Report

on

IOT HANDS-ON WORKSHOP ON

BUILDING WIRELESS ROBOCARS

Organized By:

IoT Club

Computer Department, SCET

in collaboration with

CSI, IEEE WIE SCET SB, IEEE CS SCET SB

EVENT DETAILS:

Event Type: Hands-on Workshop

Event Mode: Offline

Event Date: 3rd August, 2024

Event Venue: N.J. Seminar Hall, SCET

Event Accessibility: For registered participants

Event Speaker: Ms. Tanushree Doctor

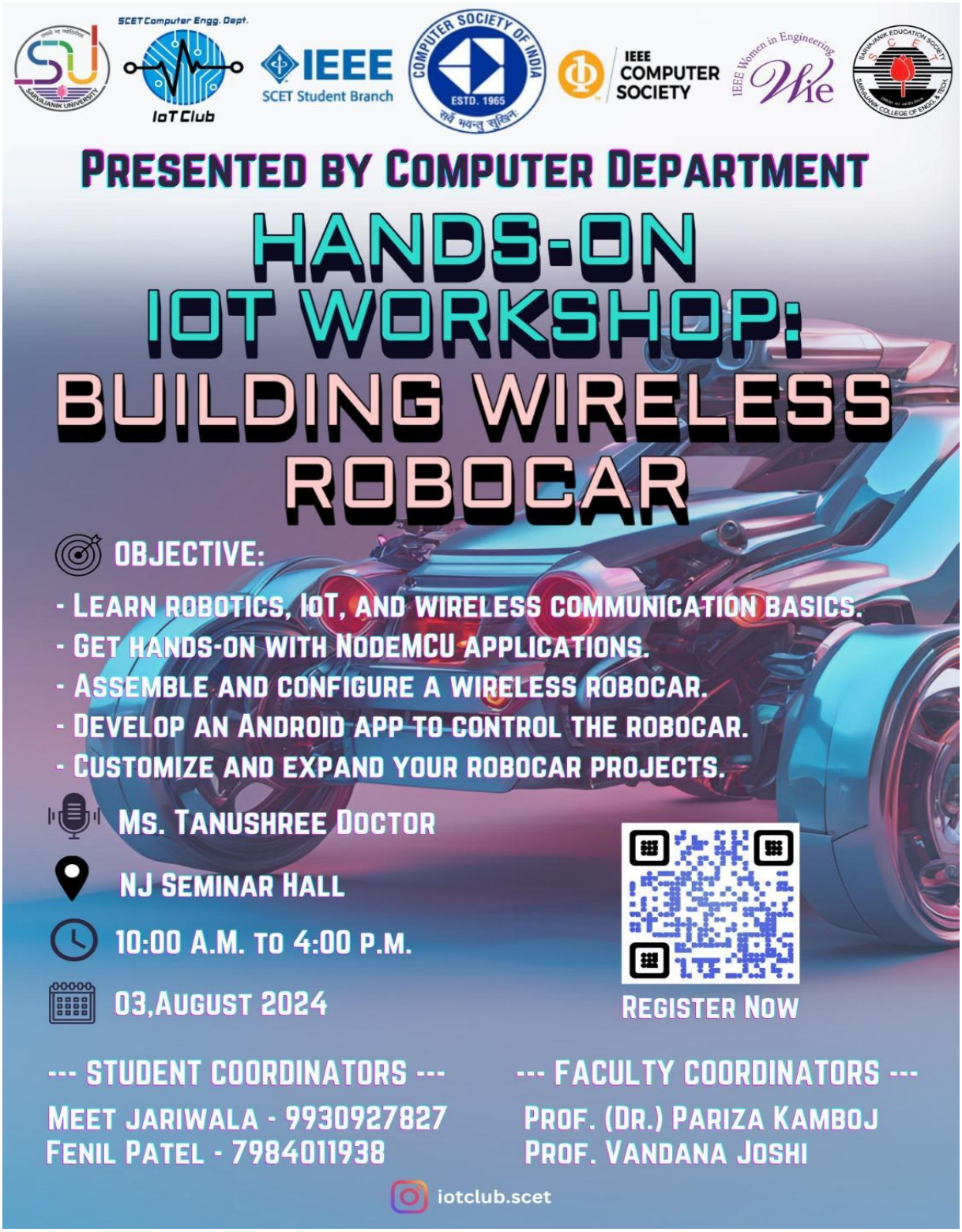
Faculty Co-Ordinator: Prof. Vandana Joshi

Prof. (Dr.) Pariza Kamboj

Student Co-Ordinator: Meet Jariwala
Fenil Patel

Student Volunteers: Khushee Maru
Meet Oza
Dev Sadisatsowala
Jainil Tailor
Jit Prajapati
Tisha Tandel
Anjali Jariwala
Aadyanshi Patel
Aakash Jaiswal
Anika Mehta
Viraj Shah
Nishita Adhisheriya

EVENT POSTER

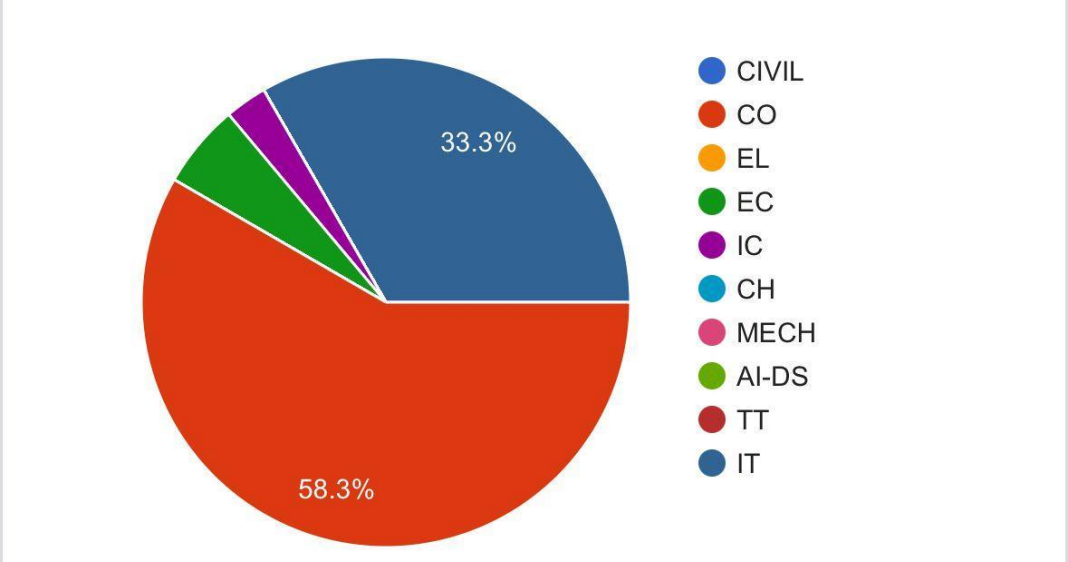


Introduction: The IoT Workshop on "Building Wireless Robocar" was conducted on 3rd August 2024 (Saturday) at N.J Seminar Hall. The workshop aimed to provide participants with hands-on experience in building and programming a wireless robocar using IoT technologies. It was organized by IoT Club, Computer Engineering Department, and it attracted a diverse group of students and enthusiasts interested in robotics and IoT.

Objectives of the Talk:

- To introduce the basics of IoT and its applications in robotics.
- To provide practical experience in building a wireless robocar.
- To teach participants how to program and control the robocar wirelessly.

Branch Wise Responses:



Event Highlights:

1. Introduction to the IoT Workshop:

- The workshop began with an introduction by the esteemed speaker, Ms. Tanushree Doctor, who provided an engaging overview of the event and its significance in the field of IoT and robotics.

- **Introduction to IoT:** She explained the fundamentals of the Internet of Things (IoT), highlighting how interconnected devices communicate and interact to perform various tasks.

- **What is a robot?** She provided an overview of robotics, defining it as an interdisciplinary field integrating technology, engineering, and computer science to design, construct, operate, and use robots. She also discussed robots' autonomous and semi-autonomous capabilities.

- **Types of Robots**: Various types of robots were introduced, including industrial robots, service robots, mobile robots, humanoid robots, and specialized robots, each with unique applications and functionalities.

- **Parts of a Robot:** She described the essential components of a robot, such as its mechanical structure, joints, chassis, limbs, sensors (ultrasonic, infrared, touch), actuators (motors), control systems, and power supplies.

- **Building a Wi-Fi-Controlled Robocar:** The main focus of the workshop was outlined, which involved constructing a Wi-Fi-controlled robot using the NodeMCU ESP8266 board. She explained the necessary components for the project, including the NodeMCU/ESP8266, battery, motor driver, motors, wheels, jumper wires, and robot chassis.

- **Circuit Diagram:** A circuit diagram was presented to guide participants in connecting the components properly. Specific connections were highlighted, such as D4 to Input 4, D3 to Input 3, D2 to Input 2, and D1 to Input 1.

- Ms. Tanushree Doctor emphasized the practical applications of IoT and robotics in various industries, inspiring participants with real-world examples and success stories.

- She also covered safety guidelines and best practices for handling electronic components and tools to ensure a secure and productive workshop environment.

2. **Hands-on Building of the Robocar:**

- Participants engaged in the practical session of assembling the hardware components of the robocar. This involved:

- Assembling the mechanical structure, attaching the chassis, and securing the motors and wheels.

- Connecting sensors and motors to the NodeMCU ESP8266 microcontroller using jumper wires, ensuring correct wiring and power supply connections.

- Writing and uploading code to the microcontroller to control the robocar. Participants learned how to integrate sensors and motors into the code and perform initial tests.

- Step-by-step guidance was provided throughout the process, with facilitators assisting participants in troubleshooting and debugging any issues that arose.

- The setup of wireless communication modules was demonstrated, showing how to pair the robocar with a remote-control device and test its wireless control functionality.

3. **Interactive Quiz:**

- To conclude the workshop, a quiz assessed the participants' understanding of the concepts covered during the session.

- The quiz included questions on IoT fundamentals, types and parts of robots, and specific details about the Wi-Fi-controlled Robocar project.

- The quiz served as a reinforcement of the knowledge gained, helping participants to review and consolidate their learning.

- Top scorers were recognized, adding a competitive and engaging element to the workshop.

User Feedback:

- After the hands-on building session, a feedback session was conducted where participants shared their experiences and thoughts about the workshop.

- Participants appreciated the comprehensive introduction and hands-on activities, highlighting the practical skills they gained.

- Suggestions for improvement and ideas for future workshops were collected, providing valuable insights for the organizers to enhance the learning experience.

Additional Feedback on logistics (management):

It was Nice
It is excellent
More equipment required.
Arrange more session
Excellent 👌
Very good
Yes
everything was perfect
yes

Further expectations from IOT club or any suggestions:

This is excellent event
More events like that
More Kits of Robocar should be there
More kits
To take more events and do very queries activities
N/A
More big workshops
Best day
More seminars like this!!

Media Coverage:

દિવ્ય ભાસ્કર સુરત-સિટી ભાસ્કર 04-08-2024

સ્કેટ કલેજ ખાતે 'હેન્ડસ્ ઓન વર્કશોપનું આયોજન કરાયું

સિટી રિપોર્ટર . સુરત

સ્કેટ કલેજ ખાતે હેન્ડસ્ ઓન વર્કશોપનું આયોજન IOT ક્લબ, CSI ચેપ્ટર, IEEE WIE SB અને IEEE CS SB દ્વારા કરાયું હતું. IOT ક્લબથી મીત જરીવાલાએ કહ્યું હતું કે, IoT આપણે જે રીતે જીવીએ છીએ, કામ કરીએ છીએ અને આપણી આસપાસના વાતાવરણ સાથે ક્રિયા-પ્રતિક્રિયા કરીએ છીએ તેમાં ક્રાંતિ લાવી રહી છે. SCET કોમ્પ્યુટર એન્જી. ડિપાર્ટમેન્ટની આઈઓટી ક્લબ, IoT ના ક્ષેત્રમાં નવીનતા અને હેન્ડ્સ -ઓન લર્નિંગ લાવવા માટે સમર્પિત છે. આ વિઝન સાથે IoT સ્ટુડન્ટ ક્લબે કુમારી તનુશ્રી ડૉક્ટર દ્વારા 'હેન્ડ્સ-ઓન વર્કશોપ ઓન બિલ્ડીંગ વાયરલેસ રોબોકાર' શીર્ષકથી 1-દિવસીય વર્કશોપનું આયોજન કર્યું હતું. જેનો ઉદ્દેશ્ય વિદ્યાર્થીઓને રોબોકાર જાતે બનાવવા માટે વ્યાપક અનુભવ આપવાનો હતો. વર્કશોપમાં નિષ્ણાંતે IoT અને વાયરલેસ કોમ્યુનિકેશનનું નિદર્શન કર્યું, રોબોકારને એસેમ્બલ કરવા અને ગોઠવવા માટે માર્ગદર્શન આપ્યું અને રોબોકારને નિયંત્રિત કરવા માટે એક એન્ડ્રોઈડ એપ્લિકેશન વિકસાવી. ઈવેન્ટને સફળ બનાવવા માટે ડો. પરિઝા કંબોજ, પ્રો. વંદના જોષી અને વિદ્યાર્થીઓએ ખૂબ જ ઉત્સાહપૂર્વક ભાગ લીધો હતો.

Key Takeaways:

- **Understanding IoT:** Gained foundational knowledge of IoT principles and applications.
- **Robotics Knowledge:** Learned about different types of robots and their components.
- **Practical Skills:** Built a Wi-Fi-controlled robocar, gaining hands-on experience.
- **Problem-solving:** Enhanced troubleshooting and debugging skills.
- **Collaboration:** Fostered teamwork and idea-sharing among participants.

Conclusion:

The IoT Workshop on Building Wireless Robocar was a great success, is offering participants valuable theoretical and practical insights into IoT and robotics. From the engaging introduction by Ms. Tanushree Doctor to the hands-on building and concluding quiz, participants left inspired and equipped with new skills.

Acknowledgments:

Special thanks to Ms. Tanushree Doctor for her expertise and guidance, the organizing committee, volunteers, and all participants for their active involvement and feedback.

Future Endeavours:

We plan to organize more advanced workshops on IoT and robotics, focusing on:

- Advanced IoT Projects
- Robotics Programming
- IoT and AI Integration
- Industry Collaboration