IOT Based Home Automation Using Arduino

G.Mahalakshmi, M.Vigneshwaran

Abstract— While the cost of living is going up, there is a growing focus to involve technology to lower those prices. With this in mind the Smart Home project allows the user to build and maintain a house that is smart enough to keep energy levels down while providing more automated applications. A smart home will take advantage of its environment and allow seamless control whether the user is present or away. With a home that has this advantage, you can know that your home is performing at its best in energy performance. By implementing this system, it is possible to explore a variety of different engineering challenges, including software programming, PCB design, Wi-Fi, TCP/IP protocols, Web Server logic design, and other aspects. This automation system provides great insights to the challenges of software and hardware design.

Index Terms— Arduino uno,MQ-6 sensor,PIR Sensor,Wi-fi module

I. INTRODUCTION

While the cost of living is going up, there is a growing focus to involve technology to lower those prices. With this in mind the Smart Home project allows the user to build and maintain a house that is smart enough to keep energy levels down while providing more automated applications. A smart home will take advantage of its environment and allow seamless control whether the user is present or away. With a home that has this advantage, you can know that your home is performing at its best in energy performance.

By implementing this system, it is possible to explore a variety of different engineering challenges, including software programming, PCB design, Wi-Fi, TCP/IP protocols, Web Server logic design, and other aspects. This automation system provides great insights to the challenges of software and hardware design.

II. GENERAL DESCRIPTION

A. Overview of the System

A low cost and efficient smart home system is presented in this paper. This system has two main modules: the hardware interface module and the software communication module. At the heart of this system is the Arduino UNO microcontroller which is also capable of functioning as a micro web server and the interface for all the hardware modules. All communication and controls in this system pass through the microcontroller. The smart home system offers feature such as environmental monitoring using the temperature, humidity, gas and smoke sensors. It also offers switching functionalities to control lighting ,fans/air conditioners, and other home appliances connected to the relay system. Another feature of this system is the intrusion detection which it offers using the motion sensor and all these can be controlled from the Android Smartphone app or web application.

In the present day, home automation is becoming essential for the purpose of improving our life condition. Convenience and ease of using home appliances is what home automation is offering. Home automation offers a futuristic way of life in which an individual gets to control his entire house using a smart phone, from turning on a TV to locking/unlocking doors; it also offers an efficient use of energy. But to get or acquire such system installed will cost a lot of money and that is the major reason of why home automation has not received much demand and attention, adding to that also the complexity of installing it and configuring it.

Thus it is essential to make it cost effective and easy to configure, if this is granted to people then they will be willing to acquire it in their homes, offices and schools. In other words, a system modification for the home automation is required in order to lower the price of applying it to houses. Also home automation offers ease of mind and body to handicapped and/or elders in their houses by just one click to do what they want as stated above. Overview of the system is shown in Fig(i)
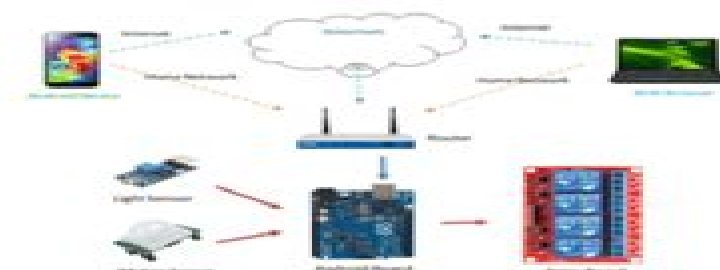

Fig (i) Overview of the System

B. Existing System

The Existing system based on with the GSM Module & Bluetooth Module only. The recent developments in technology which permit the Use of Bluetooth and Wi-Fi have enabled different devices to have capabilities of connecting with each other. Using a WIFI shield to act as a Micro web server for the Arduino eliminates the need for wired connections between the Arduino board and computer which reduces cost and enables it to work as a standalone device. The Wi-Fi shield needs connection to the internet from a wireless router or wireless hotspot and this would act as the gateway for the Arduino to communicate with the internet. With this in mind, an internet based home automation system for remote control of home appliances is designed.

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