



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Home Automation Using Iot

Shivam Gosavi, Pratik Chavan, Anukta Kumari and

Prof. Mamta koban

Department of Electronics and Telecommunications Engineering
AISSMS Institute of Information Technology, Pune, India

Abstract: In this age of digitization and automation, human life has become simpler as almost everything happens automatically, instead of manual home systems. Today people made the internet an essential part of their everyday lives apart from what they can help themselves with. Internet of Things (IoT) provides a platform that allows devices to connect, hear and remotely control network infrastructure. IoT devices control and monitor electrical, electronic, and mechanical systems used in various systems. Devices connected to the cloud server are controlled by a single controller that helps the number of users where the number of sensors and controls are connected advances in technology have not only changed our lives but also expanded all aspects of our lifestyle. Many electrical appliances are constantly monitored by hand to ensure efficient operation. Installing new device-specific devices not only increases costs but replaces the old device. Here we propose a system, which can monitor and organize any old electronic device with a mobile app, and its functionality can be effectively maintained by saving time and energy.

Index Terms: Arduino UNO, wi-fi ESP module, Thing speak, modified module.

I. INTRODUCTION

With the development of home automation tech, life becomes easier. In today's world, automation systems are widely used instead of sophisticated manual systems. Here our project deals with an automated type of system called Home Automation which is also considered important for the online use of objects. With the rapid growth in the number of users, IoT is being considered an emerging internet technology. The home automation system will control home features such as lighting, weather, and other electrical items. It may also include such security. The default home system usually connects everything that is controlled devices to the central hub or gate. Now - a - Today switching home systems has become popular with everyday internet usage. Considered one of the energy-saving programs, with the use of this automated system we can also save our time and that time can be used to do some productive work. Let's consider for example, that in the morning you rush to the office and part of the way you realize you forgot to change the fan, now instead of going home you can turn it off with servers. connecting it to servers saves time and electricity as well. Another example is that we have to start our engine every day to fill an extra water tank. The motor is maintained until the tank overflows. This is a waste of water and energy. If we can plan the motor in advance, we will turn it on and after some time we will turn it off, then it will save a lot of water and power. Therefore, we aim to design a system that can overcome these problems and provide time-saving protection and energy saving. With the help of traditional safety and security procedures and the monitoring and control of smart managed homes. The paper will provide a clear idea of how a smart home can be made with the help of modern technology.

2. Literature Survey

Paper 1:

Development of a Smart Home System for Managing and Monitoring Electrical Devices Using Microcontroller, H Maulana and M R Al-Jabari There are 4 stages of system design, which begin with data collection to produce user specification requirements, followed by hardware integration, and software development, as well as system testing using black-box testing and user acceptance testing. The system is built using a Microcontroller installed with a Wi-Fi module so that the user can use the system to monitor home appliances and control the electronic device over the Internet. Based on the test results of the system, the Smart home system for controlling and monitoring electrical devices using a microcontroller. More than 80% of users agree that the system can reduce energy consumption and save homeowners time testing electrical appliances before doing outdoor work. With this program users still feel anxious about the condition of their electrical appliances while performing outdoor activities.

Paper 2:

Smart House Remote Control Application Mobile application Amir Rajabzadeh, Ali Reza Manashty, and Zahra Forootan Jahromi in an effective and secure way. Sequential diagram of a mobile app that connects to a server application with usage conditions that may be displayed. The built-in mobile app was used and its key components were explained. Structured management tools and rules are also used in this mobile application built for use on the Windows Mobile platform. This application has the ability to connect to a large server using GPRS mobile internet and SMS. This program is expected to be an important step in the development of an integrated system that can be used effectively in conventional houses nearby.

Paper 3:

Implementation of a Home-Based Switching System, This paper introduces the implementation of a new Wi-Fi hotspot system, which provides a simple sensor interface and a home automation system actuator. Unlike most home automation systems available on the market, the proposed system is capable of measuring whether a single server can handle multiple hardware integration modules as long as it has a WiFi network..

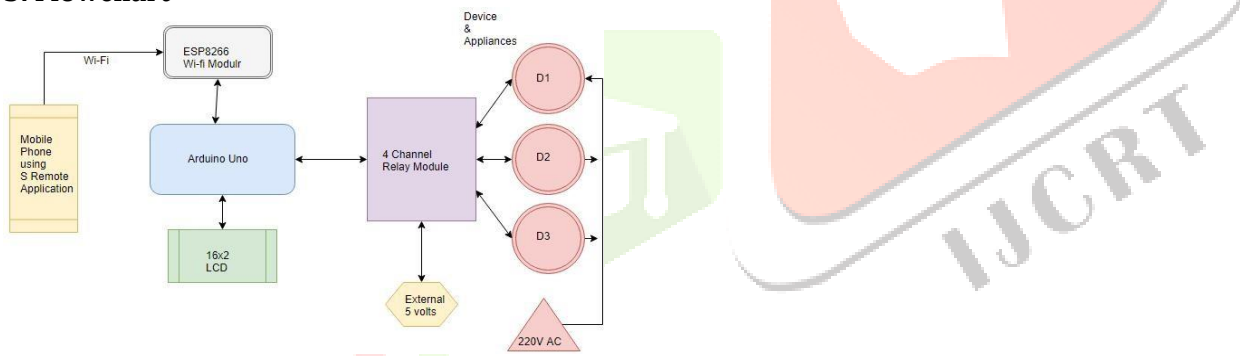
Paper 4:

Development of Workplace Intelligence System Intelligence Networks, Fatima Qayyum, Naaem Muhammad In addition to power plants, they have adopted a photovoltaic (PV) panel as a power generator that operates as a small grid. An optimization algorithm, which can provide a schedule for the use of smart home appliances, is proposed based on a mixed planning system. Imitation results indicate the use of the proposed electronic editing solution. They also point out that adding a home PV system results in reduced electricity bills and power supply to the national grid at times when solar energy production exceeds domestic demand.

Paper 5:

IOT Based Home Automation System for Android P. Shiva Nagendra Reddy, P. Ajay Kumar Reddy There are several platforms for developing smart phone applications such as Windows Mobile, Symbian, iOS and Android. In the proposed system, the Android platform app is upgraded as most phones and mobile devices support the Android OS. 4/8 The SDK includes a complete set of development tools such as debugger, libraries, and documentary handset templates, sample code and tutorials. Eclipse (works on Windows 7 development platform), which is an integrated development platform (IDE) used in conjunction with the Android Development Tools (ADT) Plug-in to develop a smart home application. [8] [9] An app designed for the smart home system provides the following functionality for the user: • Device control and monitoring. • Scheduling activities and setting automatic control of the smart home environment. • Option to change password. • Supports voice activation to switch tasks.

3. Flowchart



4. System Design and Working

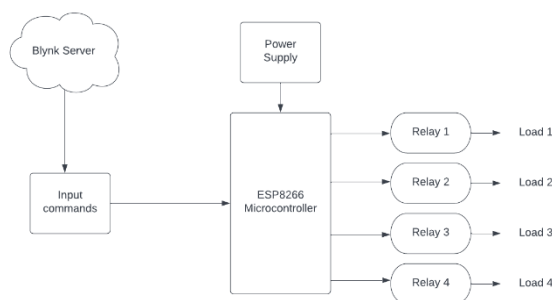


Figure . block diagram

The performance of our project is as follows

- There is an Arduino UNO board that plays a key role in setting all other components organized by this UNO board.
- We will provide the integration of the Arduino UNO with the WIFI ESP8266 module. This module is 300m wide
- There is a relay driver IC ULN2003 that will act as an open / closed switch for all external components that we will be connecting to.
- After this we will be encoding our UNO board code using the Arduino IDE and the setup is ready for testing. By using thingspeak as a cloud platform the user will be able to control all household electrical items remotely.
- There is an LCD display provided to show all results to the user and flexible delays, apart from the LCD provided in the setup the user can also access all the messages in this cloud account which app currently exists. the length of time it is opened.
- Cloud platform can make it one of the best IoT apps as it is currently the Internet of Things enabled.

6. SYSTEM DESCRIPTION

6.1 Arduino UNO it is a microcontroller board that is based on an 8-bit ATmega328P microcontroller. Along with ATmega328P support microcontroller. Arduino Uno has 14 digital input/output ports, 6 analog pins, USB connection, Power barrel jack, ICSP header, and set button re.

5 Volts Active Power, 7 to 20 Input Power, 14 I / O pins

6.2 ESP8266 WiFi Module The ESP8266 is a low-cost Wi-Fi microchip, with full TCP / IP stack and micro control capability, manufactured by Espressif Systems in Shanghai, China.

6.3 LCD Display Liquid crystal display (LCD) has features that combine your features with both liquid and crystals. They have a temperature inside where the molecules almost move as they would in a liquid, but are grouped together in an orderly fashion like crystals. The LCD display also has 64 bytes of Character-Generator Each character takes up 8 bytes of CG RAM, the total number of characters, the user can specify, is eight.

6.4 Relay Module Relay is an electrical device that uses electrical power to turn on or off switch switches. The singlechannel relay module is more than just an empty relay, it contains components that make switching and connecting easy and act as indicators to indicate whether the module is enabled and whether the relay is working or not.

Supply voltage - 3.75V to 6V

Current Quescent: 2mA

At present when the relay is active: ~ 70mA

Transmission high voltage - 250VAC or 30VDC

Current Relay Relay - 10A

7. TEST RESULTS

A basic software model for iot based home automation is being developed. Arduino integration with clouds is used for data storage and processing process. The product pcb design is made and printed. The integration of computer hardware with a cloud network is complete. After the successful completion of all components the connection to the server data is sent to the server to monitor the system. By entering the IP address of the appropriate server, a web page will appear. The server provides information on all electrical appliances connected to the house and the current state of the components whether they are ON or OFF.

8. CONCLUSION

This paper provides a summary of the smart home that was managed with the help of iot technology. Specifies the various technologies used to make the project. As each category of society has the right to protect their home provided the work is done for the benefit of all. This paper also provides an overview of the future scope of the project. In the future home automation will be widely used

9. FUTURE SCOPE

In the future, homes will automatically function with the help of 6/8 a number of technologies, such as a small number of hand-operated interventions. Not only the interiors or appliances but also the surrounding area of the house including the parking lot as well as the gardens will be managed with the help of this technology. Home automation will not only help us manage our homes but also health services that will be of great help to the elderly and the disabled. Advances in technology will help control, monitor, and protect your home. As we know technology is growing day by day so the houses of tomorrow will always work smarter compared to today.

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