

Internet of Things-Applications and Future Trends

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Abstract

Internet of Things (IoT) one of the most exiting trends and innovation in the recent history of technological advancement. Also the advances in computer hardware, embedded system devices, networking devices, display devices, control devices, software enhancements etc. has tremendously supported IoT to grow slowly and steadily from leaps to bounds. With computation, connectivity, and data storage becoming more advanced and universal there has been an explosion of IoT based application solutions in diversified domains from health care to public safety, from assembly line scheduling to manufacturing and various other technological domains. IoT represents a system which consists a things in the real world, and sensors attached to or combined to these things, connected to the Internet via wired and wireless network structure. IoT-enabled things will share information about the condition of things and the surrounding environment with people, software systems and other machines by the technology of theIoT.

The Internet of things refers to the type of network to connect anything with the Internet-based in specific protocols through information sensing equipment to conduct information exchange and communications in order to achieve smart recognition, positioning, tracking, monitoring, and administration. The Internet of Things sensors can use various types of connections like Wi-Fi, Zig-Bee, and Bluetooth, in the addition to allowing large-scale area connectivity used many technologies such as 3G, GSM, GPRS, and LTE etc.

All concept will create new types of applications can involve such as smart home and the smart cities, too many services provide such as notifications, security privacy, energy saving, communication, computers, and entertainment. This paper briefly discuss on what Internet of Things is, and its applications in Future Technologies.

Keywords: The IoT Applications, Future Technologies, Smart Cities of IoT, Sensor

Introduction

IoT (Internet of Things) is the network of physical objects-devices, vehicles, buildings and other items set in with electronics, software, sensors, and network connectivity that facilitate these objects to sense, collect, exchange data and control remotely across existing network infrastructure that is based on a layered architecture. Each of the layers includes the application of a range of diverse technologies for the data transmission, processing and storage. The vulnerabilities and threats in IoT environment and protection methods can be implemented within environment due to the hardware limitations of the existing equipment and technology used for data transfer. The rapid development of information technology has brought advancing a hyper connected society in which objects are connected to mobile devices and the Internet and communicate with one another. In the 21st century, we want to be associated with anything anytime and anywhere, which is already up-to-the- minute in various places everywhere in the world. The core component of this hyper connected society is IoT, which is also referred to as Machine to Machine (M2M) communication or Internet of Everything(IoE).

Over 12.5 billion devices were already connected in 2010 and about 50 billion devices will be connected by 2020. However, little is known about the impacts of IoT service to consumer behavior. From the consumer point of view, IoT is both opportunity and possible danger.. Internet of Things (IoT), triggered by technological advances in embedded systems hardware, software, and connectivity. The increasing availability of tiny, cheap, power-efficient micro-controllers and peripherals has spun a new category of computers: low- end IoT devices. Even though such devices cannot run traditional operating systems (e.g. Linux and equivalents) due to very constrained memory, CPU, power resources, most low-end IoT devices have enough resources to run newer operating systems and cross- platform application code. Furthermore, recent network technology and protocol standardization efforts have enabled new interconnection capabilities for such devices, such as low-power, end-to-end IPv6 based networking. The growing role of the Internet of Things (IoT) concept is proved by its application in the number of areas such as the development of smart cities, the management of energy resources and networks, mobility, transport, logistics, etc. The high level of complexity of the IoT concept and the use of Automatic Identification and Data Capture (AIDC) technologies increases the risk of compromising the basic principles of safety which is why this problem domain remains continuously investigated in the last fewyears.

Broad Applications

IoT has broad applications across all industries and markets. It proves not just useful, but nearly critical in many industries as technology advances and we move towards the advanced automation imagined in the distant future.

Engineering, Industry andInfrastructure

Applications of IoT in these areas include improving production, marketing, service delivery, and safety. IoT provides a strong means of monitoring various processes, and real transparency creates greater visibility for improvement opportunities. The deep level of control afforded by IoT allows rapid and more action on those

opportunities, which include events like obvious customer needs, nonconforming product, malfunctions in equipment, problems in the distribution network, and more.

Marketing and Content Delivery

Current advertising suffers from excess and poor targeting. Even with today's analytics, modern advertising fails. IoT promises different and personalized advertising rather than one-size-fits all strategies. It transforms advertising from noise to a practical part of life because consumers interact with advertising through IoT rather than simply receiving it. This makes advertising more functional and useful to people searching the marketplace

Rails and Mass Transit

Current systems deliver sophisticated integration and performance; however, they employ older technology and approaches to MRT. The improvements brought by IoT deliver a complete control and monitoring. This results in better management of overall performance, maintenance issues, maintenance, and improvements. Mass transit options beyond standard MRT suffer from a lack of the integration necessary to transform them from an option to a dedicated service. IoT provides an inexpensive and advanced way to optimize performance and bring qualities of MRT to other transportation options like buses. This improves services and service delivery in the areas of scheduling, optimizing transport times, reliability, managing equipment issues, and responding to customer needs.

Road

The primary concerns of traffic are managing congestion, reducing accidents, and parking. IoT allows us to better observe and analyze the flow of traffic through devices at all traffic observation points. It aids in parking by making storage flow transparent when current methods offer little if any data.

Automobile

Many in the automotive industry envision a future for cars in which IoT technology makes cars "smart," attractive options equal to MRT. IoT offers few significant improvements to personal vehicles. Most benefits come from better control over related infrastructure and the inherent flaws in automobile transport; however, IoT does improve personal vehicles as personal spaces. **Environmental Monitoring**

The applications of IoT in environmental monitoring are broad: environmental protection, extreme weather monitoring, water safety, endangered species protection, commercial farming, and more. In these applications, sensors detect and measure every type of environmental change.

IoT- Educational Applications

IoT in the classroom combines the benefits of IoT in content delivery, business, and healthcare. It customizes and enhances education by allowing optimization of all content and forms of delivery. It enables educators to give focus to individuals and their method. It also reduces costs and labor of education through automation of common tasks outside of the education process.

IoT- Government Applications

IoT supports the development of smart nations and smart cities. This includes enhancement of infrastructure previously discussed (e.g., healthcare, energy, transportation, etc.), defense, and also the engineering and maintenance of communities.

Creating Jobs

IoT offers thorough economic analysis. It makes previous blind spots visible and supports better economic monitoring and modeling. It analyzes the industry and the marketplace to spot opportunities for growth and barriers.

National Defence

National threats prove diverse and complicated. IoT augments armed forces systems and services and offers the sophistication necessary to manage the landscape of national defense. It supports better protection of borders through inexpensive, high-performance devices for rich control and observation.

Future Trends of IoT

Smart City Implementation Based on IOT

Recently, several native governments are reaching to implement AN IoT-based good town through the construction of a work for IoT verification And an integrated infrastructure. This movement conjointly corresponds to the artistic economy that's emphasized by the govt.



Smart Traffic Service

Major good traffic services embrace good parking services to for estallill-gotten parking and facilitate convenient parking, subject participation-oriente dill-gotten parking bar services, and goods a fecross over services, good parking refers to the development of a platform that allows period of time checking of accessible house and parking costs in areas that need parking and facilitation of reservation/payment through internet and mobileconnections.

The subject participation-oriented ill-gotten parking bar service is associate improvement of the ill-gotten parking quelling system of the traffic authority by permitting voters (including victims of ill-gotten parking) to handily report such violations through their smart phones.



IOT in Healthcare

Connected care however remains the sleeping large of the IOT applications. The construct of connected tendings system and sensible medical devices bears huge potential not only for corporations, how ever additionally for the well-being of individuals normally. Research shows IoT in tending are going to be huge in returning years. IoT intending is geared toward empowering folks to measure healthier life by carrying connected devices. The collected knowledge can facilitate in personalised Analyses of an individual's health and supply tailor created ways to combat healthproblem.



Smart Energy and the Smart Grid

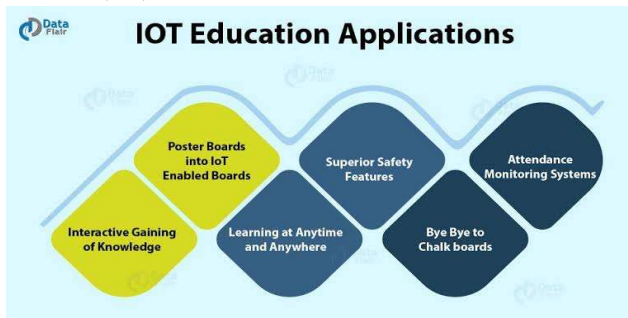
A smart grid is linked to the information and control and developed to have as mart energy management. A smart grid that integrates the data and information technologies (ICTs) to the power network will enable a real-time, two-way interaction between suppliers and consumers, creating more dynamic interaction on energy flow, which will help deliver power more efficiently and sustainably. The Key elements of in formation and

communications technologies will combinesen sing and monitoring technologies for powerflows; digital communications in frastructure to send data across the grid; smart meters with the in-home display to notify energy usage; coordination, control and automation systems to aggregate and process various data, and to create highly interactive, responsive electricity.



Smart EducationService

The Internet has evolved from connecting individuals and later videos, photos, and text to a lot of recently physical objects. victimization sensors, physical objects will —talkl (transmit data) to every different and even command one another to perform a physical act. As things and folks become a lot of connected, such objects also will become a part of social networks, a lot of within the same approach that individuals tag photos on Face book. During this approach, the worth of such objects can increase for each analysis and learning. This service provides period of time, interactive high-definition lectures that desire face to-face conferences reception through high-definition(HD) services and wide-area web infrastructure



IOT inAgriculture

With the continuous increase in world's population, demand for food supply is extremely raised. Governments are helping farmers to use advanced techniques and research to increase food production. Smart farming is one of the fastest growing field in IoT. Farmers are using meaningful in sights from the data to yield better return on investment. Sensing for soil moisture and nutrients, controlling water usage for plant growth and determining custom fertilizer are some simple uses ofIoT.



SmartRetail

The potential of IoT within the retail sector is gigantic. IoT provides a chance to retailers to attach with the purchasers to reinforce the in-store expertise.

Smart phone are the approach for retailers to stay connected with their customers even out of store. Interacting through Smartphone and mistreatment Beacon technology will facilitate retailers serve their customers higher. They will conjointly track customers path through as to re and improve store layout and place premium merchandise in high traffic areas.



Conclusion

Internet of things is a new technology which provides many applications to connect the things to things and human to things through the internet. The Internet of Things(IoT),we can say that this sector is now in development and have a lot of possible futuristic development. Internet of things is a new technology which presents many applications to connect the things to things and human to things over the internet. Each object in the world can be identified, connected to each other through internet independently.

This paper has tried to discuss some of the most important applications of the Internet of Things with a particular focus on future trends of Internet of things concept. The Internet of Things is happening now, and there is a need to address its challenges and make the concept of the Internet of Things feasible.

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