A Review on Controlling Household Appliances Using IR Remote

[1]Anubhav Dhanvik, [2]Chitraveer Singh Yadav
[1,2]student
Electronics and Instrumentation
Galgotia's College Of Engg. And Tech., Knowledge Park, Greater Noida(U.P.), India

Abstract- **Automatic control of home appliances is highly demand now a day. In this work, we have designed, constructed a circuit which specially meet the requirement of control the home appliances through any remote control device that is portable within the periphery of the room. The device is able to control a load of high power rating from remote area. The system works satisfactorily and it is also considered to be a cost effective system.**

KEYWORDS: microcontroller, home appliances, IR remote, easy installation cost.

I. Introduction

Home automation is not a new concept in today's world, it isused to provide convenience for user to remotely control and monitor the appliances and it provides a better use of electricity. The efficient use of electricity makes the home automation to play an important role in daily life. As by the growth of PC (personal computers), internet, mobile phone and wireless technology makes it easy for a user to remotely access and controls the appliances. A lot of research has beendone and many solutions have been proposed to remotely access the home appliances. Some of them used internet, wireless technology to communicate and control home appliances, others used Bluetooth and GSM technology for controlling the home appliances. Proposed method reduces the wiring and complexity of the system. It is mainly focused on the elderly people, disables and for the people who are unable to type text or face difficulties intyping. For the disable people, it is quite difficult to operate the home appliances physically or they are unable or feel uncomfortable to type a text so as to switch on/off the relative device as in [1] [7] [9].

II. Related Work

Haque *et.al* [1] proposed an internet based wireless home automation system for multi functional devices. This paper proposed a low cost and flexible web-based solution. Nhivekar *et.al* [2] developed microcontroller based IR remote control signal decoder for home application. The authors only used Sony IR remote as transmitter. They used ATMEL AVR Atmega8 microcontroller as decoder. *et.al* [3] developed a microcontroller based home security system. They designed an IR transmitter section for their work and in the receiver section, they used AT89C51 microcontroller for the Work of protection. Compared to this work, we could makeevery equipment password protected to provide the security facility. Shahriyar *et.al* [4] designed remote controlling of home appliances using mobile telephony. They have used X10 technology to carry out the control of home appliances. Bahaullah *et.al* [5] developed a cell phone based remote control system to control home appliances and systems. They have used the GSM technology to control home appliances. Chiral *et.al* [6] presented a design and implementation of SMS based control for monitoring systems. The paper had three modules involving sensing unit for monitoring the complex applications. A processing unit, that is microcontroller and a communication module that uses GPRS modem or cell phone via serial port RS-232. The SMS is used for status reporting such as power failure. Kaur *et.al* [7] developed a microcontroller based home automation system with security. They have also used ATMEL`s AT89S52 microcontroller to control and security Purpose. But, their overall system was not cost effective. The main objectives of our proposed project are (i) To sense the existing status of the remote devices and obtaining formation in the display, (ii) To control the remotely operated devices using control signals, (iii) To take corrective action automatically as per requirement, and (iv)To protect the equipments from unwanted operations.

III. Methodology

"IR" stands for infrared. Infrared light is invisible since its frequency is below that of visible other light sources operating udder the same laws of physics. In [1] there were two major approaches the first involves controlling home appliances using timer Option and second approach is to control home appliances using voice command. In this method the appliances were controlled using a PC and to successfully integrate the digital controller with the analog plant, an Interface device is used within the PC that can perform the necessary tasks and developed a system which is able to control the home appliances in intuitive and flexible way which was able to control eight electric appliances. In [2] the system was based on microcontroller that makes the control system smarter and easy to modify and it also enables the user to operate or control the device and the mains power switch can be controlled from about 10

meters away.The first remote control developed called "lazy bones" in 1950 by Zenith Electronics Corporationand it was called "Zenith Space Command" then the remote was produced and it was the first practical wireless remote control system. Ahmed *et al.* and team designed the first remote control of the fan regulator using analogy and digital component but it proved to be a controlling technique for aparticular function. Nhivekar *et al*. [2] carry forwarded the work of Ahmad and the team. The load was connected to the dimmer channel and the value given to dimer increased. After each new value the voltage was measured using a Multi Mate at the output end and the voltage supplied to the dimmer was measured at the mains output plugged in Example-

Time setting Voltage	measured Voltage	% full scale
58916	25.92	11.0
59656	72.80	32.2
60814	87.8	38.8
61370	116.4	51.5
61925	141.7	62.6
62481	162.2	71.1
63082	180.3	79.7
63830	207.0	91.6
65435	221.6	98.0

Each channel of the dimmer output can take on any voltage between 11% and 98% of full scale. Power saving increased at a cost of only 20% in increase power supply current for the microcontroller. This reduced the overall current drawn which resulted in significant power saving and the component price reduced which makes it more economic. In [4] a mobile phone takes the added responsibility to control the smart home and the control is reachable from almost everywhere. Internet is a crowded place and Security vulnerability is the most alert point of the Internet. When a web based application goes live a lots of efforts are done to make it secureand when used in remote control it should be kept protected from all the malicious parties to gain control over it and to use it the minimum requirement is continues internet connection Which Is not all the time possible so the solution to this remote communication problem is the use of mobile telephony. As mobile telephony offers a wide range of communication services like voice and data transfer through SMS and other enhanced data transfer protocols at a comparatively low price and at a wide variety of places around the globe and by the use of strict traffic control the security can be better achieved and this system provides high security at a low price. In [5] the user can control their home appliances and systems from remote using a cell phone-based interface and to access the control unit, the User sends an authentication code (DTMF) along with the desired action to his home control system via Global System for Mobile communication (GSM) and after being properly authenticated the control unit at home will give the command to the microcontroller which would perform the required action and returns a completion code to the user's cell phone. And this method resulted in proper decoding and successful authentication with the GSM network. In [6] Security was the prime focus and to provide maximum security to the user when he's away from his place. The system was SMS based and wireless technology was used as the system was cost effective it became the ideal solution to all the problems faced in general life the system provided security against intrusion as well as automates different home appliances using SMS. The system uses GSM technology and provided ubiquitous access to the system for security and automates appliances.

IV. CLASSIFICATION COMPARISON

WORKING METHOD	
[1] Home appliances were controlled using timer and voice command.	
[2] The device was controlled through interface box. The interface box was controlled by computer by connecting it to the parallel code and with program.	
[4] A simple mobile phone takes the added responsibility to control.	
[5] The home appliances and system were controlled through remote using cell phone based interface.	
[6] The focus was to control home appliances remotely and providing security when the user is away from the place.	
DISTANCE	
[1] Less than 10 metre.	
[2] More than 10 metre	
[4] can be controlled from everywhere	
[5] can be controlled from everywhere	
[6] can be controlled from everywhere	

DEVICES CONTROLLED

[1] 8 appliances
[2] Only 8 appliances
[4] Less than 4 appliances
[5] 4 appliances
[6] 7 appliances
ADVANTAGES AND DISADVANTAGES
[1]The system can control 256 electric appliances in industry through a single PC. The distance should be less than 10 metre.
[2]Power dissipated in the transformer reduced, this offers the system design involving much less expensive components.
[4]It does not rely on internet and web servers which cut down the overhead and cost of the communication. The main disadvantage of web based solution is its dependence over internet all the time.
[5]The system provides high security to the user as the person who will be successfully authenticated can only communicate the control module. Receiver must have power source (12v) attached all the time.
[6]System sends breech alert when intrusion detected. The system automatically performed test and checked support for available features and SMS sending and receiving capability.

V. CONCLUSION

Remote controller is one of the applications of electronics to increase the facilities of life. It gives one the ability to control multiple home appliances from a particular distance. Asingle IR remote controller can be used to manipulate the different kinds of home appliances; as they are compatible which leads to the wastage of resources.

VI. FUTURE WORK

In near future, automationwill cover every industries and homes for driving different loads and facilitate the livelihood of human being.

VII. REFERENCES

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