Workshop on Embedded Systems & IoT Technology

Internet of Things (IoT): Applications and Challenges

Dr. Ali H. Hamad



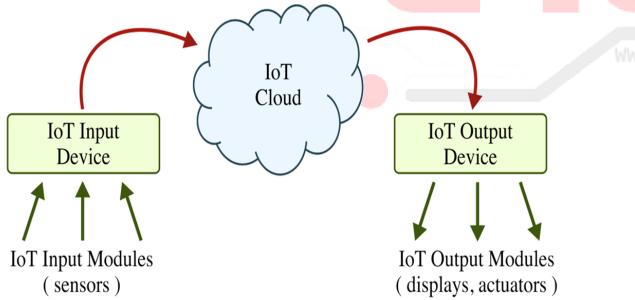
Outlines

- Definition \bullet
- IoT Platform, operating systems, development tools
- Security issue in IoT
- Local applications in IoT

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Definition

The IoT is basically an interconnection of sensors, actuators, and computing devices. It emphasizes that "things" (devices) are connected and communicate rather than peoples.







Information and Communication Engineering

Three main waves in Information and communication technology in last three decades:

1. Internet

2. Mobile communication

3. Internet of things



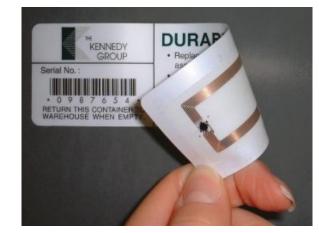
Important aspects related to IoT

• Radio frequency identification:

A key role is played by RFID system composed of one or more readers and several tags which helps in automatic identification of anything.

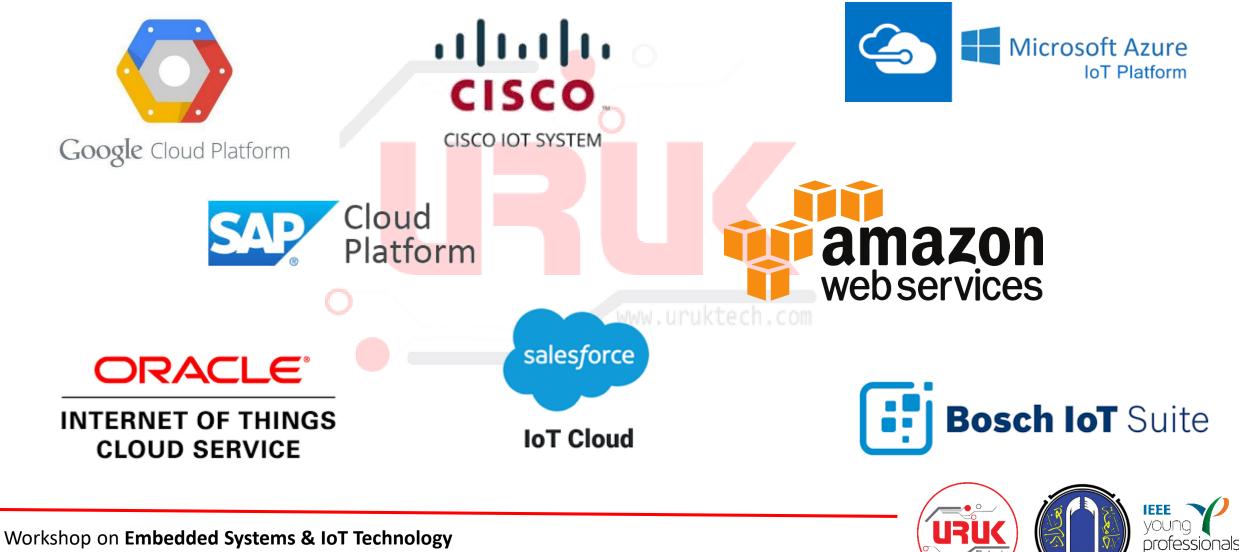
• Wireless Sensor network:

Better track of the status of things, getting information about position, movement, temperature. Also it can be utilize in several areas like healthcare, government and environmental services, defense, etc.





IoT Top Platforms



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UrukTech Electronics - Training & Development Department

Top IoT Operating Systems

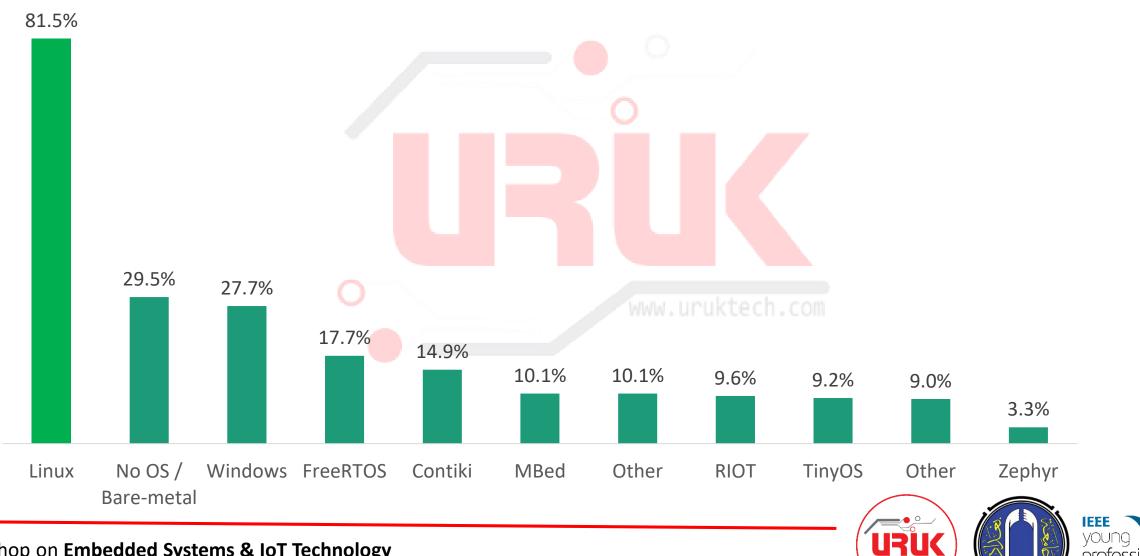




Contiki **ARM**mbed The Open Source OS for the Internet of Things RIOT ubuntu®)s lin Raspbian



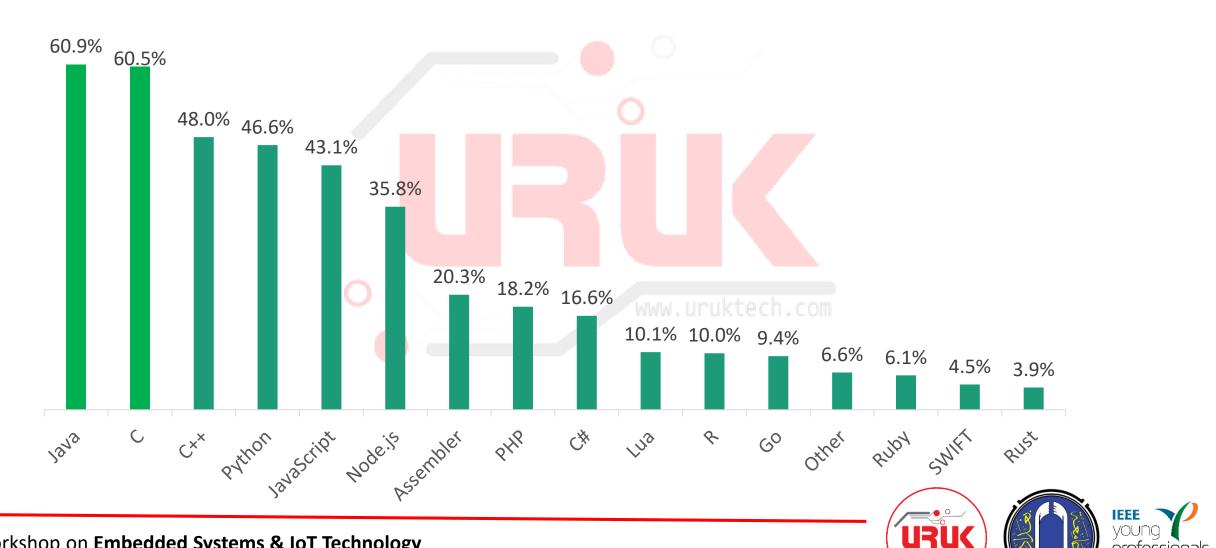
Top IoT Operating Systems



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Overall Summary of Language Usage



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Potential issues in using IoT

• Security and privacy:

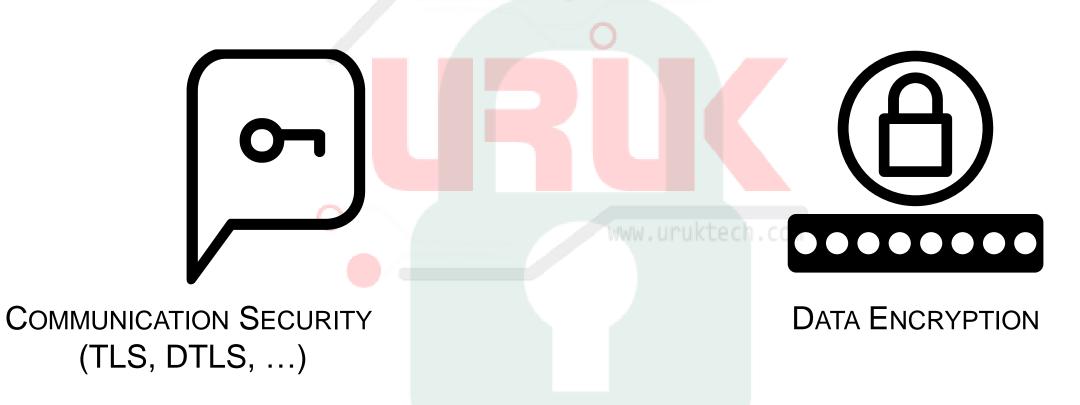
When devices are connected to internet, then location would not be an important issue for intruders where they can attack these devices from anywhere in the globe.

• Quality of Service (QoS) :

sharing workload between different nodes will offer more available resources, hence improving QoS. Such collaborative work is a promising mechanism in IoT.

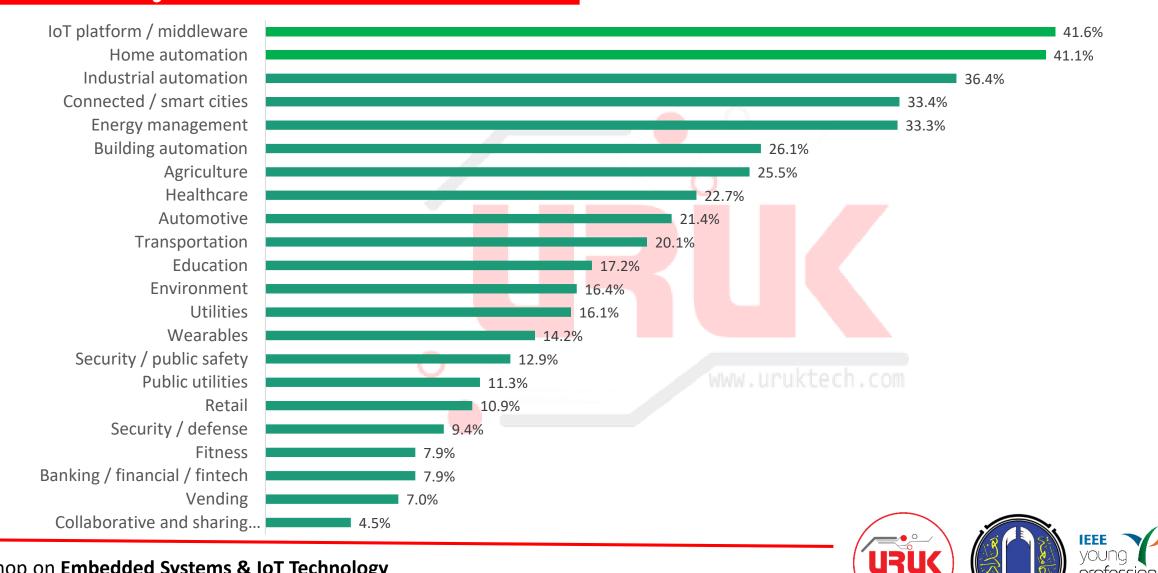


Key IoT Security Technology





Key Industries



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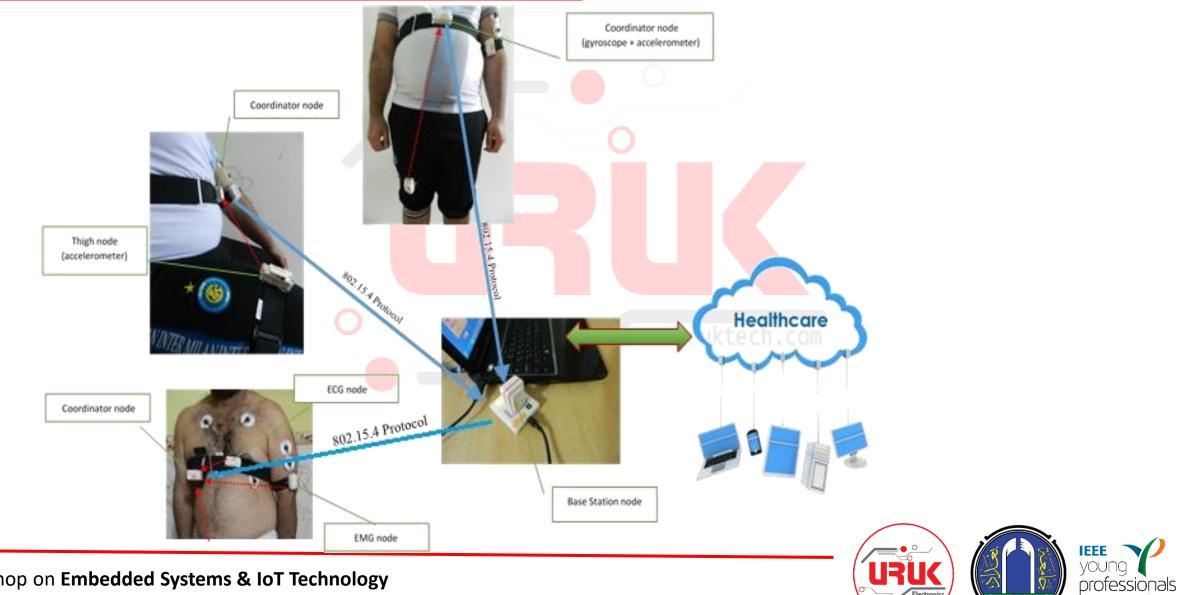
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Internet of Things Based Secure Healthcare monitoring system using Wireless Sensor Network

• Prototype system of a ubiquitous healthcare monitoring based on internet of things technology where the sensor nodes are connected to a cloud server



System Architecture Design



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Stream ECG Signal with Diagnostic

Home Updated Jan 26, 2015, 11:10 AM		sihamed722@gmak.com
	Iraq e-healthcare s	system
Home		
About the system	What is E-Health	
Add New Patient	E-health is the transfer of health resources	200
Find Patient ID	and healthcare by electronic means. It	
Live ECG	encompasses three main areas :	
Live EMG Drawing		
Patient status		5-
Schedual	The delivery of health information for	
Statistics	The delivery of health information , for health professionals and consumers,	
Stream CCG Brawing	through the internet and	
Stress Test	telecommunication.	
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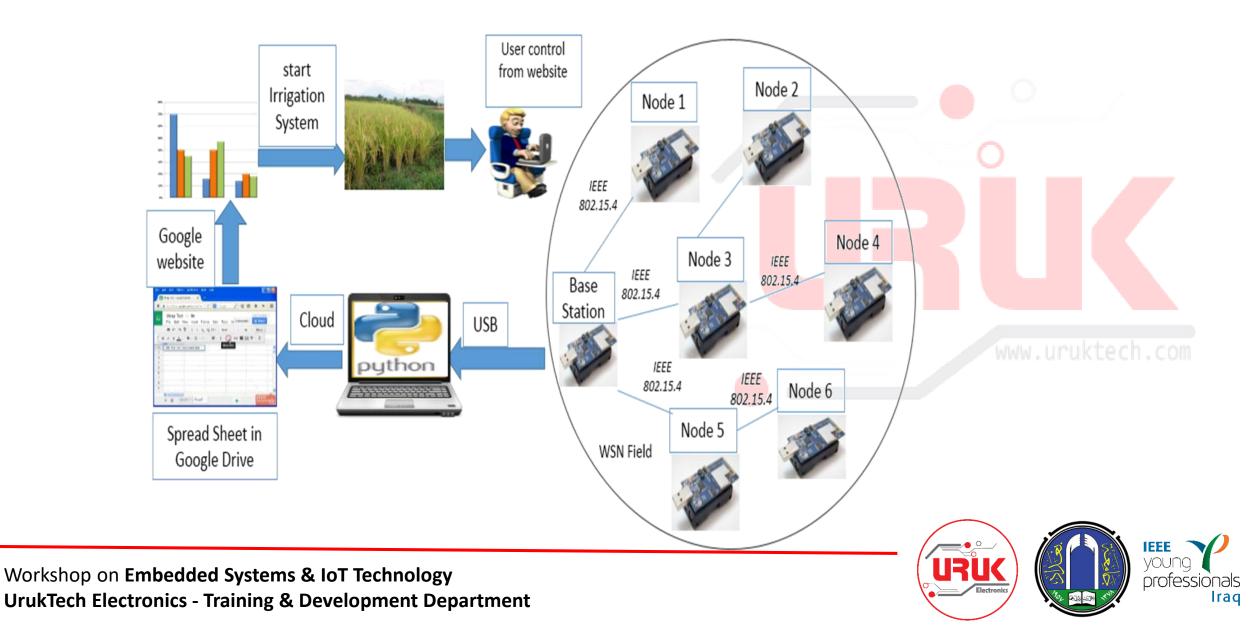
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Encrypted ECG Signal

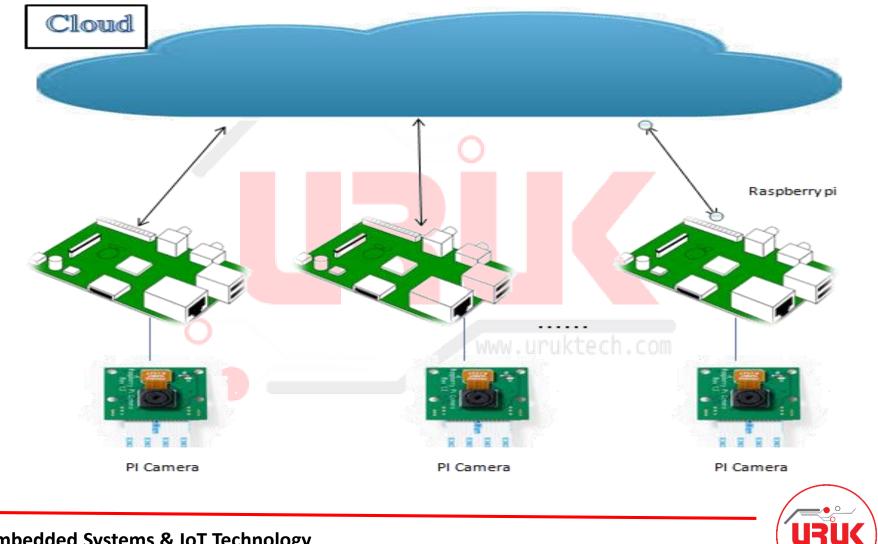


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IoT based smart irrigation system....



Design and Implementation of a Secure IoT Based Real Time Intelligent Video Surveillance



IEEE

professionals

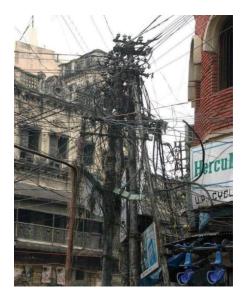
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Infrastructure



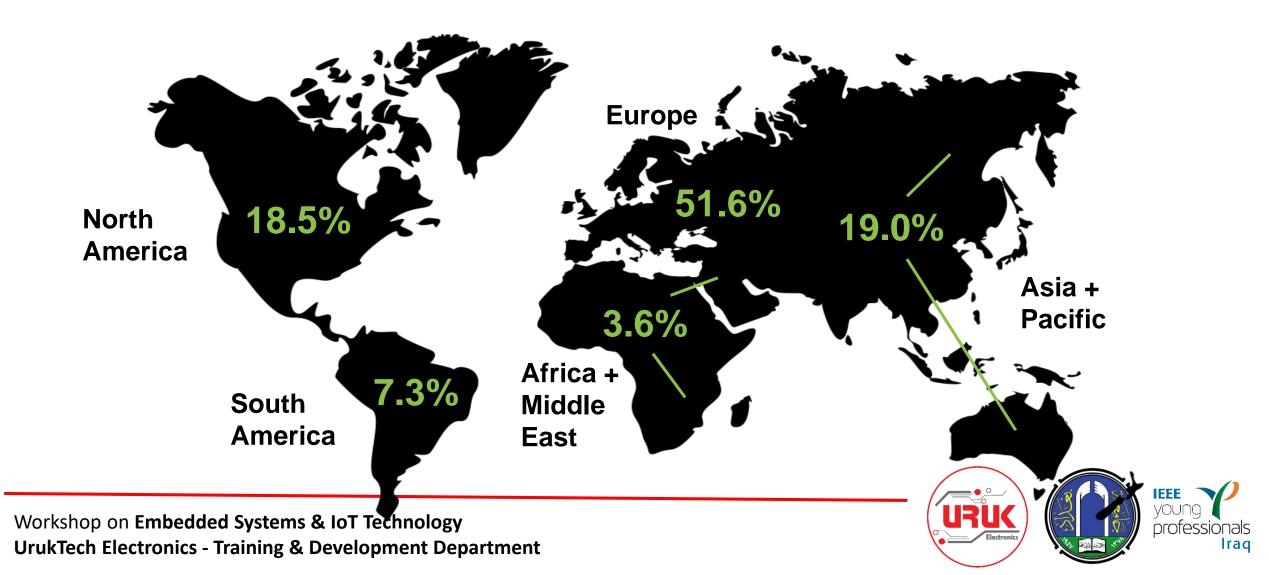






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Thank you ...

