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A Study of Internet of Things and its Future

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***Abstract*: This paper gives introduction about internet of things with some applications and future approach. It describes about internet of things as well as its future. Regardless of how you look at it, technology has been trending toward automation for quite some time. Isn't it true that one of the most basic principles of technology is to make our lives easier by requiring us to do fewer things explicitly? It may be making us all lazier on a daily basis, or it may be giving us significantly more time to pursue whatever we choose. Whatever the outcome, there is little doubt that automation is the way of the future, and the most significant area where it is occurring is in our homes.**

***Keywords*: Cloud computing, Internet of Things, Radio frequency identification, Resident security, Traffic automation.**

1. Introduction

IoT has become so important in our daily lives that it will have a significant impact in the near future. For example, solutions for traffic flow can be supplied instantaneously, as well as reminders regarding car maintenance and energy conservation. Sensors will diagnose upcoming maintenance concerns and will even prioritize maintenance team schedules for repair equipment. Data analysis technologies will make it easier for metropolitan and cosmopolitan cities to manage traffic, trash, pollution control, law enforcement, and other major functions efficiently.

Taking it a step further, connected devices may assist individuals such as receiving an alarm from the refrigerator reminding you to buy for veggies when the vegetable tray is empty, and your home security system allowing you to unlock the door for some visitors using connected devices (IoT). The amount of data created would be huge, given the massive increase in the number of devices every day. This is where Big Data and IoT come together.

Big Data is in charge of managing the massive amounts of data generated by its technology. Big data and the Internet of Things (IoT) are two important topics in commercial, industrial, and other applications. The term "Internet of Things" was coined about a decade ago to describe the world of connected equipment and devices that collect, store, and handle huge amounts of big data. Big data also refers to the examination of this generated data in order to achieve valuable outcomes. The collecting and analysis of data connected to consumer actions in order to discover why and what customers buy has been the driving force behind the IoT and big data.

It wasn't long ago that we imagined future homes with lights that turned on their own, coffee brewed just the way you like it as you were ready to wake up, and showers that recognised the weather outside and adjusted the water temperature accordingly. And now we've arrived at a moment where the technology to accomplish all of this has been available for some time and has finally become inexpensive.

2. Uses of Internet of Things

It doesn't take much to figure out what home automation is: it's essentially the use of smartphones and other readily available compute clusters to automate and control household products and equipment, such as electrical appliances, lights, and doors, using hardware that can be controlled remotely. Most home automation starts small—people begin by controlling simple binary devices that may be turned on or off. When these gadgets are connected to the internet, however, they become genuinely smart and enter the internet of things domain. In reality, most automation systems nowadays use their internet-enabled capabilities to record and analyse device usage patterns, primarily lighting and heating systems, in order to lower monthly electricity bills and overall energy consumption.

Today's smart home automation systems often consist of a central hub that may be set to operate a variety of smart devices, sensors, and switches, all of which interact with the hub via specific communication protocols. The hub, in turn, receives instructions via an app or the internet. A distribution of surveillance and processing functions between both the hub and the remote app is the most important takeaway. A hub, for example, would operate as the core link between various smart devices, such as a bulb and a door contact sensor, in a smart lighting system.

The smart gadgets and hub would communicate via common communication protocols, and the lighting system would be controlled via an app. If you're still unsure about the Hub's function, consider how it functions similarly to a normal Wi-Fi router. Devices that route signals from numerous sources to one another, to put it simply. In a few designs, the hub and router are combined, eliminating the requirement for two separate devices. When they are separate, the hub, which must be connected to the internet to work, is connected to the router, thus a smart hub essentially gives a centralized method of controlling all your smart gadgets, as they can connect all your devices to the internet.

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3. Future Approach of IoT

Connected automobiles will be able to send and receive communications 10 times faster thanks to 5G. The global connected automobile industry is predicted to increase from 5.1 million units in 2015 to 37.7 million units by 2022, according to a recent analysis. The use of telematics devices and technological advancements that focus on the driver and passenger experience, as well as safety and cyber security, are ushering in a new era of growth for linked automobiles around the world. India is likely to be a significant market for these vehicles. Currently, less than 2% of all automobiles sold in the country are equipped with some type of connectivity. However, our experience with cellphones has demonstrated that mass acceptance of technology may occur quickly if we are at ease with it.

A. IoT in Secure Riding

Insurance firms can use linked automobiles to provide drivers incentives to drive safely in exchange for lower premiums. This will make our roads safer and make driving more enjoyable. This data can also be used by drivers to assess and enhance their driving abilities. In a country where we continually grumble about traffic jams, your automobile will soon wake you up early to warn you that if you don't get to work early, you'll have to deal with even more traffic. With data from each vehicle stacking up, big data will provide more predictability to traffic management.

B. Maintenance Prediction

Drivers and fleet managers will now have access to important vehicle diagnostics data, allowing errors to be identified before they become a big issue. This will result in fewer vehicle failures, easier driving, and better mileage. Vehicles that are well-maintained emit fewer pollutants.

C. Traffic Congestion

Congestion and heavy traffic are two of the most vexing problems in every large metropolis. But it's also a problem that the Internet of Things is already addressing. For example, in Tel Aviv, one lane on popular roadways is reserved for buses and taxis. Are you in a hurry? An impatient driver can also use the lane, but it will cost them a lot of money. The sensors embedded in the asphalt can detect the license plates of drivers and charge them automatically. The price is determined by the amount of traffic on the road.

D. Resident Security

A safe city is one that is wise. Facial detection and biometric technologies are only a couple of ways to keep us safe at home, at work, and on the streets. However, there are many more basic and effective techniques to make us feel secure on the streets. For example, a bulb that brightens up when it detects slamming or yelling. Anti-hooliganism lamps are also equipped with cameras that broadcast live footage to the cloud.

4. Conclusion

A connected automobile can search its database for information such as your favorite phone number or the best route to take to pick up your child from her piano lesson every Friday. Connectivity concerns will be a thing of the past with the arrival of 5G. 5G will make it possible for connected cars to send and receive communications more quickly (up to 10 times a second). 5G will also improve situational awareness and provide advance warning in the event of a roadblock or other hazard appearing on the road you're driving on, allowing you more time to respond.

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