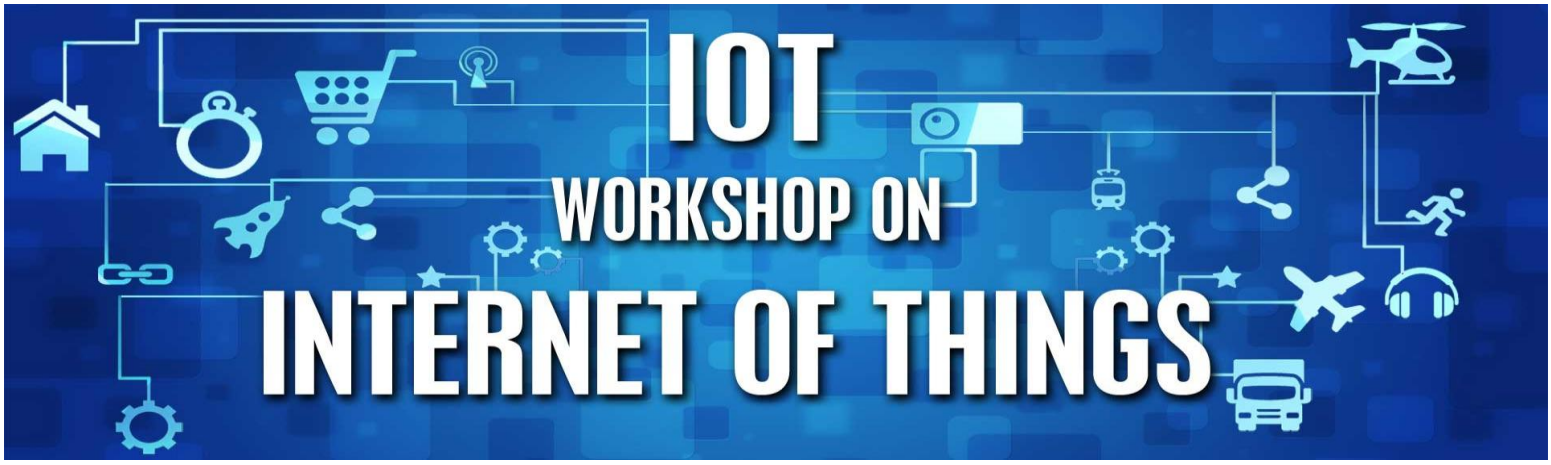

Topics To Be Covered

Day 1

***** **I**ntroduction to the Internet of Things

- The Internet of Things
- The Basics of Sensors & Actuators
- Introduction to Cloud Computing

***** **T**he Arduino Platform

- The Arduino Open-Microcontroller Platform
- Arduino Basics
- Arduino Board Layout & Architecture

***** **R**eading from Sensors
***** **P**rogramming fundamentals (C language)
***** **A**rduino Programming & Interface of Sensors

- Interfacing sensors with Arduino
- Programming Arduino
- Reading from Sensors

Project 1: Simple LED Program for Arduino
Project 2: Integrating Sensors & Reading Environmental Physical Values.
Project 3: Reading Environmental Values on Android Smartphone.

- Talking to your Android Phone with Arduino
- Connecting Arduino with Mobile Device.
- The Android Mobile OS.
- Using the Bluetooth Module

Project 4: Creating Android App using MIT App Inventor & controlling arduino connected devices through App.
Project 5: Voice Controlled Mini Home Automation using Android Smartphone

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Day 2

Project 6: Control Devices using Localhost Web Server for Home Automation.

- Integrating Ethernet Module & Testing DHCP Connection
- Creating Program for Localhost Web Server for controlling devices.

Project 7: Being Social on Twitter & update status on Twitter through Arduino

- Make Electronics Gadget Talk to Internet
- Integrating Ethernet Module
- Creating App on Twitter

Project 8: Send Voltage & Analog Data on Cloud Server.

- Cloud Computing
- Communicating with the Cloud using Web Services.
- Cloud Computing & IoT.
- Popular Cloud Computing Services for Sensor Management.

Project 9: Use Arduino to Upload free data from Environmental Sensors to Cloud Server.
Project 10: Automatically update status on Twitter based on Sensor Data.
Project 11: Control Electronic Devices from anywhere across the world using Internet & Mobile App.

Day 3

*** I**ntroduction to the Internet of Things

- The Internet of Things
- The Basics of Sensors & Actuators
- Introduction to Cloud Computing

*** U**nderstanding and Introduction to RPi

- What is SOC?
- Versions of Raspberry Pi & Their Difference
- Raspberry Pi 3
- Basics of Electronics
- Hardware Description
- Pin Configuration

*** O**S Installation on SD Card

- Downloading Image
- Study Various Operating Systems Available

- Making SD Card: Formatting and Partitions
- Raspberry Pi SD Installer

*** O**S Configuration

- Booting Into Desktop
- GUI Version
- CLI Desktop
- Changing Timezone
- Other Options
- Raspi-Config
- Test

*** N**etwork Setup

- Setting Up Using GUI
- Setting Up Using Command Line
- Finding Pi's IP Address
- Connecting with Wi-Fi/ LAN/ Datacard

*** G**PIO

- Study GPIO Pins
- Libraries Using Git
- Configuring GPIO Pins

*** P**i using SSH

- Enabling SSH
- Logging in using Putty
- Run Basic Commands
- Use GPIO

*** L**inux

- Understanding Linux
- File Structure
- Linux Commands
- Permissions

*** U**sing Python

- Understanding Python
- Condition Statement
- Loops
- Importing Libraries
- Functions

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Project 12: LED Program with Raspberry Pi
Project 13: Controlling LED with a Switch using Raspberry Pi.
Project 14: Integrating IR Sensor with Raspberry Pi.

Day 4

Project 15: Integrating Temperature & Humidity Sensor with Raspberry Pi read Current Enviornment Values.
Project 16: Reading Environmental Values on Android Smartphone.

- Talking to your Android Phone with RaspberryPi
- Connecting RaspberryPi with Mobile Device.
- The Android Mobile OS.
- Using the Bluetooth Module

Project 17: Control Devices using Local host Web Server for Home Automation.

- Integrating Ethernet Module & Testing DHCP Connection
- Creating Program for Localhost Web Server for controlling devices.

Project 18: Send Sensor Data on Cloud Server.

- Cloud Computing
- Communicating with the Cloud using Web Services.
- Cloud Computing & IoT.
- Popular Cloud Computing Services for Sensor Management.

Project 19: Automatically Tweet Sensor Data on Twitter.
Project 20: Control Electronic Devices from anywhere across the world using Internet & Mobile App.

Day 5

Project 21: Sending Sensor Data to Cloud using Raspberry Pi.

Ø Introduction to MQTT & Communication protocol for IoT

- Understanding MQTT
- Difference between HTTP & MQTT
- Understanding MQTT Broker
- Understating Publish & Subscribe Methods

Project 22: Installing server on Raspberry Pi.
Project 23: Connecting Arduino with Raspberry Pi Server.
Project 24: MQTT Publish from Arduino.
Project 25: MQTT Subscribe from Arduino.

Eligibility: The are no prerequisites for joining this workshop. Any one interested, can join this workshop. While a basic C Programming would be helpful, it is not compulsory. Student from Electronics, Electrical, Instrumentation, CS/IT any branch student can attend this workshop.

Got Quotations? Contact us

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