

Smart Home Automation System

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ABSTRACT: Automation of a device has a wide scope for this Generation as well as in forthcoming generation. In this wide scope, Mobile communication technology is playing a major role in the world of automation. This article is fully based on low cost and reliable home control monitoring system for accessing and controlling devices and appliances remotely using Android based Smart phone application. While using this technology the system improves the living standard at home, reduces human effort, energy efficient and time saving and thus make a smart home .And also it was very helpful for providing support to disabled people and fulfil their needs in home and thus they leads a normal life. The proposed systems consist of android application. We are using Wi-Fi technology to monitor the device because of its accuracy, high range and instant connectivity. This module controls the home appliances with a very ease of installation and it is user friendly.

KEYWORDS: IOT, Smart Home, Android App, DHT 11.

I. INTRODUCTION

In we used a Wi-Fi wireless technology to monitor the device. An android application is installed in a mobile device i.e. android smart phone and it has inbuilt switch interface of all the appliances separately in it. Through which all the respective devices can be control and monitor individually. The Wi-Fi module receives the command from mobile phone and passes to relay circuit. As per the given signal from the user, the relay circuit switched ON/OFF the respective devices. The main purpose of using Wi-Fi wireless technology is to provide a greater extent to range and better feasibility.

II. LITERATURE REVIEW

IMPLEMENTATION OF INTERNET OF THINGS FOR HOME AUTOMATION: Mamata Khatu, Neethu Kaimal, Pratik Jadhav and Syedal Adnan Rizvi [1] they presented a paper on the implementation of Internet of things for home automation. This paper mainly focused on IoT coverage that connects all the variety of objects like smart phone, tablets, digital cameras and sensors in the internet and thus provides many services and huge amount of data and information. They also focused on Cloud computing, Cloud based platform help to connect the things that surrounds as so that we can easily access anything at any time and in any place. They have illustrated sensing as a service on cloud by using certain application like Augmented Reality, Agriculture, Environment monitoring etc. and finally they have proposed a prototype model for providing sensing as a service on cloud. The society need new and scalable, compatible and secure solutions for both the management of the ever broader complexly networked Internet of Things. Security concern is overcome by this model since we are using Wi-Fi Wireless Equivalent Privacy (WEP) and Wi-Fi Protected Access (WPA) are two most used security accesses used in Wi-Fi.

BLUETOOTH BASED WIRELESS HOME AUTOMATION SYSTEM USING FPGA: B.Murali Krishna, V.NarasimhaNayak, K.Ravi Kishore Reddy, B.Rakesh, P.ManojKumar and N.Sandhya [2] they presented a paper on the Bluetooth based Wireless Home automation system using FPGA. They primarily focused on Bluetooth technology. With the help of the Bluetooth module (HC-05) and Android Phone, they control the home appliances, which all connected to FPGA board. Thus, they have mentioned the advantages of the home automation, which not only reduces the human efforts, but it is also energy efficient and time saving. Moreover, they have included that it is also help to the handicapped and old aged people to control the home appliance without any difficulties. We need module so that the range will be high as well as it can operate in different frequencies. This drawback is overcome by our model. Wi-Fi based networks work at 2.4, 3.6 and 5 GHz. In addition, it can extend up to range 100m.

HAND GESTURE BASED HOME AUTOMATION FOR VISUALLY CHALLENGED: Smitha M, T. Ayesha Rumana and Sutha P [3] published a paper entitled Hand gesture based Home Automation for Visually Challenged People. They have designed a device for the visually challenged people to help them to operate the home appliances. They have used MEMS (Microelectromechanical Systems) accelerometer which is used to sense the accelerations of a hand in corresponding three perpendicular directions that is (x y z) and thus transmit the signal to wireless protocol using Radio frequency. The gesture templates were stored in a microcontroller at the receiver end. The received gesture and the hand gesture were compared by the templates. If the corresponding gesture were matched with the templates then accordingly home appliances were controlled. In addition, these devices were helpful for the old aged person too. Since they have used four types of gesture and stored in the microcontroller and it processed further. However, we need the system to be automated without the use of gesture. We do not need the gesture to be stored in the controller. Nowadays, the application can be used by any means of people by the option “TALKBACK” in the android application.

HOME AUTOMATION USING ATmega328 MICROCONTROLLER AND ANDROID APPLICATION: S. Anusha, M. Madhavi and R. Hemalatha [4] presented a paper on Home automation using ATmega Microcontroller and Android application. In this paper they have describe the design and development of a remote household appliance control system using the ATmega328 microcontroller and android mobile through GSM technology. In addition, this appliances remotely using the SMS-based system that satisfying user needs and requirements. Thus, all electrical household appliances can be controlled by sending a text message from an Android mobile. For Controlling, the remote appliances carried out by sending a SMS message from a mobile phone, which again congestion process and make system, complicated for the disabled persons. Here, we does not carry out this technique, we are using simple open source android application through Wi-Fi we can directly control the entire appliance with a greater extent. Thus, intend to be a reliable method.

E-MAIL INTERACTIVE HOME AUTOMATION SYSTEM: Sirisilla Manohar and D. Mahesh Kumar [5] presented a paper on E-mail interactive Home automation system. They have enlighten on a basic home automation application on the public domain through the subject of E-mail ID. The switching action were done by LED indication. They provide a basic application of home automation using GVT app, which can be easily implemented and used as efficiently. The coding which they provide is generic and flexible in user-friendly manner and can be controlled in any application like power control, surveillance etc easily. In addition, all the results were generated by a series of E-mail sent to the user of G-mail account. For each and every interrupts one email will generated and will send to the user of the Gmail account, which again a tedious process. We can easily control the appliances instead of going through such process.

III. SYSTEM ARCHITECTURE

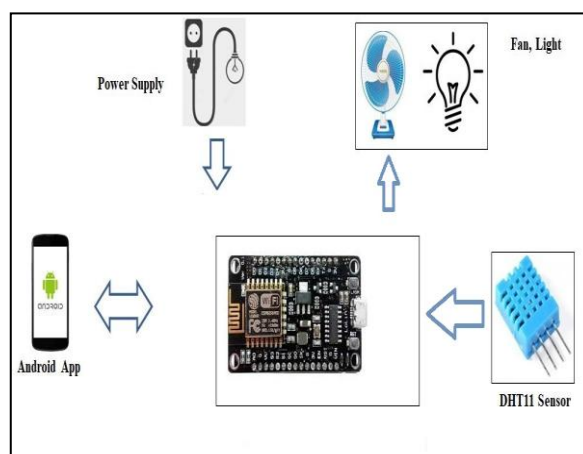


Fig: Propose System Architecture

System Modules

DHT 11 Module : The DHT11 is a basic, ultra low-cost digital temperature and humidity sensor. It uses a capacitive humidity sensor and a thermistor to measure the surrounding air, and spits out a digital signal on the data pin.

ArduinoModule :Arduino Uno is a microcontroller board based on 8-bit ATmega328P microcontroller. Along with ATmega328P, it consists other components such as crystal oscillator, serial communication, voltage regulator, etc. to support the microcontroller.

Servo Motor Module : A servo motor is an electrical device which can push or rotate an object with great precision. If you want to rotate an object at some specific angles or distance, then you use servo motor. It is just made up of simple motor which runs through servo mechanism.

IV. HARDWARE REQUIREMENT

- Processor: Pentium 4 or above
- RAM
- ROM
- LCD
- Servo Motor
- Arduino Uno
- DHT11

1. SOFTWARE REQUIREMENT

- Arduino IDE
- Netbeans 8.2
- MySQL 5.5
- Android Studio

2. ADVANTAGES

- It's secure.
- Simple and easy to access.
- It's pick-proof.

3. APPLICATIONS

Following are the applications:

- Faster operation and efficient.
- Security system.
- This project can be used in Industries, Home, Office, Shops.

V. CONCLUSION

Today, Android is the world's powerful mobile platform open source operating system to fit easily whatever the functionality we had in our mind. This article is about wireless home automation using Android mobile helps you to implement such a fantastic system in our home at a very reasonable price using cost-effective devices. Thus, it overcomes many problems like costs, inflexibility, security etc. In addition, will provide greater advantages like it decreases our energy costs, it improves home security. In addition, it is very convenient to use and will improve the comfort of our home.

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