

SMART HOME USING IOT

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ABSTRACT

The main purpose of this design is to develop a smart home using IOT. currently, homemade wall switches located in different apartments in the home makes it delicate for people to go near them to operate, especially for the elderly people, physically hindered impaired people and for children to do so as well as if we're far from our home, we cannot operate our home so for this problem there's effective result i.e., to make our home smart. This field of home robotization is continuously arising in technology making house safer and better places to live. These features help druggies to nearly cover and control home attributes like lights, entertainments systems, security, climate control, etc. In this design we can automate our home by using voice command, remote and smart phones. While home robotization bias are an open investment that will add to your charges as you're adding convenience to your life, you 're saving electricity, adding security, and perfecting your life.

Keywords: Home automation, Smart Home, IOT, sensors.

I. INTRODUCTION

The main purpose of home automation is to save the electricity. The IOT based home automation of smart devices for different application like lighting, security, home entertainment etc. All these biases are integrated on a single network established by gateway and connected in a mesh network. These means it gives flexibility to the users to operate one sensor-based action. For e.g., you can record the turn off timing of living room lights as well as door sensor of your main door triggers after 7pm in the evening. Thus, all the sensors within a network can perform crosstalk via the main regulator unit. Some of the sensors in home automation acts like a sensor capital. These types of sensors are principally the signal repeaters of signals which that are in the middle of the system installation location and the sensors that are at a distant location. For similar long distances, these sensor capitals play an important role to allow easy transmission of signals to sensors that are far away from the main controller but in near proximity to the sensor hub. Smart plug is the mostly used sensor hubs in IOT based automation. Thus, using the same set of sensors, the problem of home security and home automation can be solved. One of the major advantages of this IOT is needed the Wi-Fi is not available we can go through the 3G and 4G services. In other existing methods it is not possible so, by overcoming all the downsides we have implementing a project based on smart home-based automation. This design provides further comfort and the simplicity. The concept Internet of Things (IoT) can be closely tied together with home automation. IoT devices, such as smart thermometers, can be controlled by, for example, a smartphone and thus possibly providing worldwide range through the Internet. These devices together with the rising popularity of the smartphone account for one of the reasons to the increase in home automation.

II. OBJECTIVE

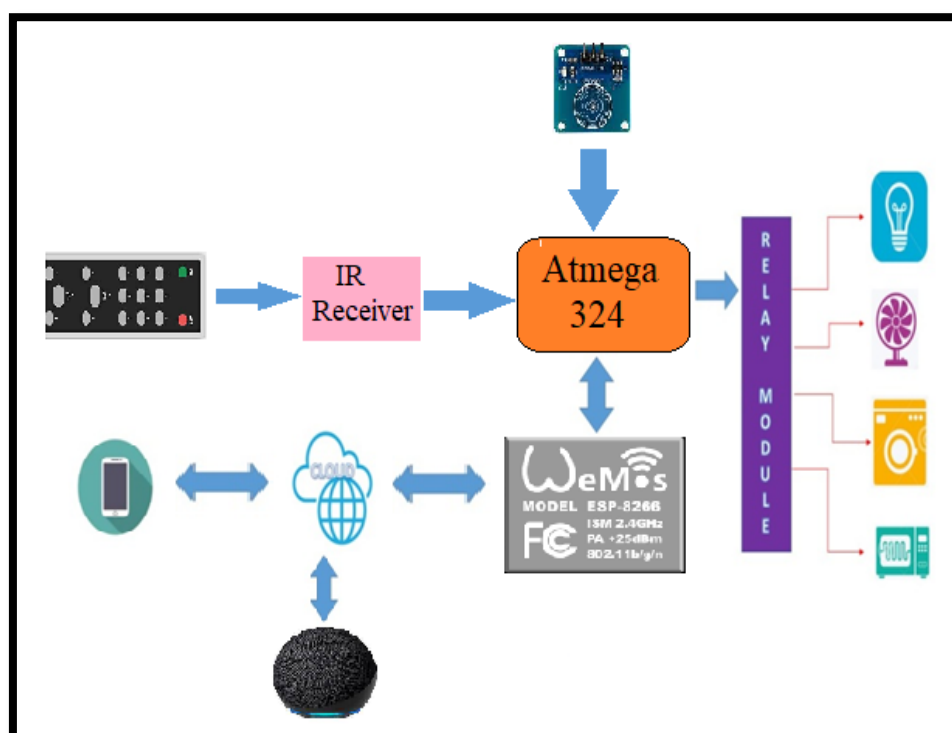
The main objective of home automation is to save the electricity. The home automation system improves the living standards and helps the elderly and disabled people. It gives the user the ability to control the electronic and electrical home appliances not only from one location but throughout the country. Home automation system focuses on controlling home electronic devices whether you are inside or outside your home. It gives an individual the ability to control things remotely or automatically around the home. Many people are always on the move from place to place due to business work. Some people can spend a couple of days away from their home leaving all their household appliances without any kind of monitoring and control. Some devices are left plugged into power sockets whereas others are supposed to be plugged into and out of power sockets at

different intervals depending on the time of the day. All of this requires an individual to manually attend to each of the devices independently from time to time. All such monitoring and control can be done without necessarily being around or inside the home. Some devices if not controlled properly consume a lot of energy which leads to extra expenditure on electricity. Therefore, Internet based home automation system is proposed which will enable one to remotely manage the home appliances from anywhere, anytime.

III. LITERATURE REVIEW

This technology resolves immovability of the disabled people. The home automation system allows the home appliances to switch ON and switch OFF with the respective input received from the Bluetooth interface and the state of the home appliances are displayed in the LCD by installing android application in the smart phone of users. [1] The IoT device market has undergone radical changes in only a few short years. Starting with disparate devices and no ecosystems to speak of, the market has now grown to encompass enterprise players working together to create ecosystems, tailored for mobile technology, which allows IoT devices to become interconnected. Automaton of the home may have once seemed like a peculiar and unlikely concept, but as our devices become smarter and more investment is poured into the development of IoT consumer products, we are likely to see increased competition spur on further innovation in the field. Returning for its third year, Smart Homes Summit continues to move connected technology forward in the ever-changing Smart Home Market. This year the focus of the event is on voice AI capabilities driving service innovations for the home. [2] The operating system of the smart mobile phone in android, we progress remote control program. The program connected with Wi-Fi to communicate with the robot. Wireless control is the most significant basic needs for all the people. Wireless network-controlled robots use Wi-Fi modules. Our Home automation will be helpful for disabled and elderly people to perform ON and OFF operation automatically by giving voice commands. Our future work will be focused to reduce the time taken to recognize and response the voice commands. Trying to implement the idea in other real-world application also. [3] R. Piyare refers to wireless lifestyle which gives us relief from “cable chaos”. To control the electronic appliances through the mobile phone and Arduino is more efficient than the using of electric switches because it makes the system cost effective and long lasting to use. [4] Bluetooth and Ethernet. When connectivity between Arduino and smart phone is established using Bluetooth, short range wireless communication is possible in an indoor environment. Ethernet module is used for connecting Arduino board from any part of the world. [5]

IV. BLOCK DIAGRAM



The main process which is involved in our system is the combination of all four ways to controlled home appliances like by touch detector, remote, mobile application, and voice command. We see the how all styles work one by one.

Touch sensor- In our home we used conventional wall switches and also in many homes automation system rather of the wall switches where key of button directly interfaced with the home automation circuit control switching of the appliances. In our system, the capacitive detector\sensor is used to switch devices ON or OFF.

A capacitive touch sensor sends the signal in form of analog voltage to a microcontroller to accept the commands and reply consequently. It operates the loads through a set of relays using a relay motorist ic. Relays are connected between loads and the control unit.

Remote- We can operate our home appliances using the remote control by switching the devices ON or OFF. A remote transmit the infrared data signal to the control unit. Receivers catch the infrared signal, analyses them, and shoot to the microcontroller to accept the commands and then reply accordingly. It operates the loads through a bunch of relays using relay driver integrated circuits.

Mobile- We can also control our electrical loads with the help of android applications. Which is have the proper indication of our home appliances. It operates the loads through a bunch of relays using a relay motorist integrated circuit. A Wi-Fi module ESP 8266 catches the signal provided by the mobile application and send it to the microcontroller to accept the commands and then react accordingly. It operates the loads through a bunch of relays using a relay driver integrated circuit.

Voice command- The voice controlled wireless smart home system has been presented to the elderly and disabled peoples. In which the system controlled by the voice command to the Alexa. Receivers catch the signal and shoot it to the pall (ESP 8266) and from that to microcontroller to accept the commands and then react accordingly. It operates the loads through a set of relays using a relay motorist integrated circuit.

V. COMPONENTS

- 1) Wi-fi Module ESP 8266
- 2) Microcontroller
- 3) Relay Module 8 Port
- 4) Motion Sensor
- 5) Microwave Sensor

Wi-Fi Module ESP 8266

The Wi-Fi module ESP 8266 is a basically a network provider module which helps your microcontroller to connect to any Wi-Fi network in the vicinity. The Wi-Fi modem USB 8266 will receive command from the smartphone or voice command wireless through the internet.



Microcontroller

Microcontroller module AT Mega 324 it takes the command from Wi-Fi module. It recognizes the given command on or off and according to that it will send signal to the relay. And the working of relay is just on or of the circuit. If there is a on signal the relay switch on the loads if there is an off-signal relay of the loads.



Relay module

We are using 8port relay. Electrical electrically operator switches that open and close the circuit by receiving electrical signal from output sources, we are using 8port relay, in this 8-port relay module first 5 points operated on 230volt/ 5 amp.The 6 point we are using for 230V/10 amps which is power plug. And the last 2 points we are using for fan with regulator. The first two points which are L1 and L2 and last two points which are F1 and F2 are operated on one phase. And remaining 4 loads or points are operated on another phase.



Motion sensor

Motion sensor is a device that recognizes and detects the movement of object in its surrounding such as human, animals or solid objects. Motion sensor light triggers a response when motion is detected. They can install indoor or outdoor of buildings and homes. Light can be control due to your motion as you enter and exit a room.The infrared waves released from the motion sensor that detects the presence of body heat of a person moving in that specific area it automatically initiates action like turning on/off the lights and other electrical appliances or devices.



Microwave sensor

The microwave sensor is similar as that of motion sensor. This microwave sensor provides more coverage than the motion sensor and this we can be used for all loads.



VI. APPLICATIONS

Home automation does not only reduce human efforts but also saves time. A complete automation may sound complex and expensive, but these are surprisingly affordable and simple to install. Home automation has wider range of application such as

- 1) The most common applications of home automation are lighting control, HVAC, outdoor lawn irrigation, kitchen appliances, and security systems.
- 2) Lighting.
- 3) Safety Sensors.
- 4) Security System.
- 5) Temperature Control.
- 6) Doors.
- 7) Kitchen.
- 8) Windows.
- 9) Home Routines.

VII. ADVANTAGES

- 1) Voice commands are given to control devices, and it is more convenient.
- 2) Wi-Fi based devices have better bandwidth and, we can connect many peripherals.
- 3) It includes safety, convenience, and control.
- 4) Noise less operation.
- 5) Prevents from shock.
- 6) Electricity saving.
- 7) No need of extra wiring it will be connected to external switch board.
- 8) Maximizing home security.
- 9) Increase energy efficiency.

VIII. CONCLUSION

IOT based Home Automation is a quite different concept than what is presently available in the market. This would make automation easier and further intuitive. With the help of that people will be able to interact with the system everywhere across the world. It also is an important aspect in the present world where people are so busy, this would help them in easing the introductory functionality of their life. Smart home is an exciting and rapidly evolving field that has seen tremendous growth in recent years. The integration of IoT (Internet of Things) technology has made it possible to connect and control various devices in the home using a single system. IoT devices such as smart thermostats, lights, security cameras, and door locks can be controlled using a mobile app, voice commands through virtual assistants, or a remote-control device. Smart home not only provides convenience and comfort to homeowners, but it also offers improved energy efficiency, enhanced security, and increased home value. With the ability to control and monitor your home from anywhere with an internet connection, you can have peace of mind knowing your home is secure and energy efficient. In conclusion, smart home by using IoT technology provides homeowners with the ability to create a customized and integrated smart home system that fits their lifestyle. With the growing popularity of IoT devices, we can expect to see even more advancements in the field of smart home in the years to come.

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