



HOME AUTOMATION SYSTEM USING IOT

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Abstract :

Home automation or domotics is building automation for a home, called a smart home or smart house. A home automation system will monitor and/or control home attributes such as lighting, climate, entertainment systems, and appliances. It may also include home security such as access control and alarm systems. When connected with the Internet, home devices are an important constituent of the Internet of Things.

Internet of things (IoT) provides a platform that allows devices to connect, sensed, and controlled remotely across a network infrastructure. In this paper, we focus on home automation using smartphones and computers. The IoT devices control and monitor the electronic electrical and mechanical systems used in various types of buildings.

Key words: *domotics; electronic; electrical; mechanical.*

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Introduction :

Home automation is constructing automation for a domestic, mentioned as a sensible home or smart house. In the IoT home automation ecosystem, you can control your devices like light, fan, TV, etc. A domestic automation system can monitor and/or manage home attributes adore lighting, climate, enjoyment systems, and appliances. It is very helpful to control your home devices.

Now everything has been automated and it functions automatically. A simple touch is enough to close or open the gate, or today's technology has become so smart that the door itself senses that someone is coming and it opens on its own. This is what known as automation. In other words, automation is a system that works without human intervention. Without human intervention means, no manual power is required to switch on and switch off any electronic machine or gadgets, it simply works on its own. When such automated systems are applied to a residential project, then it becomes a home automation system. The automation system in residential projects refers to an integrated system in which a very minimum human intervention is required. All electrical and electronic machines/gadgets are monitored and controlled by a common control panel. In a smart home project, electronic gadgets like lighting, kitchen appliances, temperature control, entertainment systems that all function in an integrated manner and



are attached to a central controlling and monitoring system. Advanced security and surveillance systems, fire alarms, burglar alarms are also very important features of a home automation project. Monitoring of all these devices can be done with a central control system in real-time. All electronic devices or gadgets are assigned with an IP address which provides us with access to control them with the help of a laptop, mobile, tab, and desktop from anywhere in the world. In a smart home system, you can set a timer so that every day at a specific time the lights will get switched off and switched on. The heater, the air conditioner can be adjusted to turn on few minutes before arriving home. Similarly, lights can also be adjusted to turn on when the security system alarms are triggered. Other devices like an entertainment system can also start functioning at a specific time. The possibilities in home automation systems are endless. Home automation can give you a greater level of security, comfort, and luxury at the same time.

Internet of Things for Smart Home :

IoT contraptions are a bit of the greater thought of home robotization, which can fuse lighting, warming and cooling, media and security systems. Long stretch preferences could join essentialness venture reserves by means of thusly ensuring lights and equipment are murdered. Endeavors are pondering and recognizing a huge proportion of IoT-related applications, which can be isolated into two classes. In first grouping the devices are related, molding an establishment that is mechanized with M2M correspondence and significance to improve people's lives. In this grouping IoT can be seen expecting the activity of TCC&R (track, request and control). In nuclear families for example the room temperature, windows, lights and electrical contraptions, etc would all have the option to be controlled remotely from PC and robotized to discard manual techniques people face step by step in their lives. The Internet of Things is acknowledged to have suffering effects in both advancement and present day society. In present day information society, IoT can be seen as an overall system that enables additionally created organizations by partner physical and virtual contraptions and things to starting at currently existing and regardless, best in class information and correspondence developments. In spite of the way that the term IoT has started to incline out in the open during the latest five years, partner things to the Internet is definitely not another wonder. Possibly the key application was the Trojan room coffee pot that was envisioned not long after web was considered in 1989. A keen home or obotized home could be established on a phase or focus focuses that control clever devices and mechanical assemblies. For instance, using Apple's Home Kit, producers can have their home things and decoration obliged by an application in iOS devices, for instance, the iPhone and the Apple Watch. This could be a dedicated application or iOS neighborhood applications, for instance, Siri. This can be displayed by virtue of Lenovo's Smart Home Essentials, which is a line of keen home contraptions that are controlled through Apple's Home application or Siri without the necessity for a Wi-Fi interface. The general work in this paper and my examination is to make keen home utilizing web of things with a high security level and including a few gadgets, sensors, controller and so on.

Advantages of Home Automation Systems :

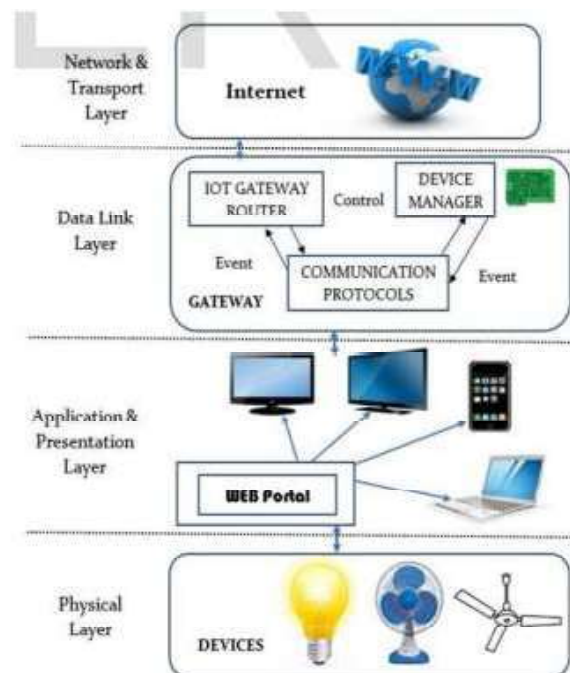
In recent years, wireless systems like Wi-Fi have become more and more common in home networking. Also in home and building automation systems, the use of wireless technologies gives several advantages that could not be achieved using a wired network only.



1. **Reduced installation costs** : First and foremost, installation costs are significantly reduced since no cabling is necessary. Wired solutions require cabling, where material as well as the professional laying of cables (e.g. into walls) is expensive.
2. **System scalability and easy extension** : Deploying a wireless network is especially advantageous when, due to new or changed requirements, extension of the network is necessary. In contrast to wired installations, in which cabling extension is tedious. This makes wireless installations a seminal investment.
3. **Aesthetical benefits** : Apart from covering a larger area, this attribute helps to full aesthetical requirements as well. Examples include representative buildings with all-glass architecture and historical buildings where design or conservatory reasons do not allow laying of cables.
4. **Integration of mobile devices** : With wireless networks, associating mobile devices such as PDAs and Smartphones with the automation system becomes possible everywhere and at any time, as a device's exact physical location is no longer crucial for a connection (as long as the device is in reach of the network). For all these reasons, wireless technology is not only an attractive choice in renovation and refurbishment, but also for new installations.

Architecture of Proposed IoT :

The proposed IoT architecture system consists of Network and Transport Layer, data link Layer, Application and Presentation layer, Physical Layer. IoT gateway router, device manager and many contact protocols are the part of the data link layer. All the controlling devices are included in the physical layer section. For controlling many devices a web portal is designed a web page at the application and presentation layer. The devices can also be controlled by making an app on a mobile phone. The web portal and mobile app do similar works. The proposed system IoT layer is shown in figure





Conclusion :

There have been many works done by the existing method on home automation and security purposes. But our method is unique when you compare with existing method cost, security, and sustainability. Our proposed method gives data updates within 3 seconds that help to take a quick decision if any hazard occurs. Our system can be controlled via many ways like Voice control app, Smart-phone, internet, World Wide Web, and electrical switch that help all kinds of peoples (Specially disable persons) to control home appliances. Through IoT technology, our system can ensure security and comfort for all users. The Pi-camera sends an email automatically intruder picture or fire accident to concern person that enhances the safety of the residence and the homeowner can alert as well as can take necessary steps toward his family safety which is not possible by CCTV. This system can be used for mitigating the wastage of electrical power by proper scheduling and monitoring of the devices. Our developed system can be engaged in many places such as banks, hospitals, labs, offices, etc that dramatically cut back the hazard of unauthorized entry. Our method reaction is excellent which is sustainable for long time performance. We have to further work on live video streaming.

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