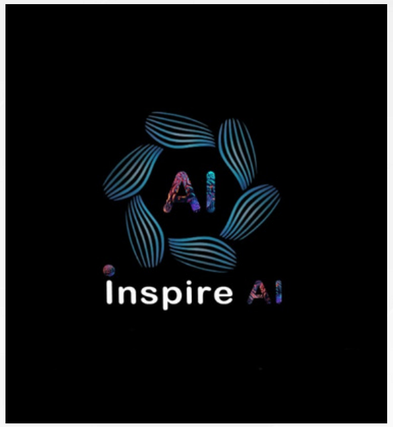


IOT & ROBOTICS

PROGRAM HIGHLIGHITS

- **Basic-Advanced Level Training**
  By Experienced Mentors
- **Live & Recorded Lectures**
  At Your Flexible Schedule
- **Real Time Projects**
  Minor & Major Projects
- **Accredited certificates**
  Program approved ISO Certificate
- **Internships**
  Opportunities will be provided
- **Placement Guidance**
  Assistance from industrial EXPERTS

OUR MOTIVE

UPSKILL

Empowering Minds For Tomorrow

ENHANCE

Discover Your Next Ambition

MOTIVATE

Empowering Minds, Igniting Futures

ABOUT US

Inspire AI is a leading EdTech company dedicated to empowering engineering students with the skills and knowledge necessary to excel in today’s competitive job market. Our mission is to bridge the gap between theoretical learning and practical application, enabling students to develop a strong foundation and enhance their employability.

The integration of the Internet of Things (IoT) and Robotics presents a transformative impact across various industries and aspects of daily life. Here are several key reasons why IoT and Robotics are important

WHY IOT & ROBOTICS ?

- Automation and Efficiency
- Enhanced Connectivity and Integration
- Cost Savings and Resource Optimization
- Improved Safety and Security
- Innovation and Advancements
- Enhanced User Experience
- Environmental Impact

LEARNING PATH

- Introduction to IoT
- IoT Hardware
- Introduction to Robotics
- Robotics Hardware
- IoT Software and Communication Protocols
- IoT Data and Analytics
- Robotics Software Robotics
- Sensors and Perception
- Advanced IoT Projects Advanced
- Robotics Projects IoT and
- Robotics Integration Capstone
- Project

Module 1: Introduction to IoT

- What is IoT?
- History and Evolution of IoT
- IoT Architecture
- Applications of IoT

Module 2: IoT Hardware

- Overview of IoT Hardware
- Sensors and Actuators
- Microcontrollers (Arduino, Raspberry Pi)
- Connectivity Modules (Wi-Fi, Bluetooth, Zigbee)

Module 3: Introduction to Robotics

- What is Robotics?
- History and Evolution of Robotics
- Types of Robots
- Applications of Robotics

Module 4: Robotics Hardware

- Overview of Robotics Hardware
- Microcontrollers and Microprocessors in Robotics
- Sensors and Actuators for Robotics
- Introduction to Servo and Stepper Motors

Intermediate Level

Module 5: IoT Software and Communication Protocols

- IoT Software Platforms and Operating Systems
- Communication Protocols (MQTT, CoAP, HTTP, WebSockets)
- Data Formats (JSON, XML)
- Cloud Platforms for IoT (AWS IoT, Azure IoT, Google Cloud IoT)

Module 6: IoT Data and Analytics

- Data Collection and Storage
- Data Processing and Analytics
- Edge Computing
- IoT Security

Module 7: Robotics Software ● Introduction to Robot Operating System (ROS) ● Programming Languages for Robotics (Python, C++) ● Simulation Tools (Gazebo, V-REP, Webots) ● Control Systems and Algorithms **Module 8: Robotics Sensors and Perception** ● Types of Sensors in Robotics (Proximity, Ultrasonic, LIDAR) ● Sensor Fusion ●Computer Vision and Image Processing ●Machine Learning for Robotics **Module 9: Advanced IoT Projects** ●Building IoT Applications ●Smart Home Automation

● Industrial IoT (IIoT)
●IoT in Healthcare

Module 10: Advanced Robotics Projects

- Autonomous Navigation
- Robot Manipulation
- Humanoid Robots
- Swarm Robotics

Module 11: IoT and Robotics Integration

- Integrating IoT and Robotics
- IoT-enabled Robotics
- Real-time Data Processing
- Case Studies and Real-world Applications

Module 12: Capstone Project

- **Real-world IoT and Robotics Project**
  - Project Planning and Design
  - Hardware and Software Development
  - Testing and Deployment
  - Final Presentation and Feedback

Assignments & Assessments

- Weekly assignments based on module topics
- **Mid-term project:** Wireframing and prototyping a small application
- **Final project:** Comprehensive IOT & ROBOTICS project
- Participation in class discussions and activities

Recommended Reading

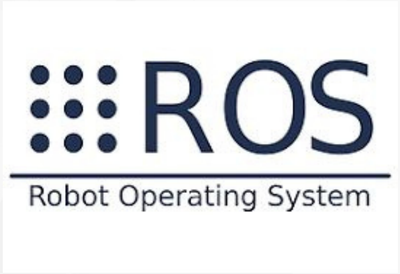
- **"Internet of Things: A Hands-On Approach" by Arshdeep Bahga and Vijay Madisetti**
- **"Building the Internet of Things" by Maciej Kranz**
- **"IoT Inc: How Your Company Can Use the Internet of Things to Win in the Outcome Economy" by Bruce Sinclair**

FRAME WORKS


aws
IoT


Google Cloud Platform

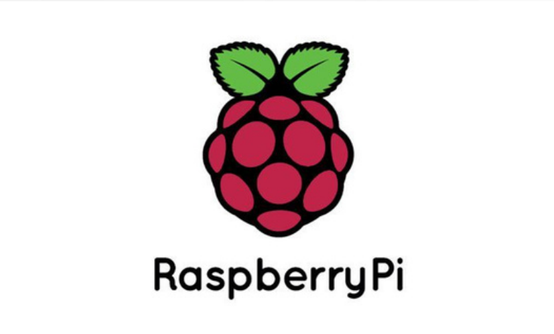

Microsoft Azure
IoT Platform


ROS
Robot Operating System

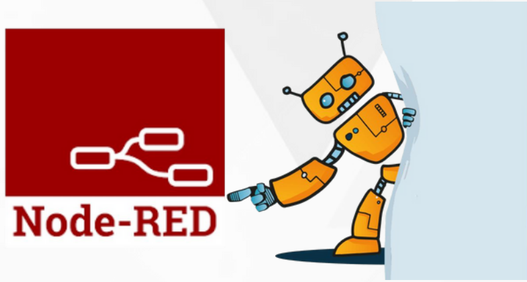

GAZEBO


ARDUINO

TOOLS USED



RASPBERRY Pi



Node-RED

*In case of additional tools used, It will be discussed in live class

CERTIFICATIONS

www.inspireai.in

THANK YOU

www.inspireai.in

Inspire AI