

Internet of Things (IoT)-Applications On Various Fields

Devika E S, Malavika C

Department of computer science , Carmel college Mala

ABSTRACT

The new era of computing technology

Internet of Things (IoT). Connecting everyday things with electronics, software and sensors to the internet enabling them to collect and exchange data. Things can be anything and everything. IoT has got a great attention in each and every fields and it is an important technology. IoT provides

a way to interact with living beings, objects and machines. IoT works with the help of sensors and is combined and connected to internet. It has the ability to transfer the data over a network without human to human or human to computer interaction. IoT enables to share information about the surroundings with people, conditions of things, software system and machines. By the invention of IoT, our world is becoming smart in every aspects. As the technology grows, our world is building up smart cities, smart homes, and smart buildings. And also IoT

serves us in different ways such as transportation, waste management, irrigation facility, agriculture etc. In this paper we review a concept of IoT in all fields.

INTRODUCTION

The IoT is referred to as Internet of Things. Internet of Things (IoT) the term represents a concept that it is the ability of

network to sense, collect data around the world and sharing via internet. IoT consists of smart machines, human and even objects. IoT is becoming a relevant in every area. As we all know, we are communicating with people through the internet. Internet has impact in each and every fields such as education, business, government, society, science and technology. Our most communication way is Internet which connects people. Internet has become the most common way of communication and it came to relevant for nearly two decades. Internet is one of the most powerful creation of human history. But, now the Internet has introduced another interesting interactive way by using various things and devices. Even household appliances can also be connected to network and can enable it to work liberally. IoT in any situation is useful for real-world. IoT can be used in smart home like we can turn on the television by sitting at the place we are, we can turn on the air-condition before we are entering our home, windows can be closed automatically when the air condition is turned on, turn off the gas stove when required. All these can be done by sitting at where we are. These are some of the application in a home. There are many other purposes where IoT is applicable.

Thus IoT has ability to change including ourselves. It is a new technology of

internet accessing. IoT leads the objects to recognize everything itself and enabling it to take the right decisions on right time to

behaves intelligently. We can communicate to internet at any time, at anywhere by using any network to anyone. IoT is applicable in almost all fields such as smart home, smart city, smart vehicles. Internet of things, makes our life easier and smart.

Internet of Things Applications

IoT provides many applications such as smart cities, homes, transportation and smart environment.

- ☐ Smart city
- ☐ Smart home
- ☐ Transportation
- ☐ Industries
- ☐ Smart hospitals
- ☐ Agriculture

Smart city:-

Smart cities are still be viewed as a cities of the future and smart life. The innovation rate of creating smart cities, it will become very feasible to enter the IoT technology in cities development. Smart cities demand requires careful planning, with support from governments, citizens to implement the internet of things technology in every field and aspects. By the IoT, cities can be improved in almost all levels, by improving infrastructure, enhancing public transportation, reducing traffic congestion, Monitoring parking area in the city and keeping citizens safe, healthy and more engaged in the community. By connection all systems in the cities like transportation system, healthcare system, weather monitoring systems and there are also many facilities provided by the IoT technology. By the use of internet in every place, it helps to access the database of airports, railways, transportation tracking operating under specified protocols, cities will become smarter by means of the internet of things.

Smart Home:-

Smart home technology is amazing technology by IoT. The devices, appliances or system that connect into common network can be controlled remotely. By IoT, our home turns to a "connected home". The things such as home's thermostat, lights, audio speakers, TVs, security cameras, locks, appliances, and all those things can be connected into a common system, which can be controlled from your smart phone or through a mobile device. Smart home automation allows to tap into high-tech functionality and luxury life. It changes our life easier and more enjoyable. The electronic devices such as TVs, mobile devices, etc are usually supported by Wi-Fi. Wi-Fi have started becoming a part of the home network. Due the increasing rate of usage of mobile computing devices like smart phones, tablets, etc. The Wi-Fi and mobile devices can be used as gateways for IoT applications. The building automation with entertainment, healthcare monitoring and wireless sensor monitoring in the home and building environments. By the concept of the internet of things, homes and buildings may operate devices and objects smartly. Of the most interesting application of IoT in smart homes and buildings are smart lighting and media, air control and central heating, energy management and security.

Some of the advantages are:

- ☐ Managing all of the home devices from one place.
- ☐ Flexibility for new devices and appliances
- ☐ Maximizing home security.
- ☐ Increased energy efficiency.
- ☐ Improved appliance functionality

Hospitals:-

The medical field has a great potential for IoT. IoT plays an from in-patient treatment to population health condition monitoring. IoT technologies in medical fields are able to automatically gather necessary information from patients and detect possible diseases in order to prevent them. Remote patient monitoring or RTM is a system that is profitable for people that have problems with the heart or diabetics. So, that patient just needs to carry the RTM device with them. So that it automatically alerts the doctor about patient deterioration. One of the best examples is the smart vaccine fridge. It is able to prevent vaccines from spoiling and monitor their conditions 24/7. There are a many ways to use IoT for optimizing everyday hospital activities and reduce costs. Lost and stolen equipment leads to spending a lot of money. The problem can be solved by integrating sensors to equipment, e.g. RFID or Bluetooth. This solution allows tracking the locations at any time. Assistance for elderly or disabled people, Monitoring and Control of conditions in freezers storing medicines ,vaccines, Vital signs monitoring in high performance centres and fields, Monitoring the current conditions of patients inside hospitals and in old people's home, Measurement of UV rays to warn the people not to be exposed in certain hours.

There are many advantages too in using IoT in medical field. They are:

- ☐ Lower expenses.
- ☐ Better treatment results
- ☐ Better disease control
- ☐ Fewer mistakes.
- ☐ Remote patient care
- ☐ Maintenance of medical devices
- ☐ More trust towards doctors

Smart Transportation:-

Technology advances are supporting the development and deployment of IoT applications in transportation. Use cases of IoT transportation are:

- ☐ Connected cars
- ☐ Vehicle tracking systems
- ☐ Public transport management
- ☐ Traffic management

Internet of Things can change the transport theme by transforming how transportation systems gather and make use of data. IoT is the networking of objects through embedded sensors, and other devices that gather and transmit data about real-world activities. Objects here include household appliances, mobile devices, vehicles, and structures.

The advantages of IoT in transportation:

- ☐ Enhanced traveller experience
- ☐ Increased safety
- ☐ Reduced energy use and congestion.
- ☐ Better operational performance

The development in transportation is one of the factors to indicate the wellbeing of the country. A road condition monitoring and alert application is one of the most important of IoT transformation application . The main idea of the concept of smart transportation and mobility is to apply the principles of crowd sourcing and participatory sensing. The process began with user identified the route wishes and marked some points as pothole in the smart phone's application. IoT can also be used in transportation is an electric vehicles, which is an important means to reduce both the fuel cost and the impact of global warming have also gained considerable attention from drivers. Government in many countries has supported researches on systems to monitor performance of Lithium-ion (Li-

on) battery for electric vehicle as explored. The system presented was designed to detect the functions of Li-on power battery by deriving the driving situation from the realistic working conditions for driver so that the driver was able to get the idea of the route status. This solution was embedded with many essential functions such as dynamic performance test of the Li-on battery, remote monitoring with on-line debugging and error correction that could significantly reduce the maintenance cost.

Internet of Things-Advantages

- ☐ Scalability
- ☐ Security
- ☐ Data volume
- ☐ Self-organising
- ☐ Interoperability
- ☐ Privacy
- ☐ Power Supply
- ☐ Wireless communication
- ☐ Software complexity

Conclusion

The future of IoT is virtually unlimited due to advances in technology and consumer's desire to integrate devices such as smart phones with everything. Wi-Fi has made it possible to connect people and machines on land, in the air and at sea. It is critical that both companies and governments keep in ethics in mind as we approach the fourth Industrial Revolution. With so much data traveling from device to device, security in technology will be required to grow just as fast as connectivity. Governments will undoubtedly face tough decisions as to how far the private sector is allowed to go in terms of robotics and information

sharing. The possibilities are exciting, productivity will increase and amazing things will come by connecting the world. Internet of things is a new technology which provides many applications to connect the things to things and human to things through the internet. Each objects in the world can be identified, connected to each other through internet taking decisions independently. All networks and technologies of communication are used in building the concept of the internet of things such technologies are mobile computing, wireless sensors networks, and embedded systems, in addition to many algorithms and methodologies to get management processes, storing data, and security issues. IoT requires standardized approach for architectures, identification schemes and frequencies will happen parallels, each one targeted for a particular and specific use. By the internet of things many smart applications becomes real in our life, which enable us to reach and contact with every things in addition to facilities many important aspects for human life such as smart healthcare, smart homes, smart energy, smart cities and smart environments. Internet of things may facing two major challenges in order to guarantee seamless network access; the first issue relates to the fact that today different networks coexist and the other issue is related to the big data size of the IoT. Other current issues, such as address restriction, automatic address setup, security functions such as authentication and encryption, and functions to deliver voice and video signals efficiently will probably be affected in implementing the concept of the internet of things but by ongoing in technological developments these challenges will be overcome. The internet of things promises future new technologies when related to cloud, fog and distributed computing, big data, and security issues. By integrating all these

issues with the internet of things, smarter applications will be developed as soon. This paper surveyed some of the most important applications of IoT with particular focus on what is being actually done in addition to the challenges that facing the implementation the internet of things concept, and the other future technologies make the concept of IoT feasible.

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