INTERNET OF THINGS

UTM
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IoT is made up of devices with embedded systems such as processors, sensors, and hardwares. The data and systems acquired from the environment are collected, sent and managed through these devices. Besides, analyzing and sharing of sensor data, IoT devices will connect to IoT gateways, IoT platforms, or other devices.

OBJECTIVE

The Internet of Things is a concept that aims to enable the connectivity of various physical and cyber worlds. It is the third wave of the IT industry revolution, and it also reflects the future networking trend.

(The Objectives, Standards, and Protocols of IoT — EITC, 2021)

INTRODUCTION

- IoT makes virtually everything "smart," by improving aspects of our life with the power of data collection, AI algorithm, and networks.

- The IoT application also called as machine-to-machine communication (M2M) where smart manufacturing is applied

- The entire IoT are process that starts with the devices themselves like smartphones, smartwatches, electronic appliances like television or washing machine which helps you to communicate with the IoT platform itself

6 LEADING TYPES OF IOT TECHNOLOGIES

LPWANs *(Low Power Wide Area Networks)*

This technologies is purpose-built to handle large-scale IoT networks stretching across enormous industrial and commercial campuses by offering long-range communication on small, inexpensive batteries that endure for years

Zigbee and Other Mesh Protocols

A short-range, low-power wireless protocol (IEEE 802.15.4) that can deliver a higher data rate while consuming significantly less power due to the mesh architecture. (A perfect complement to Wi-Fi a variety of home automation applications)

Wi-Fi

It primarily refers to connecting items that can be easily plugged into a power outlet, such as smart home gadgets and appliances, and security cameras.

Cellular (3G/4G/5G)

It is well-suited for specific use cases in transportation and logistics, such as connected cars and fleet management

Bluetooth and BLE *(Bluetooth low-Energy)*

A short-range communication technology with a strong consumer market position. BLE was introduced to minimize power consumption subsequently to meet small-scale Consumer IoT applications. Example :-smartwatches, glucose meters, pulse oximeters, etc.)

RFID *(Radio Frequency Identification)*

RFID uses radio waves to transmit small amounts of data from an RFID tag to a reader within a very short distance.It also still widely used in retail, allowing for new IoT applications such as smart shelves, self-checkout, and smart mirrors

EXAMPLE

EDUCATION
Track students' attendance, engage students in the learning process (including gamification), and adjust education for students who require special treatment

SECURITY
Enhanced access control through smart cards and other forms of verification

SUSTAINABLE FARMING & AGRICULTURE
Help farmers to reduce generated wastes and increase productivity. As a high-end technology for growing food, smart farming is a clean process and is sustainable for the masses spurred by sensors, data wavelength, drones, and IoT platforms providing real-time data

SMART CITIES
Transfrom entire cities by solving real problems citizens face each day like solving a traffic congestion issues and reduce noice, crime and pollution

CONNECTED CAR
Vechicles are equipped with Internet access & can share that access with others, just like connecting to a wireless network in home or office

SMART APPLIANCES
Provide users with an effortless, mess-free way to cook food by creating a smart oven or stoves. It works by scanning QR or bar codes & connecting to WiFi, which then is uses to determine the best temperature & time to cook the food

BASIC AND ARCHITECTURE OF IOT

PERCEPTION LAYER
Do object identification and information gathering using edge technology like RFID, Barcodes, NFC and sensor networks

NETWORK LAYER
The main function is to transmitting and processing information

APPLICATION LAYER
A combination of IoT's social division and industry demand to realize the extensive intellectualization. Processed information is analyzed and decisions are made.

REFLECTION

By existence of IoT, its help us to work smarter, live smarter and gain complete control over our lives, but it's also supporting our wellbeing behind the scenes. In addition, IoT also reduces waste and improves services delivery. It allows companies to automate processes and save money on labor which reduce costs, increase safety and improve quality from end-to-end that translates to a win-win for everybody. As a result, consumer goods are less expensive to produce, shipping is more predictable and more companies can grow bigger.
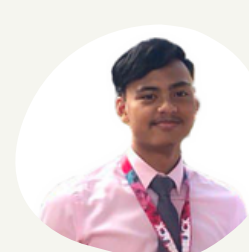
"SIMPLY, THE INTERNET OF THINGS IS MADE UP OF DEVICES – FROM SIMPLE SENSORS TO SMARTPHONES AND WEARABLES CONNECTED TOGETHER"
– MATTHEW EVANS, THE IOT PROGRAM HEAD OF TECHUK

REFERENCE

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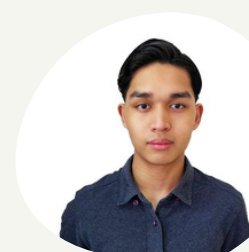- https://spgcontrols.com/zh/elements-of-iot-2/
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