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INTERNET OF THINGS (IOT): Cognizant Context of Intelligence Services

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ABSTRACT

The Internet of things revolves around the communication mechanism between electronic devices and the network innovative solutions. [1]IOT and its architecture has been displayed in this for extra knowledge. The term IOT is delivered by Kevin Ashton executive director of auto id center in 2003. IOT allows people and things to be connected anytime with anything and anyone using any network. It can also be defined and an open and comprehensive network of intelligent objects that have capacity to auto organize share information data and resources, reacting and acting in phase of situation and changes in environment the form IOT communication that we see now in either human - human or human device, what IOT promises a great future for internet[3].

Architecture

The IOT includes a six-layer architecture including the coding layer, perception layer, network layer, middleware layer, application layer and business layer.

Technologies

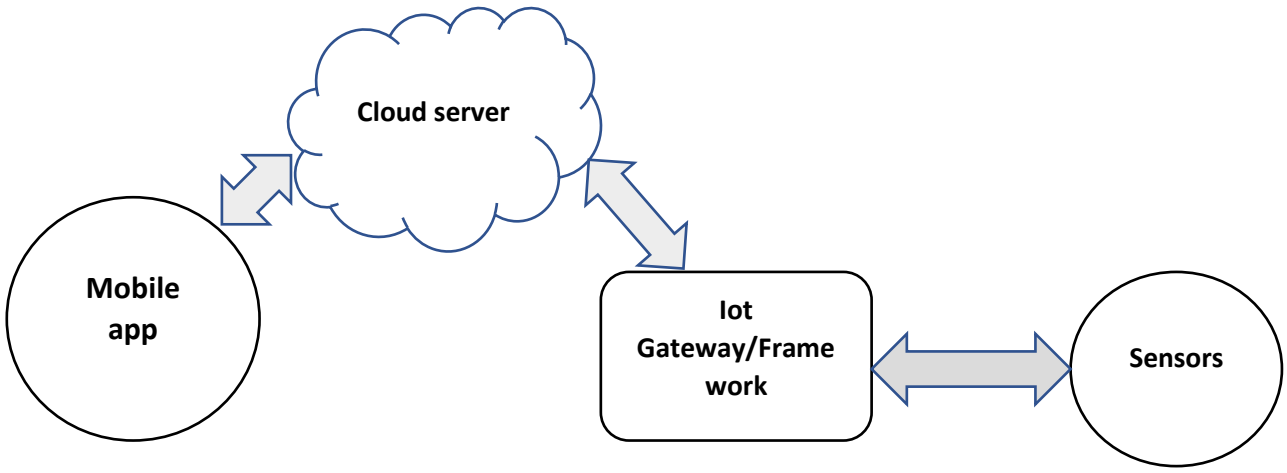
In this review paper we also discussed the technologies that help ibn the large scale of development of IOT. They include radio frequencies identifications (RFID), wireless sensors network (WSN), cloud computing, networking nano technologies, Micro electric mechanical system (MEMS) [4].

INTRODUCTION

In today's world the communication which we are doing is all possible with the help of IOT. IOT or "Internet of things" is a linkage of physical devices, sensors and software for the collection and exchanging of information and data. It contains the ability to transfer data over a network without requiring interaction with machine and person. The Internet of things are used for the connectivity of devices with the internet connection for monitoring and logistic functionalities [2].

The internet of things contains countless benefits worldwide in corresponding to the communication, technique and the purpose of learning. The Internet provides a more responsive nature and the concept of merging the digital and physical universes. [5]The concept or the purpose of the IOT is included in the various growing sectors of IOT and to handle their challenges and the implementation of internet of things. The concept of IOT dates to 1982. The coke machine was connected to the internet which was able to report the drinks contained and whether the drinks were cold. Later in 1991 a contemporary vision of IOT in the form of ubiquitous computing was first given by Mark Weiser. However, in 1999, Bill Joy gave a clue about Device-to-device communication in his taxonomy of the internet.

ARCHITECTURE



The internet of things also referred as the "world-wide network" of interconnection with devices and human for the purpose of great communication.

As the population rises, the connectivity with network is also rapidly increasing and the communication. In recent years wireless communication and networking are playing an important and necessary role for the broad range of communication[6]. The internet of things is built on the merging concept of internet footing and for the security problems.

More than 25 billion things are expected to be connected in a few years which is a huge number so the existing architecture of Internet with TCP/IP protocols cannot handle a network as big as IOT which caused a need for a new open architecture that could address various security and Quality of Service issues a s well as it could

support the existing network applications using protocols. Without a proper privacy assurance, IOT is not likely to be adopted by many. Therefore, data and privacy protection have key challenges for IOT.

Principles for IOT Strategy

- Deep information (with algorithms, models) should be known.
- Explore the new services and customer issues.
- Outcome based business models.
- Smart from small steps by thinking bigger.
- Always be productive in improving.
- Create an immaculate experience across other channels.

DISCUSSION

With the rapid growth of urbanization traffic conditions have become a major challenge globally. When this issue is addressed researchers and practitioners increasingly turn to the internet of things (IOT). Technologies for innovating traffic management solution. In 2018's review paper literate and emerging trends in IOT based traffic management system.[7] The few changes which are made IOT to enable traffic monitoring. The significant role of IOT devices in real time traffic monitoring is that the devices are used to collect data from various sources such as road sensors cameras and GPS enable vehicles. A sophisticated algorithm is used to process this data and generate accurate traffic information.

Intelligent traffic signal control

This is widely developed for optimizing traffic signal control. These systems use data collection from iot device to adjust signal timing which is based on the current traffic condition. The intelligent monitoring of traffic system provides good transportation experience by easing the congestion. It will provide features like theft detection, reporting of traffic accidents, and less environmental pollution. The traffic lighting lighting system will be weather adaptive to save energy [1].

Vehicle-to -vehicle infrastructure communication

In this IOT based traffic management (V2I) provide curtail role by using this communication vehicles can exchange information with roadside infrastructure and enable real time traffic update, hazard notification.

Researchers have explored various communication protocols and data aggregation techniques.

Hospital information management system

IOT medical software and devices brings a lot of changes to hospital management system it collects and manages such information as medical record data about doctors and patients. There are many medical emergencies such as cardiac arrest, but ambulances take some time to reach the patient. Drone ambulances are already in the market which can fly to the place with the emergency kit so due to proper monitoring, doctors will be able to track the patients and can send in the drone to provide quick medical care until the ambulance arrives[2].

- Easy search of document
- Patient record by remote access
- High level of security

Electronic health care record

A system is built to provide authorized users with real time information instantly and securely. They can see full disease history and contact doctor 24*7 through solution.

Advantages of IOT

- Iot is the major contributor in the provision of security and privacy to all the users.
- Through IOT the information available on the web is much more easily accessible to the users.
- As IOT easily helps users to access information, it also helps in saving a lot of time.
- In today's time, all users have access to cellphones and further through IOT all electronic devices can be connected directly to one another.
- To directly connect and make users communicate with one another, IOT also allows it without any human intervention.
- In the medical field,IOT might also enhance patient care as it might help patients to be treated without the need of a doctor's visit.

Disadvantages of IOT

- As the information on the web can be easily accessed by users it also makes it easy for hackers to gain access to the system.
- If there is no internet connection it might become difficult for the IOT to perform efficiently.
- As the system of IOT can be complex there are also many chances for the system to fail.
- Due to the ease and vulnerability of the IOT system to access the system it might also reduce the physical work of humans and make them totally dependent on smart devices.
- Even though the working of the IOT system is time saving but the installation of the IOT devices can be costly as well as more time consuming.

FUTURE SCOPE

IOT has the best technical and hospitality tools. The healthcare devices can directly send the patient data health to doctor over a safe network. IOT devices such as smartwatches and wrist band that show our heartbeat, blood pressure, and distance we walked. As the time is changing people around the globe are inclining more on technology rather than manual approach everyone wants a job done without any effort. Basically, the scope of the Internet of things is vast and its applications span across various industries and domains [1]. As technology continues to advance IOT is expected to bring further innovation, efficiency and convenience to our daily lives and reshape industries on a global scale. However, it's essential to address security and privacy concerns to ensure the safe and responsible adoption of IOT applications.

CHALLENGES

IOT makes everything and person locatable and addressable which will make our lives much easier than before so for its ubiquitous adoption, IOT must have a strong security infrastructure.

There are various challenges faced related to IOT namely unauthorized access to RFID, sensor node security breach, cloud computing abuse [7]. The IOT has quickly become an enormous piece of how individuals live, convey and carry on with work. All over the world, web empowered gadgets are transforming our worldwide freedoms into a more noteworthy turned-on region to live in.

Security challenges:

- Lack of encryption
- Insufficient testing and updating
- IOT malware and ransomware
- IOT botnet aiming at cryptocurrency

Design challenges:

- Battery life is a limitation
- Increased cost and time to market
- Security of the system

Deployment challenges:

- Connectivity
- Cross platform capability
- Data collection and processing
- Lack of skill set

CONCLUSION

With the incessant burgeoning of the emerging input output Technologies the concept of internet of things will soon be inexorably developing on a very large scale. This emerging paradigm of network will influence every part of our lives ranging from automated houses to smart health and environment monitoring by embedding intelligence into objects around us. In IOT paper we provided the vision of IOT and presented a well-defined architecture for its deployment [4]. Then we highlighted various enabling technologies. Research is already being carried out for its wide range of adoption however without addressing a challenge in its development and providing confidently of the privacy and security to the user the diverse variety of services for IOT has been described. An overview and particular description of each service is being developed including with the summery of those services and their opportunities In the present and future as well IOT is on the way of making humans life as a connected and smart one.

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