

A SURVEY OF ISSUES AND ENABLING APPLICATIONS IN IOT

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ABSTRACT

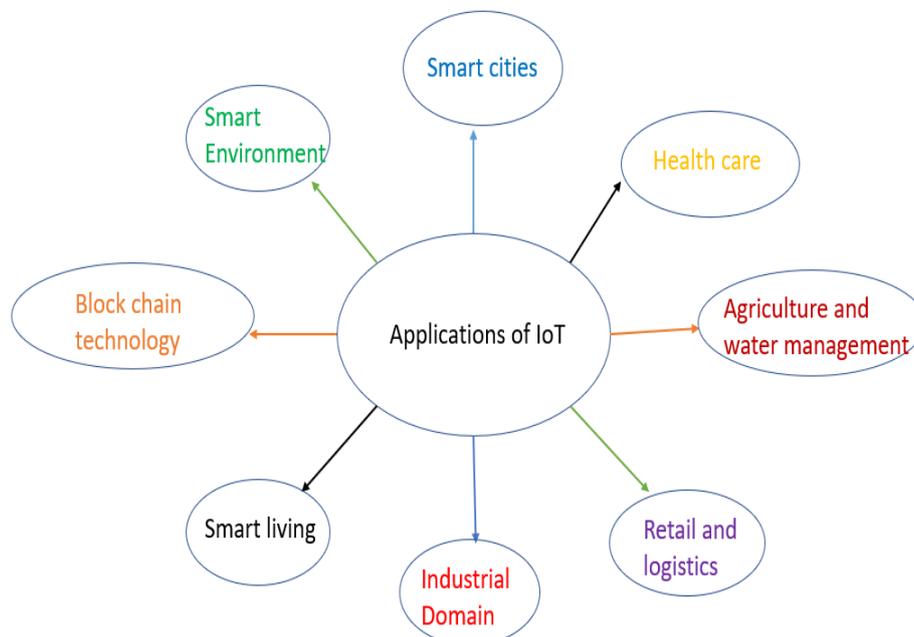
Nowadays all the people are interested in learning about latest and trending technology. IoT is one of the latest, trending computer technology in which physical objects that are embedded with sensors, processing ability, software, and other technologies that are connect and exchange data with other devices and systems over the Internet or other communication networks. Internet of Things in short called as IoT. There are many areas where Internet of Things is commonly used. Some of them are: smart cities, Health care etc. The point of this article is to make sense of Importance of IoT in different sectors. This article enlightens the uniqueness of IoT over other technologies.

Keywords: Internet Of Things. Smart Cities, Block Chain Technology.

I. INTRODUCTION

The Internet of Things (IoT) is a huge, networked universe of billions of associated gadgets all over the world that gather data about how they're being used. These items have internet connectivity, software, sensors, and other hardware that allows them to communicate with other systems and devices over the internet. IOT mainly focuses on important technologies and components for connecting the devices over the internet like "Sensors" to collect data from the environment for processing by the IoT system. Through an IP address, the device connects to the IoT system and is identified. "Actuators" that enable devices to respond to data from their own sensors and network feedback. "IoT gateway" for connecting data from various devices to the cloud. It also combines the protocols of the devices into a single standard protocol and removes extraneous data from the devices. "The cloud", where software collects and processes all data from IoT devices. The user interface is where users obtain data from devices so that they may issue the actions that the devices require.

II. APPLICATIONS OF IOT



1. Smart Cities:

IOT plays a major role in the development of smart cities for improving the infrastructure of cities. IOT deals with management of traffic like smart parking, smart transportation facilities, smart lightings etc. These IOT equipped devices used in highways provides trigger warnings, messages and information related to diversions based on the climatic changes and traffic congestions, accidents. IOT applications uses radio frequencies and sensors for development of smart cities. Most of the foreign countries use this IOT for smart work like street lights, parking areas, sprinklers which are all accessed through the internet.

2. Health Care:

In many countries the healthcare systems produce errors and results false errors which may risk lives of people. IOT applications in healthcare benefits a lot by monitoring the patients and staff and authentication, identification. Authentication and identification lower the danger of missing the information of patient records and exchanging of infants. some particular sensor devices continuously monitor the patient conditions and provide up-to-date status about their health conditions. The sensors that are connected to patients sometimes calls an alarm in case of emergency alerting the situation of patient. Some of the IOT applications are used for checking the glucose levels, body temperature, heart beat rate.

3. Agriculture and Water Management:

IOT has vast power for improving the agriculture field by determining the moisture of soil. IOT helps to control and store the vitamins occurring in agriculture products and provide microclimatic conditions for bulk production of fruits and vegetables maintaining the quality. IOT helps to predict climatic conditions by weather forecasting and prevents the crop from drought, rain or floods. This IOT also helps in maintaining cattle for grazing the animals in empty locations. These applications help in reducing the wastage of field sand saves electricity, reduces the wastage of water.

4. Retail and Logistics:

IOT helps to choose the directions inside the retail shop based on the preferred list and facilitates payment transaction without contact. Its applications also help the retailer to order stock when the stock gets scarce.

5. Industrial Domain:

In the industrial sector, the sensors help to identify the gas leakages, leaking of toxic gases into the air for the protection of health of workers and pollution control in atmosphere. The sensors equipped in the machines helps to identify the dis functionality of machines and provides a report about the machine periodically.

6. Smart Living:

IOT is mostly used in controlling devices through smartphones for reducing the energy and prevention of accidents. For example, kitchen appliance like fridges can be operated through mobiles and similarly the home appliances like air conditioners, washing machines are all operated through phones providing comfort and reducing the work by using smart and advanced technology like IOT. IOT appliances like cc cameras used in homes that are viewed through phones provides security from trespassers.

7. Block Chain Technology:



Figure 1: Block chain

The most trending technology like blockchain combined with IOT is used in banking sector, automotive and agriculture sectors. For enhancing the security and regulations, this fusion technology is widely used. Though the blockchain-IOT is still emerging, it will be a revolutionary change in the upcoming years.

8. Smart Environment:

It is very essential to have a healthy and pleasant environment for prosperity of our life. But the pollution issues like industrial pollution, usage of vehicles, wastage of limited resources cause a hectic damage to environment. In order to save the environment, we need to make smart use of environment by reducing the wastage. IOT monitors the purity of air by maintaining the data received from various sensors connected across the cities around various geographical locations. IOT technology also detects the pollution levels in water and provides idea about water usage. Radiation is hazardous to health and agricultural fields. This technology controls the radiation by observing the leakages around various chemical plants. IOT also helps to predict the weather conditions by checking the humidity and pressures and provide information to the weather stations.

9. Smart appliances:

smart speakers like Google Home, Alexa makes us easier and convenient to get information and play music. Smart watches also use this IOT technology which provides idea about our fitness and health. Smart lightbulbs, smart plugs conserve power and reduce costs, and smart thermostats heat the home before we reach home. These are just some of the applications of IOT because the potential of IoT is infinite.

III. FUTURE CHALLENGES OF IOT

Patients' safety

Because IoT components are connected to real-world items, most of them are left unchecked. Any technical fault in security when utilized on patients as wearable gadgets might be life-threatening.

Security And Personal Privacy

No study has been undertaken on security flaws and how to fix them. It should ensure the patient's personal data is kept private, secure, and accessible.

Scalability

When billions of internet-enabled devices are linked together in a massive network, massive amounts of data must be processed. Scalability is required for the system that saves and provides analysis from these IoT devices. Everyday things are now related to each other over the Web in the era of IoT growth. For the analysis of valuable data generated from these devices, big data analytics and cloud storage are required.

Failure in Cryptocurrency

Security and privacy can be manipulated by IoT botnet employees, creating significant threats to an open Crypto market. Malicious hackers could affect the actual value and development of cryptocurrency code. Companies working on blockchain are attempting to improve security. The blockchain technology is not incredibly risky, but the app development process is going on.

Danger of default passwords

Nearly all IoT devices are vulnerable to password hacking and brute force attacks due to weak passwords and login data. Any enterprise that uses company default credentials on its machines exposes both their industry and its assets, as well as their customers and their sensitive data, to a brute force attack.

Top companies using IOT

The IoT service industry is now dominated by the North American region, which is projected to remain so in the future. As Asian enterprises aim to increase the value chain by seeking expansion, the Asia-Pacific area is predicted to have the greatest growth rate.

BOSCH

Bosch was an early IoT adopter, and the manufacturer has been researching on IoT and IIoT (Industrial IoT) for a long time. The Bosch IoT ecosystem is loaded with platforms that serve to all aspects of IoT solutions. To identify opportunities for improvement in the Internet of Things (IoT) ecosystem, Bosch has developed the Startup Harbour incubator programme.

INTEL

Intel built its IoT Ecosystem by purchasing over 20 companies and start up, giving it access to sophisticated tools for delivering optimised IoT solutions. Intel has IoT solutions for a variety of industries, including retail and industrial IoT.

MICROSOFT AZURE

Microsoft Azure IoT is a set of structured and platform services that connect, inspect, and govern billions of IoT devices at the edge and in the cloud. Its IoT platform also includes security and operation systems for IoT devices, as well as advanced analytics to assist businesses in making decisions. Azure IoT is made up of three parts: things, insights, and actions. Microsoft's IoT Ecosystem allows businesses to build customised solutions for complicated IoT scenarios.

IV. ADVANTAGES OF IOT

1. The applications of IOT will be beneficial in saving the energy and money.
2. IOT helps us to handle security issues and other complexity issues.
3. Improving production and efficiency of business growth through marketing and better business prospects
4. Better use of services and infrastructure through efficient operation management.
5. Workplace safety has improved.
6. The global brand will be more trustworthy.
7. Enhance Data Collection
8. Increases comfort and helps in better quality life.

V. CONCLUSION

So, basically IoT is the latest, top trending technology in computers. IoT is mainly used in Smart cities, health care, agriculture and water management, retail and logistics, industrial domains, smart living, block chain, smart environment, smart appliances. The above are the potential domains of IoT. IoT is rightfully regarded as one of the most promising digital technologies that will definitely become more widespread and useful in the nearest future. Even at the current state, the capabilities of IoT solutions are impressive, and their advantages are tempting. However, it is important to realize that the integration of IoT in an enterprise requires a lot of efforts and skills in order to achieve those benefits without suffering from its drawbacks. That's why the most reasonable course of action is to use the services of responsible and experienced professionals in order to get an effective IoT solution.

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