

Internet of Things (IoT)

The Internet of Things (IoT) is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. A thing, in the Internet of Things, can be a person with a heartmonitor implant, a farm animal with a biochip transponder, an automobile that has built-in sensors to alert the driver when tirepressure is low -- or any other natural or man-made object that can be assigned an IP address and provided with the ability to transfer data over a network.

1. Introduction to the Internet of Things

- oWhat is the IoT and why is it important?
- oElements of an IoT ecosystem.
- oTypical IoT applications.
- oTrends and implications.

2. Sensors and sensor nodes

- oSensing devices.
- oSensor modules, nodes and systems.

3. Connectivity and networks

- o Wireless technologies for the IoT.
- o Edge connectivity and protocols.
- o Wireless sensor networks.

4. Analytics and applications

- oSignal processing, real-time and local analytics.
- oDatabases, cloud analytics and applications.

5. Industry perspective

- oBusiness considerations.
- oLegal challenges.

6. IOT lab exercises and mini-project

- o Local processing on the sensor nodes.
- o Connecting devices at the edge and to the cloud.
- oMini-project: Designing an IoT system (group exercise).

