INTERNET OF THINGS AND ITS NEED TO THE EXISTING WORLD

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ABSTRACT:

Internet of things is developing rapidly by global users. IoT is gathering much attention in the field of networks, technology, gadgets, automation, healthcare, etc. The IoT has transformed our lives beyond our imagination within two decades. In this paper we present today’s issues, including the advantages, disadvantages, scope, as well as its approaches to find a way around the problems of integrating and employing Internet of Things devices in day to day life.

Keywords: Internet of Things, technology, society, automation, smart city.

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1. INTRODUCTION

Internet of Things (IoT) comprises a wide range of objects to interact with the gadgets, devices and appliances using networking technologies. [1] There are many applications for IoT such as healthcare, home automation, wearable, cities, transport, etc. Every system or application of IoT comprises of interconnected network of devices which are intercommunicating globally with each other through web, and monitors and collects all the data. [3] In this paradigm, many of the devices and the things which surround us in one form or the other will be on network. The identification technology, sensors technology will rise up and work all together to this concept, in which the communications and the Information technology are going to be invisible to the environment around us.

IoT is a place where the web and the physical world meet. IoT related devices today are structurally based on the definition of IoT as a network of things or devices which are interconnected with each other to capture and share the data through a secured connection. In the Internet of Things the gadgets, the things, the devices, talks to other processes or things connected to them via two way interconnectivity [2] so they could cooperate with each other both locally and globally. Interconnecting the various devices and things provides the organizations with tremendous opportunities to create innovative projects. IoT includes
confluence of low cost devices (big data, cloud computing, sensors), the exponential growth of smart devices, and connectivity.

2. WHY AN INTERNET FOR EVERYTHING?

[4] The IoT is one of the main system or component of society for the evolution of Internet. IoT can be considered as a world where all the objects in the surroundings can communicate with each other, sense, and share the information between them.

And the devices.[5] These interconnected things or devices have their data regularly collected, and the data is analyzed to take the necessary actions, providing a better way for a better life style.

IoT is something more than technology, and it’s altering the reality as we know it.[6] The IoT help the people to move towards a smarter world, towards a smarter web, where all the devices which are used or not used are all interconnected to each other for enhancing the life style of people living in this world.

[7] Imagine a scenario, when you wake up in the morning and you are late for going to the work, so instead of going to the kitchen and prepare a breakfast or a coffee for yourself you could directly command your sandwich maker to prepare a sandwich for you a sans or you could directly command your coffee machine to create a cup of coffee for you by giving voice commands to it which are recognized by the inbuilt sensors on your machine. In the mean time you could refresh up yourself, or do other pending works, thus saving a lot of time of the user. (Figure-1)

![Figure 1 Smart coffee machine](image1)

Think of other scenario, where you are looking for a parking place for your car and you are not able to find a parking place nearby. [8] You could ask your inbuilt car system to find a parking place, which is much easy rather than roaming around and looking for the parking spots. [9] The inbuilt car sensors will connect it to the parking spots sensors and see for any vacant space. If it is able to find a place for your car it will send a notification to your dashboard and the driver could easily park the car, without wasting time in looking for parking spots. (Figure-2)

![Figure 2 Smart parking System](image2)
Think of a city which has smart street lighting systems, smart garbage systems, smart bus stops, smart parking, etc.[10]. All the devices will be interconnected with each other by using various sensors, and the web. In the smart city, the smart bus stops would display the real time of arrival of the bus, would show the info and route of the bus, and would easily tell how much seating space is left in the bus. The smart garbage system would be capable of optimizing the trash levels, could be used as both manual and semi-automated collection system. The smart lighting system in the smart city would be energy efficient, would provide Wi-Fi hotspots, and would be able to monitor the air quality. (Figure-3).

![Figure 3 Smart City](image)

3. KEY CHALLENGES
The first key challenge for internet of things in a single IP network to ensure integrates multi technology that the communication is simple and reliable.

The second key challenge is to guarantee privacy, security, integrity of information, and user confidentiality. As, [11] IoT connects the devices all together, it provides more points for injecting malware. With remote access of data, there will always be a threat for the safety about the personal data.

The third key challenge is to offer support for the mobile security and mobility. Mobility support increases the applicability of internet to new areas.

4. APPLICATIONS
There are several applications of IoT which could be categorized on the basis of connectivity, network availability, coverage, user involvement and impact. The applications of IoT could also be categorized into four sub-categories: 1. Mobile, 2. Personal, 3. Utility, 4. Enterprise. (Figure 4)

Under mobile IoT smart transportations and smart logistics are places where the data sharing takes place effectively. It includes monitoring of the items locally or globally, and the efficient transportation plans.

![Figure 4 Key challenges in IOT.](image)
In personal or home IoT, the data sensors who directly own the network. Controlling various home appliances such as air conditioners, televisions, comes under this category.

In the utilities sub-category of IoT, the information from the networks rather than consumer consumptions service optimisation is used.

In an Enterprise based application, ‘Network of Things’ is used within a work environment. Data may be released selectively and the information is collected by the owners.

5. FUTURE SCOPES AND VISIONS
Here we have described the key components and challenges to reach the evolution of security, mobility, reliability, and connectivity. We have described about the present work and the future scope to continue and enhance the IoT applications in various emerging areas.

Yet to progress with the evolution of IoT to build an ecosystem of interconnected things. The first and the foremost aim of IoT are to provide better interconnectivity to each and everything. Once this interconnectivity is achieved we need to cope up with security and mobility among different entities. After the connectivity is reached, then a common protocol for the transport and application layer is required.

The current trend of IoT is focused on deployments of specific sensors and applications for which they have been designed. However, the IoT requires multiple capabilities of integration and resources.

The major challenge for the IoT is to demonstrate its value to the end-consumers. The advantage is to reduce the re-usage of common communication technology and the development cost.

Through the internet based solutions the potential of IoT is to set-up the understandable platforms such as smart phones, remotely and on the base of smart capabilities of smart objects to come.

6. CONCLUSION
In this paper, Internet of Things defines the basis to reach a universal and mobile integration of the basic environment with the support for large scale connectivity from different sensors, integration with information systems, and its homogenous access through Internet and Web technologies from consumer devices such as smart phones.

The Internet of Things helps the users or people to concentrate on the larger projects, rather than turning on the switch of a light bulb, or checking the temperature of the air conditioner, or making a coffee, or roaming from point to point to find a parking place for your vehicle.

REFERENCES


