Internet of Things (IoT) Training

5 Days Course

In Association with

Axelta Systems Private Limited

(Internet of Things to Internet of Everything)

Consultancy with Limitless Possibilities...

Domain: *Engineering, Environment, Research & Academia.*

For: Individual, Institutes, University, Private, Government Organizations and Industries

TECH COUNSELLOR

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About Tech Counsellor

Tech Counsellor | Research and Consultancy firm with an experienced team of Engineers and Professionals providing its services in the domain of Engineering, Environment, Research &Academics to Individual, Institutes, University, Private & Government organizations and Industries..

Tech Counsellor is committed foremost to excellence in research, products development and in providing the best technical education and consultancy services in the domain of Engineering and Science.

Founded in Sept 2013 with a vision of '*Empowerment Through Technology*', to create innovation interdisciplinary programs, products, research based events for the technical as well as non-technical students, individuals and groups of basic to the higher level; to provide a common platform for information sharing and to bridge out the gap between Industry and Academia, officially registered on 16th Oct 2014 in Directorate of Industries, MSME, Government of Uttarakhand (EM II Reg. No. 050061201445) and in Udhyog Aadhaar on 15th Feb 2016 (UAN : UK08D0000067).

MoU's with Industry: In Nov 2017, Tech Counsellor inked an MoU with **EVIAN Engineering Private Limited**, a Delhi based ISO 9001:2008 certified company working in the domain of Water Recycling and Environment domain and;

In March 2018 signed an MoU with **Axelta Systems Private Limited**, a Hyderabad based leading company working in the domain of Internet of Things. Axelta IoT Academy is world's largest End-to-End IoT training company, has trained more than 7000+ professional across the globe. Also, has their own IoT platform OSMOSIS for integrating any IoT device.

Association with NGO's: Tech Counsellor is associated with Uttarakhand (India) based NGO's & Societies like 'Technology Research Innovation and Development Society (TRIDS)', 'Society for Environment and Women Awareness (SEWA)' and 'Kaviraj Foundation'.

Read More at: http://techcounsellor.com

AboutAxelta Systems

We provide end to end solutions for your connected device needs. Our best of breed solutions and framework enables IOT communication like no one else does. Giving you the ability to harness the power of "Internet of Things" and achieve multi fold improvement in effectiveness of your business processes.

Our machine learning enabled solutions help you derive intelligent information and intuitive visual representation to take critical business decisions in real time at fraction of cost of our competitors We also provide support for building custom solutions for your specific needs that gives you the speed and agility to build and deploy to your needs faster than anyone else Based out of Hyderabad, India we are in a unique position to meet the IoT specific needs of businesses leveraging the huge talent available here and at an amazingly effective cost

Axelta IoT Academy:

- Axelta is an Internet of Things (IoT) Company based out of Hyderabad India.
- Co-founded by 2 IITians who have more 20 years of experience in technology.
- World leader in providing End
- Axelta IoT Academy is world's largest **End-to-End IoT training company**.
- Axelta has trained more than 7000+ professionals.
- Axelta has products in Remote Security management, Remote Sales management and logistics
- Axelta also has its own IoT platform: OSMOSIS for integrating any IoT device.
- Axelta IoT Academy offers training on various modules in IoT spectrum
- Axelta is certified as "ISO 9001:2015"

Recognized worldwide as Top IoT Startup

- CIO Review
- Silicon India
- Economic Tim
- InsightSuccess

Read More at: http://axelta.com

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Syllabus

Day 1			
Topic	**Content**	**Theory / Practical**	**Duration in Minutes**
Introduction to IoT	Internet of Things – In-depth explanation, Applications in different domains, Use cases ranging from Smart Home to Smart Cities, IoT Business – How large is the IoT Market	**T**	**90**
Introduction to IoT Architecture and Technologies	Architecture, Technology Stack, Hardware and Software Development Platforms, Node and Gateways, Development boards, SOC and IC, Data Streaming , IoT Data Store and IoT, Analytics & Visualization	**T**	**90**
Sensors and Actuators	• What is Sensor & Actuator? • What is a good sensor? • Sensor properties and their classification? • Types of sensors. Selecting a sensor for your use case.	**T**	**60**
Logistics Use Case	Introduction to Logistics Business Problem and approach to solving it	**T**	**20**
Sensor Practical – Best Cold Chain & Smart Home – Capture data from Sensors – Practical	Introduction to Arduino, Connect a temperature, Humidity, LDR, PIR, Power Sensors, Door status sensor and display data on Arduino Board ,Write a Program to read the Sensor data	**P**	**100**
Day 2			
Communication Protocols	Introduction to communication architecture– Network protocol stack, Channels and protocols – RF: ZigBee, BlueTooth, BLE, Zwave, Mesh network. Communication Channels: GSM/GPRS, 2G, 3G, LTE, WiFi, PLC, IoT protocols: MQTT/MQTTS, CoAP, 6LoWPAN, IPSO, Thread, like TCP, UDP, HTTP/s, CoAP, MQTT. Comparison of the different IOT protocols, advantages and disadvantages (limitations) of these IOT protocols. IPv4addressing problem for IOT and introduction to IPv6 IPv6 is required to address more devices. Application issues with RF protocol – power consumption, LOS, reliability. Security aspects	**T**	**90**
Gateway Communication Practical –1 – Send sensor data to cloud: 1. using GPRS and HTTP – 2. Using WiFi and HTTP	Read data from sensors, Create JSON Object, Establish HTTP connection using GPRS, Send JSON data to OSMOSIS Rest API over HTTP, Establish HTTP connection using WiFi, Send JSON data to OSMOSIS Rest API over HTTP	**P**	**90**
Communication Practical – 2 –Trigger alarmthrough SMS using Platform	Create business rules in Osmosis for alarms, Send Data to Osmosis platform using simulator, Create rule and configure Alarm for your device, Trigger Alarm through Osmosis by sending alarm	**P**	**90**

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	condition Data, Connect and program for Buzzer on your Arduino board , Develop code for reading SMS, communicating through Arduino and trigger the Alarm.		
IoT Platforms and Consortiums and Axelta's IoT Platform Osmosis demo	IoT Platforms, Generic architecture and features of IoT Platforms, Comparison of few IoT Platforms, Choosing IoT Platforms for your use case, Consortiums evolving around IOT, IOT alliances and the standards (domain wise, IIC, OIC), IOT eco systems build around these platforms.	**T**	**90**
	Day 3		
Cloud Computing and Big Data Platforms	What is cloud and What is cloud computing, Benefits of cloud. Deployment Models, Top cloud providers, Service Models, Different Services from Amazon. Advantages for different offerings. Introduction to the Big Data and Big data technologies and stream processing.	**T**	**30**
Web Services and Different Data Stores	What are Web Services. Why Web Services. Types of Web Services. REST ful web services. Design Principles. SQl, No-SQL – Key Value, Column, Document and graph database, CAP model, different examples of databases, Example – Hadoop system, Big Data Technologies – CouchDB, MongoDB, Node4J, Hadoop Ecosystem, Spark, Cassandra.	**T**	**90**
Cloud Practicals – Introduction to Virtual environment on Amazon web service cloud. AWS Cloud	Participants get access to virtual machines on Amazon web service cloud and get familiar with the same. Learn and Deploy sample application on EBS instance of AWS, Learn and Deploy sample application on RDS instance of AWS	**P**	**60**
NoSQL Mongo DB Practical – Store Best Cold Chain Vehicle sensor data into Big Data NoSQL MongoDB	Understand the Big Data practical environment .Understand Mongo DB API and major commands, Start Mongo DB and store sample data, Read data from Mongo DB (Big Data),Store vehicle sensor data into MongoDB.	**P**	**60**
REST Web services Practical – Stream Best Cold Chain vehicle sensordata using REST Web services	Create a web service and receive data using device simulator, Stream vehicle sensor data to web service and store in Big Data system.	**P**	**60**
Big Data Analytics Practicals – Resolve Best Cold Chain business problem using Big Data analytics	Generate analytics to solve specific business problem as defined in the best cold chain use case,Define algorithm for the analytics, Develop map reduce code ,Arrive at Business decision using map reduce and other tools.	**P**	**60**
	Day 4		
MQTT	MQTT Introduction, MQTT Architecture,	**T**	**90**

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	Connection Management, Packet Structure, Security		
MQTT practical	Demo all features of MQTT using Mosquito broker and MQTT client Plugin	**P**	**60**
MQTT Home Automation use case	John has IoT Enabled home. Using MQTT protocols control of home appliances	**Demo**	**50**
ZigBEE	Introduction, Advantages of Zig BEE, Use case of Zig BEE, Mesh Network Concept, Zig BEE Routing and addressing, Security	**T**	**60**
ZigBEE Mesh Network Demo	Forming Mesh Network using Zig BEE modules	**Demo**	**60**
	Day 5		
IoT Security	How secure is IoT? Vulnerabilities in an End – to – End IoT scenario, Conflicts of a secure IoT systems with Economy, Key aspects for Securing IoT solutions	**T**	**40**
Coap Protocol	Architecture of CoAP, Features of CoAP, Comparison with other protocols, RESTful Architecture	**T**	**90**
CoAP based practical's	CoAP based practical using 6Lopan, Contiki OS, Copper plugin	**P**	**90**
Use Case – Ask participants to choose from various Business problems	Help participants to solve the business case using IoT	**T/P**	**140**

The table below describes the trainings and their respective charges.

S.N	Level	Pre-requisite	Duration	Batch size required	Model of Training	Cost in INR
1	5 Days End – EndIoT Training	Not Required	5 Days Complete Theoretical and Hands-On/practical Training	Min: 30 Max: 50	F2F, On Site Campus	1,50,000/- *

* *Excluding of Taxes and other expenses.*

- For Hands-On Practical Electronic/Embedded kits will be provide.
- Software Access will also be provided to participants.
- **Note: Kits will be carried by the trainers for the training purpose.**

Target Audience: Anyone can attend this training. Starting from entry level to experienced faculty can attend it.
Faculty from ECE, IT, CSE, Mechanical and Management can attend.

Delivery Mode: On-site (In Institute, Organization, College Campus)
No. of participants per batch: 30 – 50

Other Expenses: Travel, Food and accommodation expenses of trainers for 5 days should be provided by Clients.

Above training gives a complete overview of end to end IoT ecosystem. Various technical pieces likeSensors, communication protocols, IoT Platforms, cloud and Analytics is covered. Hands-on/Practical anddemo is also included.

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Key Takeaways:

- In-depth understanding of IoT and different technical pieces of IoT ecosystem
- In-depth understanding of IoT protocols
- Solve use cases using IoT protocol MQTT
- Mesh network using ZigBee
- IoT Security
- Managed Services
- IoT Platforms

This Cost Includes:

- Certification Cost (5 Day Training Program)
- Membership and Benefits for Future (from Tech Counsellor)
- 10% Discount for Next One Year on all Services offered by Tech Counsellor
- Software Access will also be provided to all participants.
- **Optional:** Individual Kit option can be selected at time of Registration with extra charges.
- Students can purchase Training Kits available on website or used in the training kit by paying the additional fee. For this they must select the option at the time of online registration.
- **Online Registration** for all participants is must. Certificates will be issued on the name of the participants registered at time of registration.

Account Details:

Account Name: Tech Counsellor
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Bank: Syndicate Bank

GSTIN: 05AANFT0053B1ZN

Mode of Transaction: Online (Pay Pal / NEFT / RTGS)

Amount to be Paid: Full in Advance (One Month)

Online Registration for All Participant is Compulsory

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