IIoT- INDUSTRIAL INTERNET OF THINGS

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WHAT IS INDUSTRIAL IOT ?

The Industrial Internet of things (IIoT) is the use of smart sensors and actuators to enhance manufacturing and industrial processes. Also known as the Industrial internet or Industry 4.0, IIoT leverages the power of smart machines and real-time analytics to take advantage of the data that dumb machines have produced in industrial settings for years. The driving philosophy behind IIoT is that smart machines are not only better than humans at capturing and analyzing data in real time, they are better at communicating important information that can be used to drive business decisions faster and more accurately.

ABOUT THE WORKSHOP ?

Can you imagine a computing concept where everyday objects have network connectivity? Is it possible for ordinary devices to communicate among themselves? Yes!! And the answer is 'the Internet of Things'. This Network of networks extracts and makes sense of data within machines. An estimated 50 billion wireless devices are to be connected to the Internet by 2020. Interesting! Isn't it? How beautiful it is when your door can update its Facebook Status every time someone opens it. A song starts playing when you tweet about it. A fire sensor that automatically send an E-Mail to the fire department. Keeping all the awesomeness in mind Innovians Technologies has introduced the internet of things workshop to get you ready for the future. You'll learn the basic concepts and features of the Industrial Internet of Things and build projects utilizing the RaspberryPi platform. You'll discover fundamental concepts of cloud computing, sensor reading and connecting the e RaspberryPi to the Internet, wireless interfaces and Android phones. You'll also learn to use the most popular open platforms for managing sensor data from the e RaspberryPi, how to trigger actuators remotely, and how to reprogram e RaspberryPi using cloud services.

TOPICS TO BE COVERED IN WORKSHOP

DAY 1	MODULE 1- BASIC CONCEPTS

Introduction to IoT- Background & History
How is IIoT different from plain vanilla IoT?
Challenges facing IIoT due to the I part
Traditional Data Acquisition & Control Architectures- PLC/DCS/SCADA/SIS
Changes in legacy architectures due to toIIoT
Industry 4.0 Concepts

MODULE 2- UNDERSTANDING IIOT ARCHITECTURES

Understanding Industrial architectures

Understanding Field Devices

Understanding Edge Gateways in IIoT

Connecting legacy I/O as Analog 4-20 mA, Fieldbus, Wireless devices and Gateways

Communication Protocol MQTT

Cyber security Considerations

UNDERSTANDING AND INTRODUCTION TO RPI

What Is SOC?

Versions of Raspberry Pi & Their Difference

Raspberry Pi 3

Basics of Electronics

Hardware Description

Pin Configuration

OS INSTALLATION ON SD CARD

Downloading Image

Study Various Operating Systems Available

Making SD Card: Formatting and Partitions

Raspberry Pi SD Installer

OS CONFIGURATION

Booting Into Desktop

GUI Version

CLI Desktop

Changing Timezone

Other Options

Raspi-Config

Test

NETWORK SETUP

Setting Up Using GUI

Setting Up Using Command Line

Finding Pi's IP Address

Connecting with Wi-Fi/ LAN/ Datacard

GPIO

Study GPIO Pins

Libraries Using Git

Configuring GPIO Pins

Pi using SSH

Enabling SSH

Logging in using Putty

Run Basic Commands

Use GPIO

LINUX

Understanding Linux

File Structure

Linux Commands

Permissions

USING PYTHON

Understanding Python

Condition Statement

Loops

Importing Libraries

Functions

PROJECT 1
LED Program with Raspberry Pi

PROJECT 2
Controlling LED with a Switch using Raspberry Pi

PROJECT 3
Integrating IR Sensor with Raspberry Pi

DAY 2

PROJECT 4 — Integrating Temperature & Humidity Sensor with Raspberry Pi & read Current Environment Values.

PROJECT 5 — 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 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 — 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 8 — Automatically Tweet Sensor Data on Twitter.

PROJECT 9 — Control Electronic Devices from anywhere across the world using Internet & Mobile App.