GESTURE BASED APPLIANCE AUTOMATION SYSTEM USING IOT

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ABSTRACT:

Automation is the essential need for the present world. There are various types of automations like building automation, industrial automation, and home automation. The main aim of this project is to control the devices by using MEMs technology for physically handicapped people. The purpose of this project is to on and off home appliances using MEMs accelerometer. Home automation is increasingly used due to wide manufacturer brands and various available technologies. These smart homes are cheap, low-power, cost effective, efficient and realize the automation of a variety of domestic appliances using user friendly interface with hand gestures. In MEMs we have Tilt register. When we change the direction, the tilt registers values are changed and that values are given to microcontroller. Whenever the direction of the MEMs changes , depending on the direction various devices like bulb, dc motor and exhaustive fan are made on and off for physically handicapped people. These are used in general and industrial applications also.

Keywords: Temperature sensor, MEMS sensor, GSM MODULE.

1. INTRODUCTION

Since last few years technology has developed at certain level it has its own bad effects on environment as well as people and living life style. Now a days the home safety detection system play the important role for the security of people and basically in the household appliances the security of this must be cured. The life style of common people is busy now a days. Earlier the women stay at home and handled the home and home appliances, but now a days most of them go to work. So all the members are out of the home to go there work and now the safety is the important problem, because in a hurry to leave for work they forget to off all the devices in home. So we developed a system to overcome all the home appliances issues using motion sensor this system is effective efficient above all. This project is to control the home appliances using MEMS technology for physically handicapped people. In MEMS we have Tilt register. When we change the direction, the tilt registers values are changed and that values are given to microcontroller. Whenever the direction of the MEMS changes, depending on the direction various devices like bulb, dc motor, led and fan are made on and off for physically handicapped people.

Appliance automation in home has been a feature of science fiction writing for many years, but has only become practical since the early 20th Century following the widespread introduction of electricity into the home, and the rapid advancement of information technology. Automation refers to the application of computer and information technology for control of home appliances easily. It is a automation of the appliances in housework or household activity. Automation may include centralized control of Light, Appliances, Temperature and other systems, to provide improved convenience, comfort, energy efficiency and security. Gesture based Automation in homes for the elderly and disabled can provide increased quality of life for persons who might otherwise require caregivers or institutional care. The popularity of automation has been increasing greatly in recent years due to much higher affordability and simplicity through Smartphone and tablet connectivity as well as gestures. The concept of the "Internet of Things" has tied in closely with the popularization of automation in smart homes. Through the integration of information technologies with the home environment, systems and appliances are able to communicate in an integrated manner which results in convenience, energy efficiency, and safety benefits. As we are using

Arduino Uno. It is a popular open source single-board microcontroller, descendant of the open-source Wiring platform, designed to make the process of using electronics in multidisciplinary projects more accessible. The hardware consists of a simple open hardware design for the Arduino board with an Atmel AVR processor and on-board input/output support. The software consists of a standard programming language compiler and the boot loader that runs on the board. Arduino hardware is programmed using a Wiring based language (syntax and libraries), similar to C++ with some slight simplifications and modifications, and a Processing-based integrated development environment.

OVER VIEW:

In the Extant System Bluetooth and Wi-Fi for the home automation system which has certain limitation like range within 100 meters for Bluetooth and Wi-Fi also have range limitation based on router range, this system has certain drawbacks like short range distance, which cannot cover whole home circumference. Bluetooth has line-of-side problem. The intent of the GSM System is to develop an electronic application which uses SMS Mobile technology that keeps control of different electronics devices. As we have the new concept has been thought to manage them remotely by using a GSM, which enables the user remotely control switching off appliances. By simply sending SMS to the modem at the remote place, the devices can be turned ON/OFF and the status of the device can be sent to the registered mobile number programmed in the microcontroller.

2. RELATED STUDY

A system based on GSM network via SMS is used to know the home appliances state. An Arduino board is the controller used to interface the appliances. It uses certain peripheral drivers and relays to achieve this interfacing. The smart phone is the user interface device. The system suffers from the same drawbacks of cost and reliability of SMS. Also the interface is pre programmed and cannot be customized based on devices. The primary communication means is through GSM. A mobile phone is used to send the text via SMS to the GSM network. This controller interprets the commands and displays the appropriate outputs. The control of electrical circuits is done with

a separated system, to isolate the load from the control circuitry. This is also an SMS based system. The user enters the commands .These are sent via SMS. However, this system uses a standardized AVR code that can be easily interpreted by the microcontroller. There is a GSM module that is attached to the AVR. This will receive the commands that are sent via SMS. AT commands are used to communicate with the modem. The AVR in turn instructs a driver circuit to control the appliances as necessary. This system has remote access capabilities from all over the world. However it cannot function in real time. The functions of the applications are received by the mobile phone via GSM from the GSM modem.

EXISTING SYSTEM:

Home automation systems face four main challenges; these are high cost of ownership, inflexibility, poor manageability, and difficulty achieving security. The main objectives of that research is to design and to implement a cheap and open source home automation system that is capable of controlling and automating most of the house appliance through an easy manageable web interface to run and maintain the home automation system. The proposed system has a great flexibility by using Wi-Fi technology to interconnect its distributed modules to home automation server. That will decrease deployment cost and will increase the ability of upgrading, and system reconfiguration. System will make use of secure wireless LAN connections between distributed hardware modules and server, and secure communication protocols between users and server.

4. PROPOSED SYSTEM

In modernistic years, there has been a growing interest among consumers in the smart home concept. Smart homes comprise multiple, connected devices such as home entertainment consoles, security systems, lighting, access control systems and surveillance. Intelligent home automation system is integrated into smart homes to provide comfort, convenience, and security to home owners. Home automation systems impersonate and report the status of the connected devices in an intuitive, user-friendly interface allowing the user to interact and control various devices with the touch of a few buttons. Some of the major communication technologies used by today's home

automation system include Bluetooth, and Wireless LAN (Wi-Fi), and Global System for Mobile Communication (GSM). The proposed home automation system allows user to monitor the devices through messages. This system is monitored using GSM module from any part of the world. The concept behind this is to receive the sent message string from gsm attached to the kit and then process it to display the working mode of the appliances like fans,motors,bulbs,etc,. This is most useful for people living alone since it allows them to remotely monitor their appliances.

The proposed system consists of the GSM Based Home Monitoring System to develop an electronic application which uses SMS technology that keeps control of different electronics devices. We are having the new logic to operate them remotely by using GSM; by using this technology the user can remotely monitor home appliances. By simply sending SMS to the GSM modem at the remote place, the status of the device monitored can be sent to the registered mobile number programmed in the microcontroller. The working of this project is very easy, a message is sent from the cell phone which has a command "*along with 10 digit mobile number".After receiving the command GSM module sends it to the microcontroller. The microcontroller has a code saved in it, reads and interprets the message and accordingly sends a the messages of the application statuses of the appliances in the text message. Similar operation can be performed on each appliance connected to the GSM module which is connected to relay.

Fig.4.1. Proposed block diagram.

It can be concluded that GSM BASED HOME MONITORING SYSTEM USING ARDUINO is successful. This monitoring system consists of an Arduino-Uno board, a GSM Module, a GSM based phone, power sockets and home appliances. The system is cost effective and also a user friendly. Also, it can be concluded that the objectives of this project have been successfully met and they are as follows: The home monitoring system is controlled by GSM based phone and it is constructed wirelessly. The Designed system is user friendly and a safe system to monitor home appliances, system is very helpful for elder and handicapped people. This system makes it possible for users to assured that their belongings are secure and that the FAN and other electrical appliances were not left running when they left the house. The design of this system is very simple for user to interact with system. This system can be used by people having the knowledge about the SMS.

Basic purpose of developing new system of hand gesture remote control is to remove the need of the hand held remote. Gesture is an action of arms or any other body part which are made to emphasize speech. Basically Gestures include motion of the hands and face. A gesture can be divided into different categories: dynamic gesture and static gesture. Gesture recognition is movement of human action by computing device. Gestures can obtain from any bodily motion but commonly obtain from the face or hand. The basic purpose of this system is to control different electronic devices with the help of hand movement. Thus, this system will work as a remote control for operating different electronic devices present in a daily use.
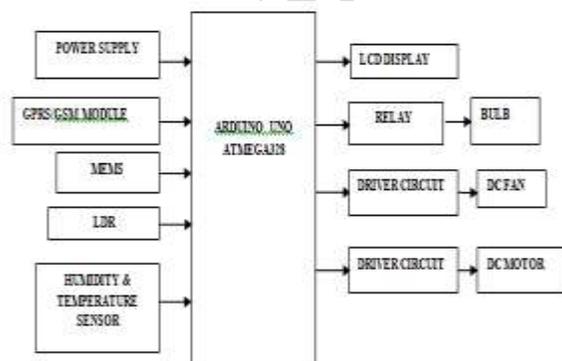
We are using gestures of hand as a remote to control home appliances like Tube; fan etc. instead of using manually. All these home electronic devices can be controlled by transmitter- receiver system. Now days, it is impossible for living in a home without interacting with the home appliances. Due to evolution of technology in the field of gesture recognition for hand gesture or human computer interaction many Techniques are done. Here the Hand mote is referred to as use of hand gesture recognition to control and work the home and office electronic devices that are operated through an atmega328.

RESULTS:

In our project when the kit is switched on the sim in the gsm gets activated displaying a "send the number to register" text on the lcd display. The device which has to be registered is supposed to send a command "*with the 10 digit mobile number". After the device gets registered the message is displayed in the registered device. When the devices are operated using mems ,each devices "ON" control is sent to the registered mobile number.

Fig 36 Working of the kit

Apart from this the sensor values like LDR values, humidity values and temperature values are displayed on the lcd display. The applications are operated when the allocated value is configured in the movement of mems sensor and that particular device is "switched on

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Fig 37: Working of the sensors

5. CONCLUSION

This paper also gives a comparison of all the above systems described. The systems that have been studied have certain common features. All these systems use a basic underlying communications technology. The advantages and drawbacks of the system derive from this underlying technology. All the systems have a control circuitry that is used to interface with the electrical appliances. There has to be a common command system that will be used to issue commands to the control circuits. The next important feature of the system is the user interface. This determines how the user will interact with the system and extent of control the user exerts over the system. This influences the usability of the system. Most systems also have security features to ensure only authorized access.

Based on all the systems surveyed and their advantages and drawbacks, this paper presents the features to be possessed by an ideal system for home automation with remote access. An ideal system should be available from all over the world to a user and in real time. A GSM network is identified as a candidate for this. However, the data channel of GSM must be used, to provide internet access. Only the Internet can ensure that access can be made available at all times. This will give rise to a standard access method for the home appliances using the Internet protocol. The user interface should be a web application that has an associated mobile application. So that people of all kinds can access the system. Such a system should also have the feature of being easy to install. Only then can automated homes become commercially viable. There should be a lot of thought put into the design of the user interface for these apps. Plug and play capabilities will be an added bonus for the system. Ease of adding a new device to an automated house will play an important role in taking forward the systems commercially.

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