

Remote Monitoring and Control Home Appliances

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Abstract:- Home owners will be able to receive feedback status of any home appliances under control whether switched on Internet of Things (IoT) is a new revolution of the Internet. It provides a platform for communication between objects where objects can organize and manage themselves. Home Automation system using IoT is a system that uses computers or mobile devices to control basic home functions and features automatically through internet from anywhere, an automated home is sometimes called a smart home. Automation of home appliances provides comfort and luxury, it also saves time and human energy. It mainly contributes for easy monitoring of home appliances, multi-tasking and also improved security. The key activities of our project are to provide surveillance and controlling of appliances. In this paper we intend to present initial designs and results of a small-scale prototype of a smart Living System. Which uses Android based User Interface for control of home appliances. or off remotely from their mobile phones. Our prototype consists of a simple home with one Bedroom, Living Room, Kitchen, Bathroom and an outdoor garden. This paper is mainly concerned with the automatic control of light, fan, room temperature and other home appliances using internet.

Keywords: Home automation System, Internet of Things (IOT), Cloud networking, Wi-fi network, Microcontroller

I. INTRODUCTION

Have people ever thought that we can control the volume of your Television sitting on your sofas 60 years back from now? But now we are controlling it with a wireless remote. Soon technologies are coming so that we can control the volume of TV using the motion of the hands.

II. LITERATURE REVIEW

N. Sriskanthan and Tan Karand in their work have presented an application of Bluetooth Technology for Home

Previous Research on existing Home Automation Systems:

Automation. The Bluetooth technology which emerged in late 1990's is used for implementing the wireless home automation system. Various appliances such as air conditioners, home theatres, cellular phones etc., are interconnected, thus creating a Personal Area Network in Home Environment. The communication between several client modules and the host server takes place through the Bluetooth module. A Home Automation Protocol has been developed to enhance communication between the host server and the client

modules. The system also allows integration or removal of devices to the network which makes the system scalable. The wireless system aims at reducing the cost of Home Automation. But the system does not use the trending mobile technology.

A. Z. Alkar and U. Buhur have developed an internet based wireless home automation system for multifunctional devices. A flexible, low cost, wireless solution to the home automation is introduced. The transformation of the initial simple functionality control mechanism of devices to more complex devices has been discussed. The home appliances are connected through a server to a central node.

The system is secure from unauthorized users by using SSL algorithm. During tests, the wireless communication was found to be limited to <100 meters in a concrete building

Muhammad Izhar Ramli, Mohd Helmy Abd Wahab, Nabihah developed a prototype electrical device control system using Web. They have developed a web based controller, for controlling electrical devices. Whenever the condition of server is down they also set their server with auto restart. The system does not use mobile technology.

Being a web based system; this application is less effective since the use of headphones and Smart phones is increasing rapidly.

E. Yavuz, B. Hasan, I. Serkan and K. Duygu have designed and implemented a telephone and PIC remote Controlled device for controlling the home electrical devices. In this Pin check algorithm has been introduced where it was with cable network and not wireless communication. The system ensures safety as it cannot be used by unauthorized users as the system uses Pin check system. The architecture is very complex, but it gives an idea of remote handling of home automation system.

Shahriyar, E. Hoque, M. M. Akbar, S. Sohan, I. Naim, and M. K. Khan presented a GSM based communication and control for home appliances. Different AT commands are sent to the Home Mobile for controlling different The drawback of this system is that a appliances. Graphical User Interface (GUI) is not provided to the user. Different AT commands have to be remembered by the users to control the connected devices. Also, the system supports Java enabled mobile phones. The system thus

becomes less functional as nowa days the use of Java enables phones are reducing and the use of Android phones are increasing tremendously.

Jitendra Rajendra Rana and Sunil N.Pawar in their paper have implemented a zigbee based home automation system. Zigbee is a high level communication protocol used to create personal area network. It supports any kind of micro controller. The system eliminates the complication of wiring in case of wired automation. Considerable amount of power saving is also possible. Operating range is more than Bluetooth. But the system does not allow remote monitoring and controlling of appliances.

R. Piyare and M. Tazil have presented the design and implementation of a low cost, flexible and wireless solution to the home automation. The system uses Bluetooth technology where the cell phone is used for interaction between the host server and the client modules. This system can be used by any appliances that require On

-off switching applications without any internet connection. The drawback of this system was that the wireless communication system was found to be limited to a range less than 50m in a concreted building and maximum of 100m range in an open range. The system supports only the symbian OS cell phones.

1. IOT (Internet of Things):The rapid development of information technology (IT) has brought forward a hyper connected society in which objects are connected to mobile devices and the Internet and communication with one another. In the 21st century,we want to connected with anything,anytime and various places around the world.The core component of this hyper connected society is IoT,which is also referred to as machine to machine communication or IoE(Internet of Everything).

2. IR Sensor

An infrared sensor is an electronic device, that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion.

When somebody enters the room the sensors at the one end are programmed in such a way that on consecutive operation of two LED complies micro- controller to count as a person to be entering the room. This information can be further used to manipulate the operation of electronic appliances automatically. When the display shows a zero then all the appliances will be signaled to turn off, this helps in the energy efficient housing system.

Moreover, the number of persons inside the big halls, malls can be easily identified.

5. ESP8266

ESP8266 is a SOC with capabilities for 2.4GHz wi-fi, GPIO,Inter-integrated Circuit,10-bit ADC,and SPI,I2S interfaces with DMA ,UART ,and PWM. It employs a 32-

bit RISC CPU based on the Tensilica Xtensa LX106 running at 80 MHz .It has a 64 KB bot ROM,64 KB instruction RAM and 96 KB data RAM .External flash memory can be accessed through SPI.

III. CONCEPT REVIEW

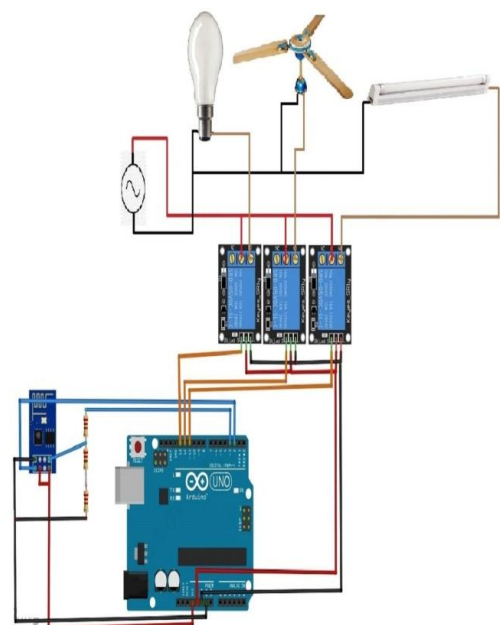
The main aim of the project is to develop a system that will provide remote control of home appliances and also provide security against the mishaps when the home host is not at home. This paper is mainly concerned with the automatic internet. It is meant to save the electric power and human energy. This project is made with the help of controller and raspberry pi. The various appliances connected to the micro- controller and sensor is connected using wireless network.This project proposes a smart home in which the appliances can be easily monitored, anytime.

The proposed project is conceived networking our mobile phone to all appliances via a smart logic circuit.

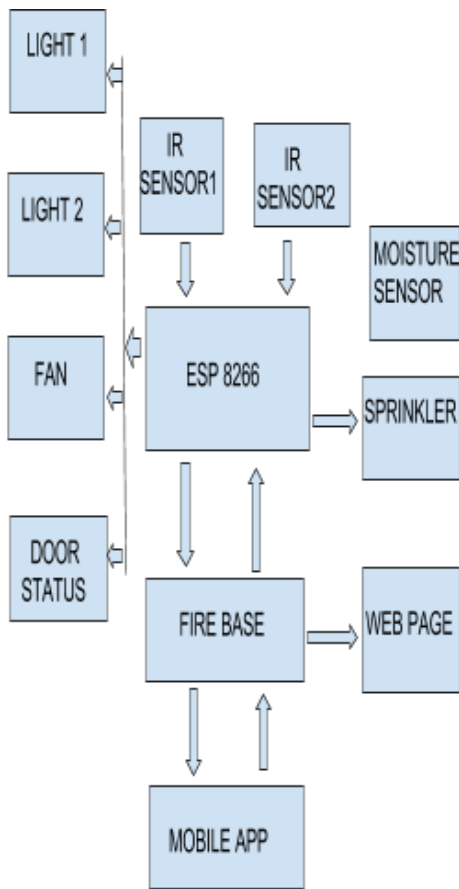
The end user can use their mobile phone to log into the system. When a user selects a change in the status for any of the device, the data from the handheld is sent to the Web Server in a string format, where the Web – site is hosted. On the server the status is stored in the database in their respective device field. At the Hardware end, the circuit drive program a web page] is used to retrieve the status of the devices in a timely pattern [every 10sec]. These changes come in to form of cookies [temporary internet files] from the web server & are stored on the computer in the name of the web site. Hence every 10 sec as the page refreshes the new cookie values are updated.

Using home automation is no longer reserved for the extremely wealthy or the tech lover. A “smart home” is becoming increasingly popular because there can be big rewards for the average homeowner with relatively small efforts and investments.

IV. CIRCUIT DESIGN



V. BLOCK DIAGRAM



VI. WORKING

In remote monitoring and control of home appliances two sensors IR1 and IR2 are present at the door . IR sensors are placed in such a way that ,entry of a person makes IR1 sensor to detect first and then IR2 sensor and exit is vice versa. Whenever a person enters the signal is sent to ESP8266 this means light1 ON .Whenever a person exit from the door the signal is sent to ESP8266 in such a way that it switches the light OFF . IR signals from ESP8266 is sent to firebase and from firebase to mobile app .Thus these appliances can be monitored through mobile also. The status from the firebase is sent to webpage simultaneously. This enables the user to monitor the status of appliances from anywhere. In order to monitor the lawn irrigation, moisture sensors are used . Whenever the moisture content of soil is varied information is sent to ESP8266 through sprinkler operation can be controlled.

VII. APPLICATION

1.Lighting Control: Smart lighting allows you to control wall switches, blinds, and lamps. You’re able to schedule the times lights should turn on and off, decide which specific rooms should be illuminated at certain times, select the level of light which should be emitted.

2. Lawn irrigation system

The system will be alerted to dry conditions and supply the necessary amount of nourishment,. If a rainstorm develops and deposits two inches of rainwater on your lawn, the automated sprinkler detects the saturation and disables its scheduled watering.

3. Smart appliances

a. Smart refrigerator: Smart refrigerators allow you to scan grocery store receipts and keep an inventory of your items, and alerts you if an item is about to expire.

b. Smart oven:

Smart ovens sync with your smartphone and automatically preheat to the correct temperature based on a recipe selected from your database.

4. Security systems:

It offers a variety of features including door and window sensors, motion detectors, video cameras and recording mechanisms. All of which are connected to a mobile device and accessible via the cloud, thus enabling you to access real-time information on the security status of your home.

VIII. CONCLUSION

In today’s up growing countries will be more effective in case of cost , man power and security as compared with today’s running complicated home appliances. Automatic home appliances control system puts up a very user friendly approach and could increase the power saving.

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