Institution's Innovation Council

Saurashtra University Rajkot

EXPLORING THE WORLD OF SENSORS WITH ARDUINO

19TH AND 20TH DECEMBER 2024

SUSEC, Incubation Centre, Dr. A P J Abdul Kalam Science Laboratory,

Saurashtra University

Contents

Saurashtra University – IIC

The university is dedicated to instruction, research, and extending knowledge to the public (public service). Ministry of Education (MoE), Govt. of India has established 'MoE's Innovation Cell (MIC)' to systematically foster the culture of Innovation among all Higher Education Institutions (HEIs). The primary mandate of MIC is to encourage, inspire and nurture young students by supporting them to work with new ideas and transform them into prototypes while they are informative years. Saurashtra University is one the Organization that have constituted the IIC to foster the vision of MoE and be a part for the promotion and development of innovation ecosystem.

Event Schedule

Date:19th and 20th December 2024

11:00AM	**Registration Time**
11:15AM	Welcome
11:20AM	Awareness Session by Shri Ravin Sardhara
01:00PM	Lunch Time
02:00 PM	Awareness Session by Shri Nirmal Bhalani
04:45 PM	Programme Feedback - Conclusion
05:00 PM	Closing Ceremony

Event Registration Link

bit.ly/CFSD-SArduino

Brief about Event

SU Startup and Entrepreneurship Council, along with IIC Saurashtra University in collaboration with Centre for Skill Development organized WORKSHOP "Exploring the World of Sensors with Arduino" on 19th & 20th December, 2024 from 11:00 am to 5:00 pm.

"Exploring the World of Sensors with Arduino" is a topic that introduces the concept of using Arduino microcontrollers to interface with various sensors to collect and process data. Sensors are devices that detect and respond to physical inputs from the environment, such as temperature, light, motion, humidity, and more. Arduino is a popular open-source platform that allows users to easily connect and control these sensors.

Shri Ravin Sardhara sir explained that Sensors are devices that detect physical properties (e.g., temperature, light, motion) and convert them into electrical signals. Common sensors used with Arduino include temperature sensors (DHT11, TMP36), motion sensors (PIR), light sensors (LDR), and many others. Analog Sensors Provide continuous data that varies in voltage (e.g., light sensors, temperature sensors). Digital Sensors Provide discrete data, usually a high or low signal (e.g., motion detectors, proximity sensors). Specialized Sensors Include ultrasonic sensors for distance measurement, gas sensors for air quality, and more.

Sensors can be connected to Arduino using various pins (digital, analog, or I2C) based on their type. Proper wiring and understanding of sensor datasheets are essential for correct sensor operation. Sensors can be used in a variety of projects like weather stations, home automation systems, security systems, and environmental monitoring. These projects help develop problem-solving, electronics, and programming skills.

Shri Nirmal Bhalani Sir explained that Arduino is an open-source microcontroller platform that allows users to interface with sensors, process data, and control devices. The platform is popular for its simplicity, accessibility, and large community support. The Arduino IDE allows for writing code in C/C++ to interact with sensors. Code is written to read sensor values, process data, and control outputs (e.g., turning on an LED based on sensor input). Choosing the right sensor for a specific project. Calibrating sensors and dealing with noise or interference. Managing power consumption, especially for battery-powered projects.

Exploring sensors with Arduino offers an engaging way to learned about electronics, programming, and data collection. With a wide variety of sensors and applications, Arduino makes it easy to build interactive projects that respond to the environment. Whether you're creating simple projects or complex systems, understanding how to interface and program sensors with Arduino opens up endless possibilities for innovation and problem-solving. By experimenting with different types of sensors, users gain hands-on experience in sensor technology, making it an excellent starting point for anyone interested in electronics or IoT (Internet of Things).

Key Points

During the session, below mentioned points were discussed:

- Introduction to Sensors
- Overview of Arduino
- Sensor Types and Their Applications
- Sensor Interfacing with Arduino
- Arduino Programming for Sensors
- Data Acquisition and Processing
- Sensor Calibration
- Building Sensor-based Projects:
- Wireless Sensor Communication
- Practical Applications of Sensors:
- Exploring Advanced Topics

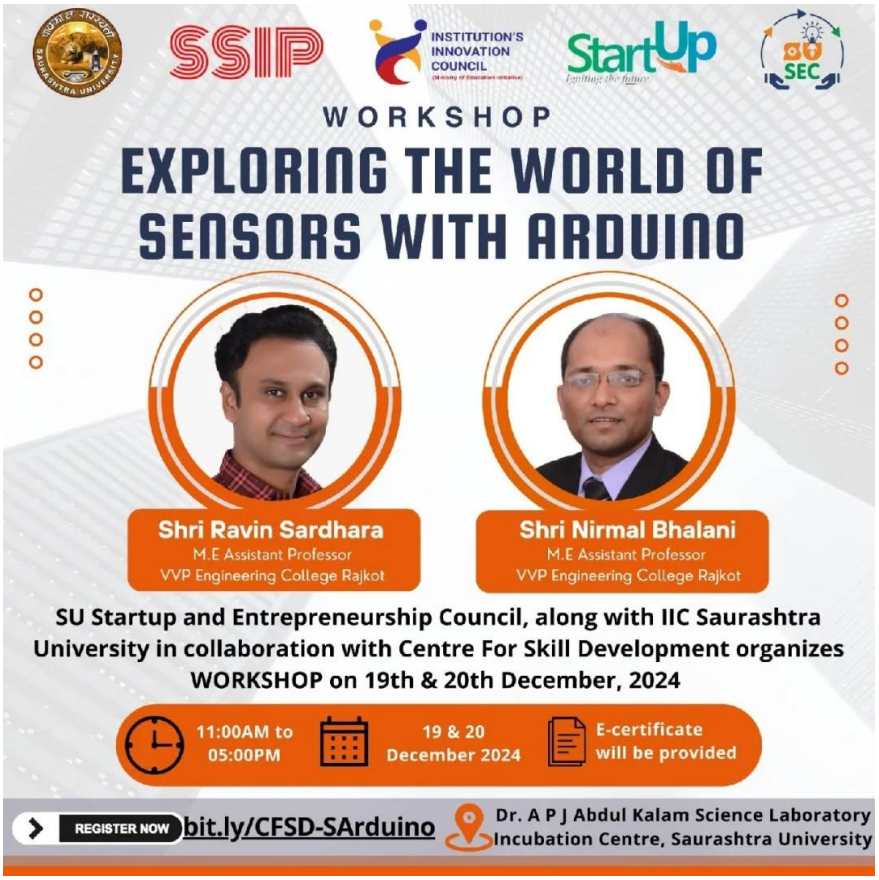
Outcome

The "Exploring the World of Sensors with Arduino" workshop will provide students and startups with hands-on experience in working with various sensors and integrating them with Arduino for real-world applications. Participants will gain practical knowledge of sensor functionality, data collection, and processing, enabling them to design and prototype innovative solutions. This workshop will enhance their understanding of embedded systems, IoT applications, and product development, empowering them to apply these skills in their startup projects and technological innovations.

About the Speaker / Chief Guest

Shri Ravin Sardhara	M.E (Electronics and Communication), Assistant Professor VVP Engineering College, Rajkot

Shri Nirmal Bhalani	M.E (Electronics and Communication), Assistant Professor VVP Engineering College, Rajkot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Shri Ravin Sardhara
M.E Assistant Professor
VVP Engineering College Rajkot
Shri Nirmal Bhalani
M.E Assistant Professor
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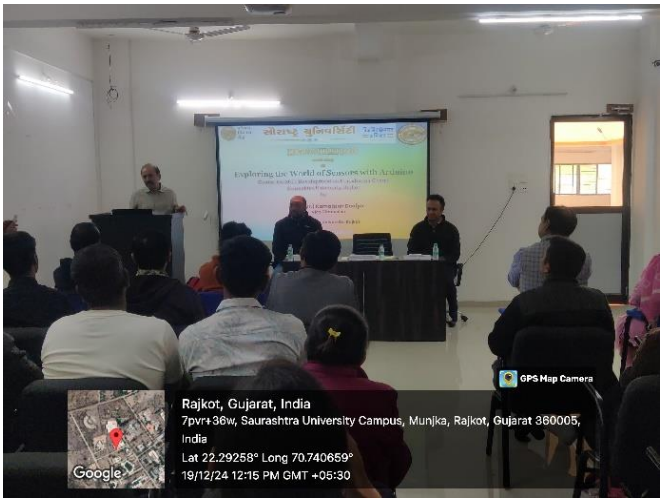
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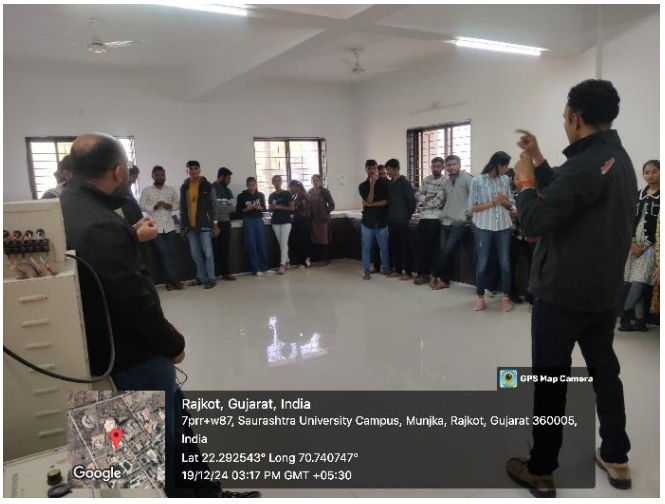
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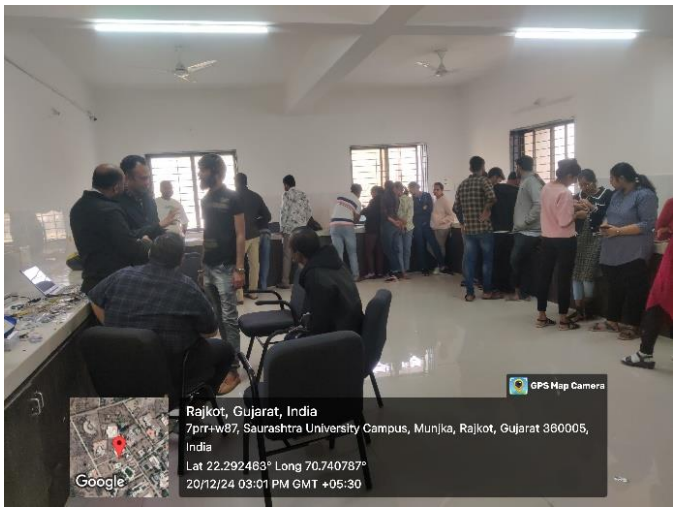
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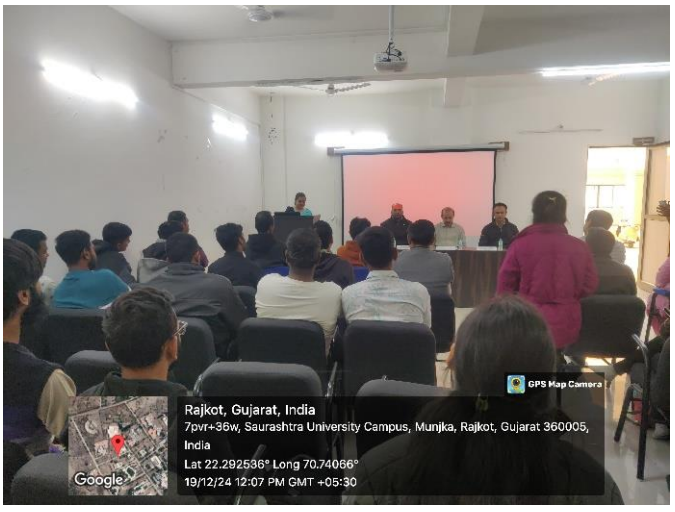
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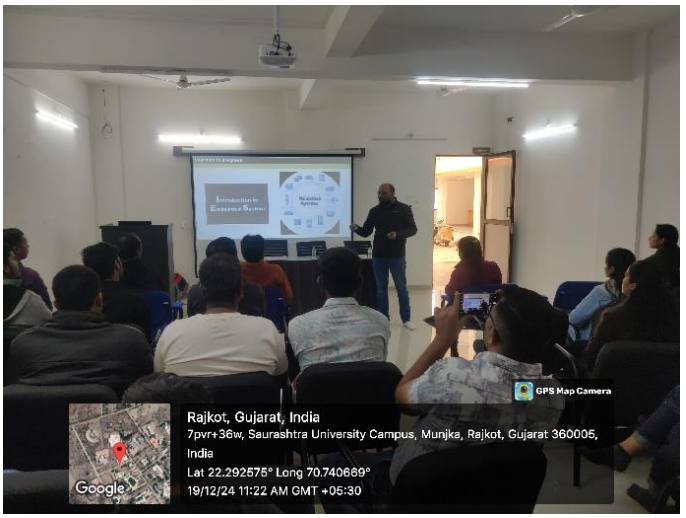

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