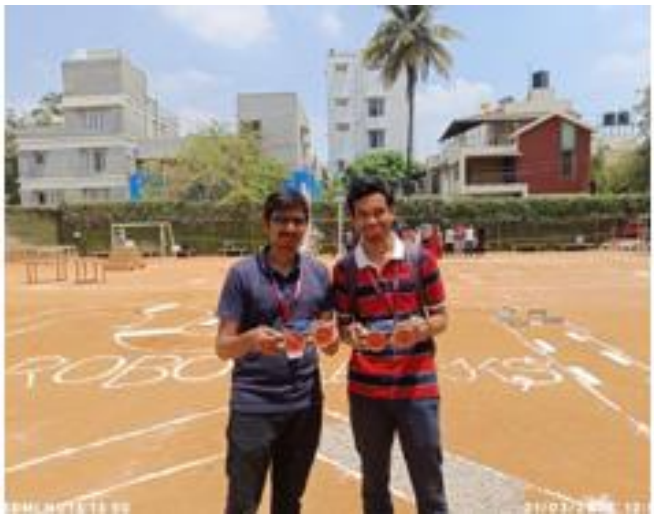
The dynamic nature of the competition made it both educational and exciting for participants and spectators.

Objective

The objective of Terrain Xtreme was to provide students with a challenging platform to apply their knowledge of robotics and mechanical engineering. The event aimed to develop problem-solving skills related to robot mobility, mechanical design, and obstacle navigation. It also encouraged students to think about real-world applications of robotics in exploration, disaster management, and industrial automation.

Conclusion

The **Terrain Xtreme** competition successfully challenged students to design robust and efficient robotic systems capable of operating in difficult environments. The event provided participants with valuable hands-on experience in robotics engineering and reinforced the importance of mechanical design and control strategies in developing effective robotic solutions.



B N M Institute of Technology

An Autonomous Institute under VTU

10. BalloonPop RoboDuel

Title of the Event: BalloonPop RoboDuel
Date: 21 March 2025
Venue: B.N.M Institute of Technology (Autonomous), Bengaluru
Organized by: IEEE Robotics and Automation Society (RAS) – BNMIT Student Branch Chapter
Participants: 40

Overview

The event titled **"BalloonPop RoboDuel"** was organized by the IEEE Robotics and Automation Society (RAS) Student Branch Chapter at B.N.M Institute of Technology as an exciting robotics competition designed to test the creativity, engineering knowledge, and strategic thinking of participating students. The competition focused on designing and controlling robots capable of competing in an arena where the main objective was to burst the balloons attached to opposing robots while protecting their own balloons. Such competitions play a vital role in encouraging students to apply robotics concepts in a practical and highly engaging environment.

Robotics competitions like BalloonPop RoboDuel are particularly effective in promoting hands-on learning because they require participants to integrate multiple engineering principles including mechanical design, motor control, embedded systems, and wireless communication. The event attracted **40 enthusiastic participants**, forming multiple teams that showcased their innovative robot designs and control strategies. The competition created a vibrant atmosphere where students demonstrated their creativity and technical skills while competing in a friendly and collaborative spirit.

Event Proceedings

The event began with a formal introduction by the organizing team of the IEEE RAS BNMIT Student Chapter. Participants were briefed about the objectives of the competition, the structure of the arena, safety guidelines, and the rules governing the matches. Each team was required to design and build a robot capable of navigating within the arena and bursting the balloons attached to competing robots using a specially designed mechanism.

Teams presented a variety of innovative robot designs incorporating different strategies and mechanisms. Some robots were designed with rotating arms or needle-based mechanisms to pop the balloons of opponents, while others focused on defensive strategies such as shields or protective frames to safeguard their own balloons. Participants used wireless control systems to operate their robots and maneuver them strategically within the arena.

The competition was conducted in multiple rounds, beginning with preliminary matches followed by elimination rounds leading to the final match. Each match was timed and judged based on factors such as successful balloon popping, robot maneuverability, and strategic

performance. The event generated excitement among both participants and spectators as robots competed in intense duels within the arena.

Throughout the event, judges and organizers provided valuable feedback to the participants regarding their robot designs and control techniques. Students were encouraged to analyze the strengths and limitations of their robots and learn from the designs presented by other teams. This interactive and competitive environment significantly enhanced the learning experience for all participants.

Objective

The primary objective of the BalloonPop RoboDuel competition was to encourage students to apply robotics engineering concepts in a real-world competitive scenario. The event aimed to enhance students' skills in robot design, control systems, and strategic decision-making. It also aimed to foster creativity, teamwork, and innovation among participants while promoting active involvement in robotics-related activities organized by the IEEE RAS chapter.

Conclusion

The **BalloonPop RoboDuel** competition was a great success and provided students with a valuable platform to demonstrate their technical abilities and innovative thinking. The event encouraged participants to experiment with different robot designs and control strategies while learning from practical experience. With active participation from students and effective coordination by the IEEE RAS organizing team, the competition successfully promoted robotics innovation and strengthened the technical community within BNMIT.

B N M Institute of Technology

An Autonomous Institute under VTU

11. Chakravyuha RoboMaze – The Navigation Challenge

Title of the Event: Chakravyuha RoboMaze – The Navigation Challenge
Date: 16 October 2024
Venue: B.N.M Institute of Technology (Autonomous), Bengaluru
Organized by: IEEE Robotics and Automation Society (RAS) – BNMIT Student Branch Chapter
Participants: 40

Overview

Chakravyuha RoboMaze – The Navigation Challenge was a robotics competition organized by the IEEE RAS BNMIT Student Chapter to test the problem-solving abilities and technical skills of students in robot navigation and control systems. The event was designed to challenge participants to build robots capable of navigating through a maze filled with obstacles and complex pathways.

The competition encouraged students to apply their knowledge of electronics, programming, and mechanical design to create robots capable of efficiently navigating the maze. With **40 participants** forming multiple teams, the event generated a competitive and innovative atmosphere among students interested in robotics.

Event Proceedings

The event began with an introduction to the rules and objectives of the competition. Participants were given a detailed explanation of the maze layout, competition guidelines, and evaluation criteria. Teams were required to design robots capable of moving through the maze while avoiding obstacles and reaching the destination in the shortest possible time.

Participants used a combination of sensors, motor control systems, and programming techniques to guide their robots through the maze. Some teams implemented line-following algorithms while others used obstacle detection sensors to navigate the maze autonomously. The competition tested both hardware design and software logic used for navigation.

During the competition rounds, each team was given an opportunity to run their robot through the maze. Judges evaluated the robots based on their navigation accuracy, speed, and ability to handle complex turns and obstacles. Teams that successfully navigated the maze in the shortest time were declared winners.

The event created a dynamic learning environment where participants observed different robotics approaches and learned from each other's designs and strategies.

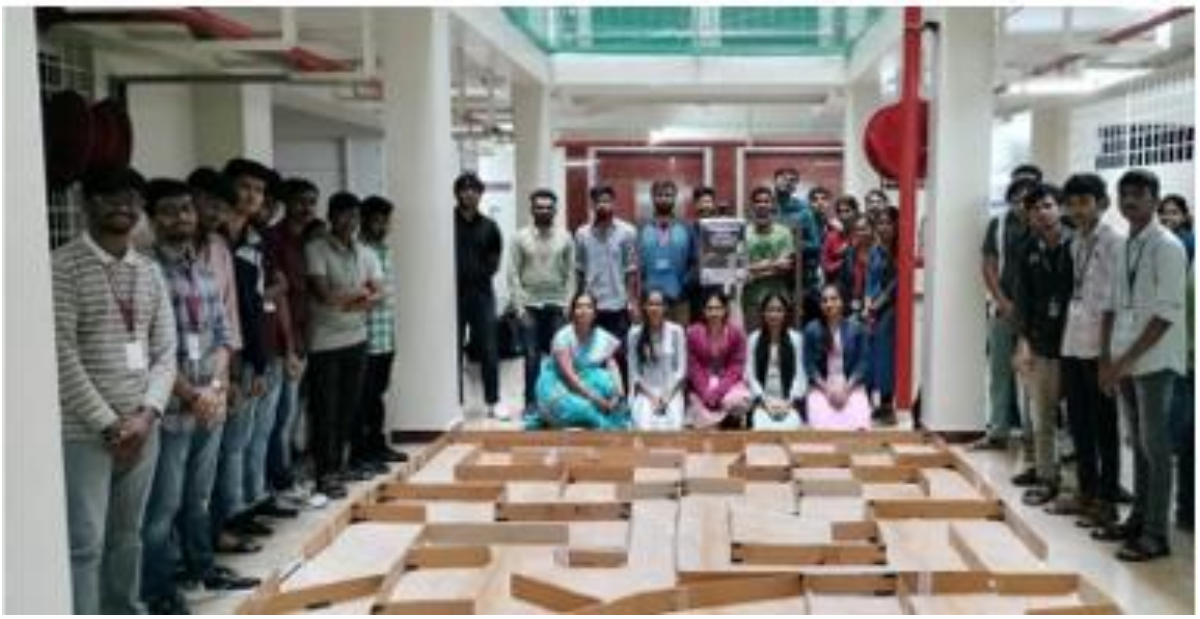
Objective

The primary objective of the Chakravyuha RoboMaze competition was to encourage students to apply robotics concepts in a competitive and practical environment. The event aimed to

improve students' skills in robot navigation, sensor integration, and algorithm design. It also promoted creativity and innovation in solving engineering challenges.

Conclusion

The **Chakravyuha RoboMaze – The Navigation Challenge** was a successful event that showcased the creativity and technical capabilities of students. The competition encouraged participants to experiment with robotics technologies and develop innovative navigation strategies. The event contributed significantly to enhancing students' practical understanding of robotics systems.



B N M Institute of Technology

An Autonomous Institute under VTU

12. Workshop on Fundamentals of Robotics with Robomanthan

Title of the Event: Workshop on Fundamentals of Robotics with Robomanthan
Date: 15–16 October 2024
Venue: B.N.M Institute of Technology (Autonomous), Bengaluru
Organized by: IEEE Robotics and Automation Society (RAS) – BNMIT Student Branch Chapter
Participants: 50

Overview

The IEEE Robotics and Automation Society (RAS) Student Chapter at BNMIT organized a two-day workshop titled **"Fundamentals of Robotics"** in collaboration with **Robomanthan**. The workshop aimed to provide students with a strong foundation in robotics principles along with practical exposure to robotics hardware and system integration. Robotics has become one of the most significant technological domains influencing modern industries, and this workshop was designed to help students understand the core concepts involved in building and operating robotic systems.

The workshop attracted **50 enthusiastic participants** who were eager to learn about robotics technologies and gain hands-on experience in designing and assembling robotic systems. The event focused on bridging the gap between theoretical concepts taught in classrooms and their practical implementation in real-world robotics applications.

Event Proceedings

The workshop began with an introductory session where experts from **Robomanthan** explained the evolution of robotics technologies and their growing importance in industrial automation, healthcare, transportation, and research applications. Participants were introduced to the basic components of a robot, including sensors, actuators, microcontrollers, power systems, and control mechanisms.

The technical sessions covered various aspects of robotics such as mechanical design, electronic control systems, and programming techniques used for robot operation. Participants were taught how sensors help robots perceive their environment and how actuators enable movement and interaction with objects. The instructors also explained the role of embedded systems and microcontrollers in controlling robotic operations.

One of the major highlights of the workshop was the hands-on session where participants assembled robotic modules and experimented with basic robotic functionalities. Students worked in teams to connect electronic components, configure control systems, and observe how different components interact to create a functional robotic system. The instructors guided the participants through each step of the process and helped them understand common challenges faced in robotics development.

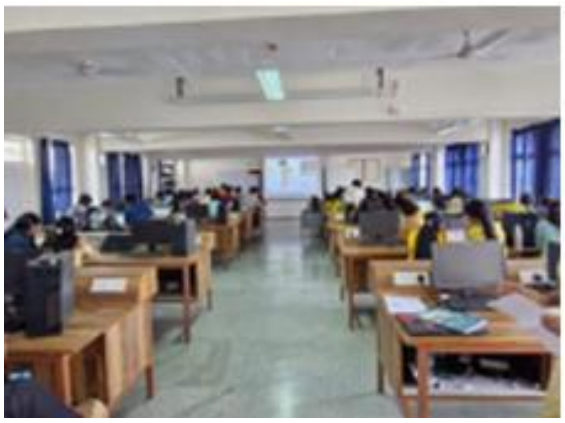
The workshop also included discussions on robotics competitions, project development strategies, and career opportunities in robotics and automation engineering. Participants gained insights into how robotics technologies are applied in industries and how engineers contribute to the design and development of intelligent machines.

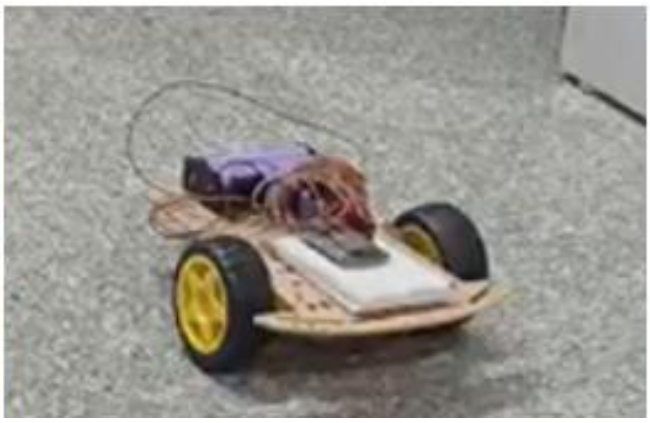
Objective

The primary objective of the workshop was to provide students with hands-on experience in robotics development while strengthening their understanding of fundamental robotics concepts. The event also aimed to encourage students to explore robotics as a field of research and innovation. Another key goal was to promote collaborative learning and teamwork among students working on robotics projects.

Conclusion

The **Workshop on Fundamentals of Robotics with Robomanthan** proved to be an informative and engaging learning experience for all participants. The combination of theoretical explanations and practical demonstrations helped students gain a deeper understanding of robotics technologies. The event successfully motivated participants to pursue robotics projects and further explore the exciting field of robotics and automation.





B N M Institute of Technology

An Autonomous Institute under VTU

13. Introduction to IoT and Robotics (Induction 2024)

Title of the Event: Introduction to IoT and Robotics (Induction 2024)
Date: September 2024
Venue: B.N.M Institute of Technology (Autonomous), Bengaluru
Organized by: IEEE Robotics and Automation Society (RAS) – BNMIT Student Branch Chapter
Participants: 600

Overview

The event titled **"Introduction to IoT and Robotics (Induction 2024)"** was organized by the IEEE Robotics and Automation Society (RAS) Student Branch Chapter at B.N.M Institute of Technology with the objective of introducing students to the rapidly evolving domains of robotics, automation, and Internet of Things (IoT). The event served as an induction program for newly joined students and provided an overview of the activities, opportunities, and technical initiatives carried out by the IEEE RAS chapter at BNMIT. The program aimed to ignite curiosity among students and encourage them to explore robotics and automation technologies that are shaping modern engineering and industry.

The event witnessed enthusiastic participation from around **600 students**, making it one of the largest induction sessions conducted by the IEEE RAS chapter. Students from different departments attended the session to gain insights into the interdisciplinary nature of robotics and automation systems. The event highlighted the importance of integrating electronics, mechanical systems, programming, and artificial intelligence to develop intelligent machines and automated solutions.

Event Proceedings

The event began with a formal welcome to the participants and faculty members present for the session. The organizing team introduced the **IEEE Robotics and Automation Society** and explained its global presence in promoting robotics research, innovation, and technological development. Students were given an overview of how IEEE RAS functions as a professional platform that connects students, researchers, and industry experts working in the field of robotics and automation.

During the session, speakers elaborated on the fundamental concepts of robotics including robot components, sensors, actuators, control systems, and embedded electronics. The discussion also covered the importance of **Internet of Things (IoT)** in enabling smart devices and interconnected systems capable of autonomous decision-making. Real-world applications such as smart homes, industrial automation, healthcare robotics, autonomous vehicles, and smart agriculture were highlighted to help students understand how robotics technologies are transforming multiple industries.

The speakers further explained how robotics systems are designed and implemented using both hardware and software components. Demonstrations and examples were presented to

illustrate how microcontrollers, sensors, and actuators interact to perform automated tasks. Students were encouraged to participate in robotics competitions, workshops, and technical projects organized by the IEEE RAS chapter throughout the academic year.

An interactive session was conducted at the end of the event where students asked questions related to robotics development, learning resources, and opportunities available through IEEE membership. The organizing team also introduced upcoming technical events such as robotics workshops, hackathons, and competitions that students could participate in to gain hands-on experience.

Objective

The primary objective of the event was to introduce students to the fundamental concepts of robotics and IoT technologies while creating awareness about the IEEE Robotics and Automation Society and its activities. The program aimed to encourage students to actively participate in robotics-based learning, innovation, and project development. Another important goal was to foster interdisciplinary collaboration among students interested in automation, embedded systems, and intelligent technologies.

Conclusion

The **Introduction to IoT and Robotics (Induction 2024)** event was highly successful and received an overwhelming response from students. The session helped participants understand the importance of robotics and IoT technologies in modern engineering and inspired them to explore opportunities in these fields. With active participation from students and effective coordination by the IEEE RAS student leadership team, the event successfully set the stage for future robotics initiatives and technical activities at BNMIT.