



# Internet of Things (IoT)

## IoT Introduction

- Introducing IoT
- Elements of IoT
- Real World Application

**-50 Hours**

## IoT Architecture

- Elements of IoT Architecture
- Actuators and Sensors
- Gateway

## IoT Platform and Analytics

- Arduino or Raspberry Pi
- Arduino Pin-outs / Raspberry Pi and Embedded Linux
- Programming
- Interfacing Sensors & Actuators
- Installing Packages
- Connecting to Clouds

## Communication Protocols

- How to transfer data by Wireless / Wired connectivity.
- Ipv4/Ipv6, Ethernet/GigE.
- GSM , 2g ,3g ,4g & 5g
- IEEE 802.15.4, IEEE 802.15.4e, 802.11ah
- Bluetooth
- Zig-Bee
- Z-Wave

## IOT Data Analytics & Visualization

- Interfacing database
- Mongo DB – Big Data
- Client Side Instances
- Analysis of data using python Module.
- Visualization and interpretation of Data.
- Data Cleaning in IOT

## IOT Security

- Attack, Defense, and Network Robustness of Internet of Things
- Malware Propagation and Control in Internet of Things
- Privacy Preservation Data Dissemination
- Trust and Trust Models for the IoT
- Authentication in IoT
- Computational Security for the IoT
- Security Protocols for IoT Access Networks
- Security Testing

## Use-Case Implementation

- Smart Home
- i-beacons
- Smart Energy

## Hackathon

- Mini-Projects



\*Kit and study material will be provided by us.

Technology Known:

C , C++ , Python , HTML , Database, Assembly Level Language (for Interfacing)  
Study Materials:

1. Designing the Internet of Things