

## Internet of Things (IoT) Internship

**30 Days 80\* hours Intensive Certified Internship is  
India's biggest ever course-work based Internship on  
Internet of Things (IoT) & Industry 4.0 Technologies and  
Application development**

### Internship Structure

No of days, hours: 30 Days & 80 Hrs (This includes Expert-Led Live Hands-on sessions, assignments, project)

#### What is Internet of Things (IoT)?

The Internet of Things (IoT), is the network of physical objects or things **embedded with electronics, software, sensors, and connectivity** to enable objects to exchange data with the production, operator and/or other connected devices.

IoT helps in developing smart real-time industry and domestic applications involving safety, ease of usage, time criticality, entertainment and comfort with the help of embedded, electronics, software, sensor and communication technologies so it opened up lot of career/entrepreneurial avenues for those who are studying electronics, instrumentation, computer science and IT engineering.

This program will introduce you to the world of IoT technologies and equip you to identify the potential problems and provides a better platform to bring technological solutions. The internship provides hands-on training to effectively use and customize sensor networks, user interaction modules, data management and device interactions. Participants will understand the essentiality of inter-connected devices through wireless sensor networks and minimize human efforts. Students will get an overview of application deployment the process involved.

#### Technologies you learn

- Raspberry Pi, Node Red
- Cloud Platforms – AWS Cloud & UBIDOTS
- Protocols – MQTT
- Firebase – Realtime Database by Google
- MIT App Inventor
- IFTTT
- Diptrace – 3D PCB Design software

## **IoT Landscape, introduction to various allied technologies & team formation.**

### **Introduction to IoT**

- What is IoT - In-depth explanation
- IoT applications in different domain
- How large is the IoT market in different domains?

### **Introduction to various allied technologies**

- IoT Elements
- Sensor Interfaces
- Sensors and Actuators
- Cloud Platforms
- Real time Database
- IoT Protocols
- Software Development
- Nodes
- Gateways
- Communication Modules - Wired and Wireless
- Servers.

### **Each topic mentioned below will have**

Explanation of concepts – industry techniques and standards – hands-on experience

### **IoT technology tools**

- ESP Programming
- ESP Sensor Interfacing
- Novel IoT Protocols - MQTT
- Connecting to an Access Point using ESP
- Dual Modes of ESP
- Configuring an ESP
- Data Acquisition and Transfer
- Firebase Data Management
- Connecting to IoT Platform – UBIDOTS & AWS Cloud
- Connecting sensors and Exchanging data
- Connecting to Real-time Cloud Database and Storing Data for future use.
- MQTT protocol for Communication between devices and software.

### **IoT technology tools**

- Sensor Configuration
- Various sensors used in IoT applications
- Raspberry Pi
- R-Pi Architecture
- R-Pi based Gateway Creation

- Connecting R-Pi with IoT Platform – Node Red
- Connecting Real-time Database with hardware/ sensors.
- MIT App Inventor
- MIT App Inventor Interface with real time Database using IoT Protocols
- ESP Controller interface
- Data Transfer between Mobile and Controller
- PCB Designing using Diptrace software
- IFTTT Services in IoT with Google Assistant voice control
- IoT based start-up Ideas
- Entrepreneurship – Starting IoT based product/services company.

### **Team Formation - Problem Statement Allocation – 15 Days**

Internet of Things related industrial problems/opportunity area will be allocated to participants. Participants will work in a team and present the solution to Industry panellists.

### **Project Presentation**

Solution/Project presentation – students will work in a team and submit all the necessary deliverables via mail and which will be validated by expert and feedback will be provided.

- Best teams will be selected and awarded “Winner Project Competition” with prizes.
- Best students who perform well throughout the program will get “Best Intern Award” and certificate of Excellence.

**Program Benefits:** After the program the students should be able to:

- Understand IoT landscape and all emerging areas to develop products
- Understand and build IoT applications
- Learn to work with various IOT platforms
- Learn to control appliances and devices over voice.
- Implement concepts of UI, data handling and control instructions
- Emulate real time IoT application sequence
- Work on safety and automation tasks in daily life
- Conceptualize and develop products using IoT
- Develop confidence of presenting their project/product
- Inclination towards entrepreneurship and business opportunities

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