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IoT: Smart home, smart life

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Abstract

In this paper, we are going to discuss about what is IoT, what does it actually mean and how does it actually work? In the era of advanced technology, there are various aspects in which there is a great use of IoT. Amongst the vast applications of IoT, we are going to summarize how IoT contributes to a fully automated environment in which various devices can communicate with each other themselves using sensors. This provides a comfortable living not only for youngsters but also helps physically challenged people. And this fully fledged life is abbreviated here as 'Smart home, Smart life'.

Keywords: IoT (Internet of Things), Smart home technology, Home Automation and Domestics.

Introduction

IoT , generally abbreviated for 'Internet of Things' is the most widely used concept in the Internet services today. 'Internet of Things' refers to a wireless network between objects usually the network will be wireless such as household appliances. It can be defined as the interconnectivity between objects and people such that they are logically linked and can be accessed using Internet and devices such as smart phones and remote controls. These devices can not only be controlled by humans but also by changing environmental conditions like humidity, temperature etc.

How does IoT work?

The five basic things are required to make the Internet of Things work :

The Thing

First is the “thing” itself – which could be anything from a person or an animal to any object or robot . It is something that we want to control or monitor. It can be a pet, a device, a our home or even our body.

The Identifier

Now if we want to monitor or measure a thing, we have to identify them and their characteristics. Consider a person, he/she has name, face and other unique identifier to separate him/her from other people. Likewise, there is a better technology RIFD which allows objects to identify themselves to a network automatically using radio waves, with little or no human intervention.

The Sensors

When an object identifies itself to a network \, that does not give us much information about the object rather than its location. Therefore, in order to collect necessary information about the object, it must contain built-in sensors that transmit automatic measurements which is another key part of Internet of Things.

The Network

Computers exist and communicate to one another using a standard agreed communication method called the Internet Protocol (IP). In the same way, there must be a medium for the things to exist and talk to one another and for this, we require a network.

The Data Analyzer

Once we are done with collecting data from different sources, we need to analyze them to find patterns that could help us to work, move and live much more smartly.

What Is Smart Home Technology?

Smart Home Technology ,also called as 'Home Automation' or 'Domestics' ('domus' is Latin word for 'house') , is a home with Internet-connected devices to enable management as well as remote monitoring of appliances and system such as locking and unlocking of doors.

It provides homeowners comfort, security, easy convenience and energy management and efficiency by controlling smart devices using smart home applications via their smart phones or other networking devices. Smart devices, smart home applications and part of 'Internet of Things' come together to perform automation and actions based on homeowner's preferences.

Implementation of Smart Home Technology

The main constituents of a smart home are:

Automation: It refers to providing the ability to a device such that it has scheduled events beforehand and performs the certain activities at a particular time on a daily basis. For example, as soon as your alarms triggers in the morning, the lights gets automatically switched on. Remote Control: Home automation makes the use of monitoring apps which can be accessed using Smartphone. These apps provide the current working state of the devices and can also alert by sending notifications , mail or text messages in case of any threat.

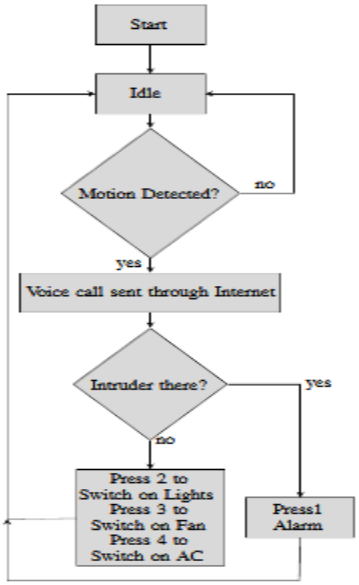

Figure 1: Flowchart of Home Automation

Components of smart home

Many components may come together under Smart Home but the main ones are the following communication protocol:

X10

It is the most common protocol which enables communication among the devices used for home automation. It is developed by Pico Electronics in 1975. It provides remote control of appliances and there are numerous X10 devices using electrical wires. Some new systems has been developed which uses radio waves to communicate.

Z-Wave

In this, each device is embedded a code and as soon as it is plugged in, the controller recognizes the code and adds it to the network after determining its location.

ZigBee

It uses mesh networking concept in which the message travels in the zigzag manner determining the best path to reach the receiver. The platform is set by standard IEEE for wireless personal networks. This implies to companies that can build a Zigbee compatible devices without paying any license fee.

Examples of Smart Home Technology

- Smart TVs which connect to Internet to access content through applications, such as videos or music.
- Smart lighting systems such as Hue from Philips Lighting Holding that adjust lighting according to the number of occupants in a room.
- Smart locks which can sense residents when they are near and keep the door open for them. Users can grant or deny access for other people.
- Petcare which can be automated with connected feeders for timely feeding to the pets when the owner is not around.
- The watering of plants and lawns at time.
- Smart thermostats which control room temperature by monitoring weather conditions.

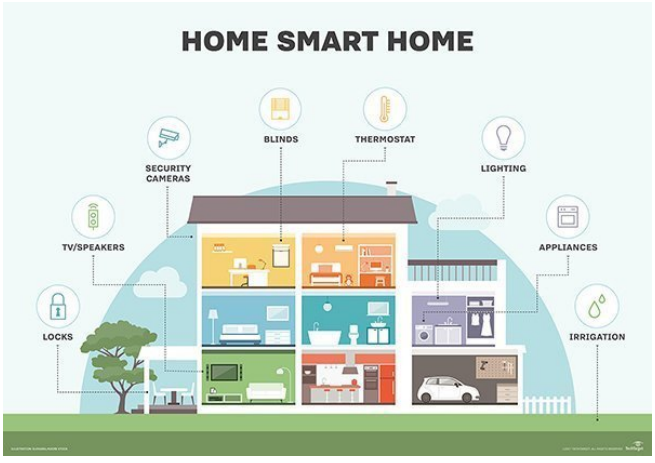

Figure 2: Examples of Smart Home

Conclusion

The technology is changing rapidly with time and is becoming more and more advanced with the passing years.The IoT is contributing to almost all of the latest technologies and it is speculated that even a small bit of dust will be monitored to serve for us using this amazing concept in the coming generation. Home automation provided people with a very cozy life and also it provides convenience for the physically challenged or old people. Therefore, in this paper, we studied about how this two concept come together to serve its best services worldwide and is working for more.

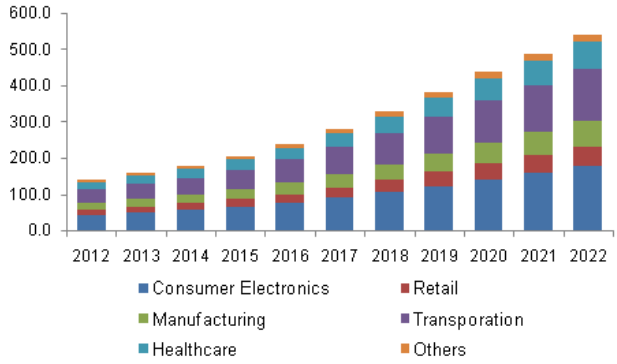

Figure 3: Increasing market demand of IoT

References

1. Margaret Rouse, ”Smart Home or Buildings”.
2. S. Pandikumar, R.S. Vetrivel, "Internet of Things Based on Architecture of Web and Smart Home Interface using GSM", IJIRSET, Vol.3, Special Issue 3, March 2014.
3. Molly Edmonds, Nathen Chandler, “How Smart Home Works”.
4. Mamata Khatu, Neethu Kaimal, Pratik Jadhav, Syedali Adnan Rizvi, "Implementation of Internet of Things for Home Automation", IJEERT, Vol 3., Issue 2, February 2015.
5. Emmanuel Bacelli, Dave Bagget, “Internet of Things and the Web of Things".
6. Suraj Choudhari, Tejas Rasal, Shubham Suryawanshi, Mayur Mane, "Survey Paper on Internet of Things: IoT", IJESC, Vol. 7, Issue 4,April 2017.
7. Himanshu Verma, Madhu Jain, "Smart Home System Based on Internet Of Things", IEEE, 2016 .
8. Ryan Mathew Pierson, "IoT and its applications: Connecting you, your home and your town".