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The Significance of Internet of Things (IoT) in Everyday of Life

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Abstract

The global network made up of people, smart devices, intelligent objects, information and data was finally transformed by the Internet of Things (IoT). Recently the internet of things has emerged as a new technology that represents the modern wireless communication networks and can be defined as an intelligent, interoperable nodes connected in a dynamic global infrastructure network. Today everyday is influenced by the internet of devices. In the area of home and manufacturing broadly used IoT devices. "Smart" refers to the way people interact with technology, while "smart objects" refers to the machines themselves. It will possible to connect with smart physical goods and make intelligent decisions across a variety of applications. Various devices such as computers, actuators and sensors can communicate with each other and exchange data in a network environment called the internet of things (IoT). In this paper highlight the concept of Internet of Things with its background, features, and some prominent applications.

*Keywords***:** Internet of Things (IoT), smart devices, RFID,

Introduction

The Internet of Things (IoT) is the recently fastest growing technology and a significant impact on both business environments and social life due its recent quick development and ability to offer a variety of services [1].The development of Internet of things (IoT) 1982 introduces the idea of a networks of smart devices with a modified coke machine at Carnegie Mellon University becoming first internet connected abstract able to report its inventory and whether newly loaded drinks were cold. The name of "the Internet of Things" is invented by British technology inventor Kevin Ashton to describe a system where widely dispersed sensors connected to the internet to the outside world [2]. IoT is consider as a pillar of future internet and enable intelligent operation and expected to enable intelligent operations. The networks of physical objects are instruments, smart banking, crowd monitoring, water measurement, smart transportation, buildings, electronic devices, circuits, software, sensors and network connectivity that allow these objects to collect and share data is known as the Internet of Things (IoT). IoT can communicate with each other without human intervention. The automotive, transportation, healthcare sectors have already early developed IoT applications. The main objective of IoT is enabling to interaction and integration of the cyberspace and physical world. [3].Figure 1 depict the internet of things.
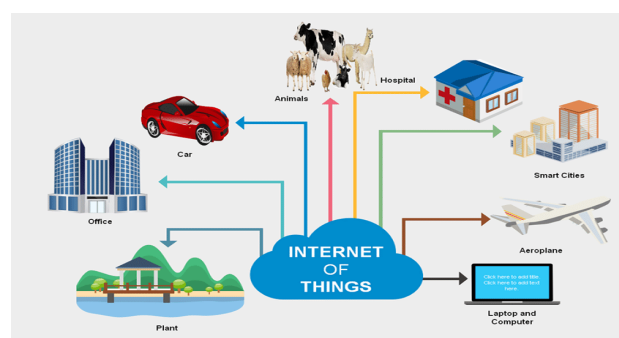

Figure 1: Internet of things [2]

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Evolution Of Iot

In 1999, Kevin Ashton firstly introduced the concept of IoT ,defining a system in which physical artifacts are connected to the internet through sensors. It is a uniquely identified network, connected objects with radio-frequency identification (RFID) technology. IoT generally defined as "dynamic global network infrastructure with self configuring capabilities based on standards and communication protocols"[4][5].Any physical object on earth surface whether or not is a communication device can be referred as "thing" .Evolution of the internet[6].

- The internet based on documents is e-libraries, web pages.
- The internet of commerce are e-commerce, stock based websites-banking.
- The internet of applications are Web 2.0
- The internet based on people is Social Networks.
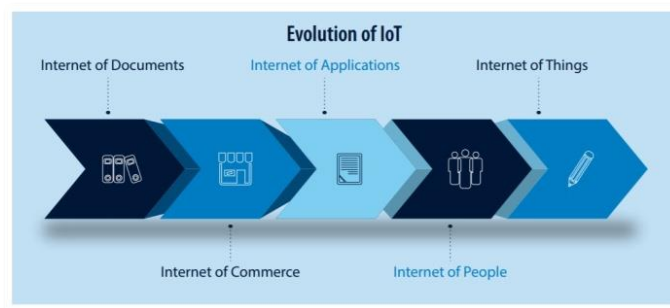- The internet based on things is connected devices and machines [3].

Figure 2: Evolution of IoT [9]

In an IoT both virtual and physical objects have unique identities and attributes. They can be integrated into an information network and use intelligent interface [3].The word "internet" and Things" mean a association between world- wide network based of communication, networking, sensors and information processing technologies, which may be the new version of communication and information technology (ICT).there are various type of technologies are concerned with IoT such as barcodes, intelligent sensing, wireless sensor networks, RFID, cloud computing etc. The future direction of internet is IoT. IoT provide the platform for accessing and identified the physical things through internet according to the implementation and definition of IoT [3] [5].

FEATURES OF IOT

There are various type of features of IoT [6] [7][8]

- **Intelligence:** The intelligence of IoT is comes from a combination of hardware and software, computation and algorithms. Ambient intelligence in IoT improves its capacity to help things to respond intelligently to a given particular situation and support them in completing specific tasks. Although the widespread usage of smart technologies, intelligence in internet of things is limited to the means of communication between devices, graphical user interface and conventional input techniques are only ways in which users and devices may interact devices. The "intelligent spark" makes a product experience smart through together compute and algorithms.
- **Connectivity:** By connecting everyday objects, connectivity enhances the potential of internet of things. The basic level interactions help an IoT networks collective intelligent these things connectivity is essential. It makes the objects compatible and accessible by networks. The networking of smart objects and applications can be open up new market for the internet of things with these connections.
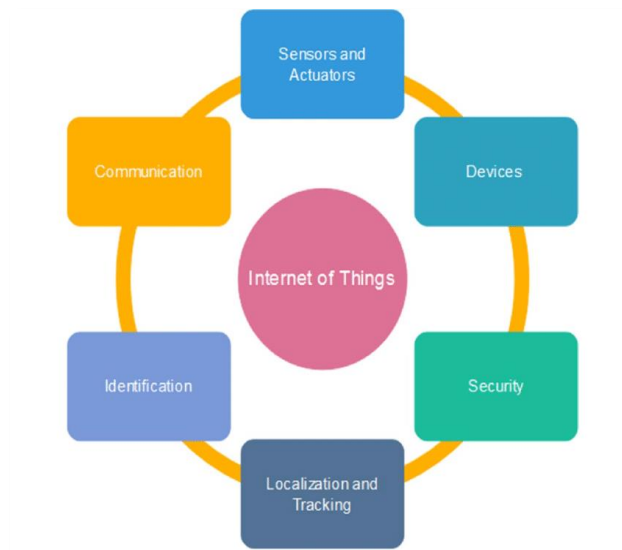
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Figure 3: Features of IoT [10]

- **Dynamic Nature:** The main function of the internet of things is to collect data from its environment which is able through the dynamic alternations occurring around the devices. The state of these devices is subject to dynamically changed, for instance switching between connected and disconnected, sleeping and waking up as well as the perspective of devices varying in terms of temperature, location and speed. Furthermore the number of devices also changes dynamically depend on factors such as person, location and time.

- **Sensing:** IoT is depend upon the technology of sensors to detect and measure change in the environment to generating data that can be used to report on their status or interact with the environment. The information gathered through sensing is essentially the analog input from the physical world, it provide the deep understanding of our complex world.

- **Heterogeneity:** One of the key characteristics of the internet of things is its heterogeneity. Devices in the lot are built on various networks and hardware platforms, allowing them to interact with other devices or service platforms through different networks. In order to support this diversity, the lot architecture should enable direct network connectivity between these heterogeneous networks. Scalability, modularity, extensibility, and interoperability are the essential design requirements for accommodating the heterogeneity of devices and their environments in the lot. These devices in the lot are heterogeneous, as they are based on different hardware platform and networks, and they have the capabilities to interact with other devices or service platforms through various networks.

- **Enormous scale:** This relates to semantics of data, as well as efficient data handling. The amount of devices required management and communication with each other will exceed the number of devices currently connected to internet by at least ten times. The management of the data generated and interpretation for application purpose will be even more critical. The related to semantics of data as well as the effective handling of data.

- **Security:** IoT devices are inherently vulnerable to security risk. The transparency and privacy issues related to IoT are significant. It is important to secure the endpoints, networks, and data involved in IoT an operation is essential in establish a robust security framework.

APPLICATIONS OF IOT

IoT application is a collection of software and services that integrate data received from various IoT devices.It uses artificial intelligence and machine learning technology to analyzing this data and make decisions based information.
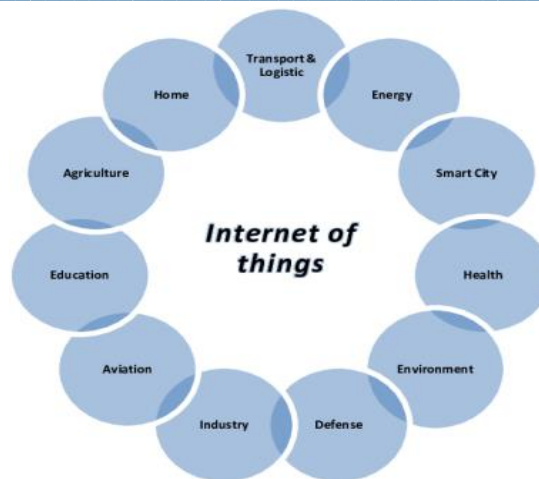
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Figure 4: Applications of IoT [10]

IoT technology has emerged a need in our lives ,in recent time it affect on our daily life including smart water, healthcare, transportation, surveillance and more. Most of the daily apps we use are smart, they are unable to interact with each other. By allowing those to do so and share useful information with each other. A vast range of innovative applications will be produced. Some applications are already in market for example Google car which is an initiative to provide a self driving car experience complete with real time traffic, weather, road conditions and others. Now discuss some useful applications of Internet of Things (IoT).

 There are various applications of Internet of Things (IoT).

•   **Smart Home/Buildings-** A smart home is becoming a necessary of today fast life. A smart home allows many domestic appliances to be connected with internet for communication. In smart home equipment includes manually controlled are heating, ventilation, air conditioning, lighting, washing machine and refrigerator doors and windows. When IoT is integrated with a wireless sensor network can give intellectual solution for building energy management. We can access building control system and energy information with the help of smart phones and laptops.

Figure 5: Smart Home [10]

•   **Smart Farming-** Smart farming systems is based on the Internet of Things (IoT).it can use connected sensors to monitor various instances of crop fields are light, humidity, temperature, rain prediction, and soil moisture. System automation for irrigation is also another benefit of IoT. IoT enhanced quality and volume product, increases control over the production, improve crop management and monitoring the conditions of climate. It offers that provides better control over the internal process and lower production risks.

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Figure 6: Smart Farming [9]

- **Smart Health-** Hospitalized patients need constant attention and IoT monitoring technologies can help with us. The continuously monitor the status of physiological patients. Smart health sensors are used to collect all physiological data, which is help for analyzed and stored using gateway and cloud. The analyzed data is then wirelessly sent to care givers for additional review and analysis. It offers an automated flow of information that is continuous. It concurrently improves the quality of care and reduces the cost of care through ongoing attention.
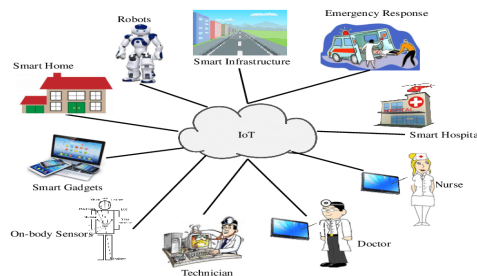

Figure 7: Smart Health [10]

- **Smart City-** In order to integrate Internet of Things (IoT) technology into all facts of smart cities, government and citizens must support careful planning at every stage. Using IoT technology cities can be better in many ways, including by enhancing public transportation, maintain public safety, health and improving infrastructure.

Figure 8: Smart City [10]

Conclusion

In this paper highlight the IoT concept in general through its evolution, features and applications.

IoT is a technology that has made life easier and will keep doing so. For more than 20 years research and development in the Internet of Things filed has been extremely active. In order to offer us with safe and convenient services, we can interact with IoT devices practically anywhere in our homes, offices, shopping

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malls, airports, schools and many other places. Additionally, IoT system is incorporating a variety of helpful technology advancement across various industries. In future explore the individual application with its use, resources and working and how they impact on our daily life.

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