VOICE CONTROLLED HOME AUTOMATION USING IOT

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Abstract: Home automation system have acquired world-wide popularity these days. In home automation system there is a collection of interconnected devices for controlling various functions that are performed inside the house. It gives security, surveillance to the user and makes their life more easy and comfortable. In other countries many homes has smart home automation system. Home automation system uses multiple ways of communication methods, such as GSM, Internet. GSM involves worldwide framework for inconsistence correspondence. Mobile phones are good for providing user interface in home automation system having very wide range of capabilities.

1. Introduction

IoT or "Internet of Things" is an advanced technology which helps user to handle home appliances through the internet which is very faster covering a wide area.The IoT refers to devices which are connected via the interent.It is similer to devices talking to each other in order to improve the quality of our life.

The definition of internet of thinhs has developed due to overllaping of multiple technologies such as machine learning sensors ans embedded systems.

The proposed system uses IoT to control the home appliances, thus automating house through the internet.The automation system uses two loads to demonstrate, the house lights and control of a fan.The system using android app to turn off/on the light and fan and to open and close the door using voice commands and also using sensors turn on the light depending upon LDR's. The gas leakage sensor will identify if leakage occurs and the buzzer will get activated. Very user friendlys

interface allows the user to easily control the house appliances through the interent, and embedded c is the commanding code for microcontroller.

In the proposed system mobile application is used to interact with the user. wifi signals sends out instructions to the Arduino board and also responds back to the feedback from them. When any command is sent from a remote place the Arduino board receives them from the wifi which are connected to the mobile device.

The system can be useful to those user who need to access or use their appliances at home while they are away from home.

2. Literature Review

Home Automation Using Bluetooth And Gsm Dhirtaj sunehra and Visual tejaswi (2015)[1]

"First scheme uses the blutooth technology for contrlling the electrical apliances when we are at home. It uses a HC-5 Blutooth module and Arduino Bluetooth controller mobile application for switching ON/OFF the appliances second scheme uses GSM technology for controlling the electrical appliances.

The system uses the Raspberry Pi**.**It is a credit-card sized that plugs into a computer monitor or TV, and uses a keyboard and mouse.Python language it is standard programming language to build a software. Bluetooth is used to communicate with home appliances **,**GSM (Global System for Mobile communications) is an open, digital cellular technology used for transmitting mobile voice given and data servces. PIR sensor allow you to sense motion,always used to detect whether a human has moved in or out of the sensors range. The advantage is it is wireless and easy to implement. The main drawback of the system is by using Bluetooth it will take a limited to short distance".

Home automation through email Y Swetha1, M Saritha2 (2016)[2]

"In home automation system there is a collection of interconnected devices for controlling various functions performed inside the house. Mobile phones are useful for providing user interface in home automation system due to there probability and having a very wide range of capabilities.If the user is away from home he wants to check the status of home appliances

The home automation system uses a basic application of home automation using LPC2148 Microcontroller processor which can be very easily implemented and used efficiently by every user. The project starts when power is supplied to the microcontroller and pc. whenever the email is received by the computer it will be forward that email to the controller.According to the instruction received by the user the controller will configurs the device operation. The computer will connect to the internet And according to the configuration of the controller developed by the devloper the devices are connected to the controller that get controlled.

The advantage of the system is email is free tool and accessable form any where.The Drawback of the system is Delay of loading/browsing. Email cannot be ignored for a long time".

Smart home appliences control system based on GSM network, R. A. Johar, E. Fakieh (2016)[3]

"GSM involves world-wide framework for various correspondence. It is a global advanced cell telecommunication.

The system uses the GSM Module same as a mobile phone with all the facilities of sending and receiving a mesage, sending and receiving calls, DTMF (Dual Tone Multi Frequency) ,the main principle of the DTMF is that it takes a number from the number pad converts it to DTMF (Dual tone multi frequency) signal and a DTMF decoder converts the DTMF signal to a digital code that can be sent to a microcontroller and 8051 Microcontroller**,** this microcontroller is a single chip that contains the processor, the ROM, the RAM, a clock and an I/O control unit.

The advantage of this system It is easy to control home appliances when the user is not at the home.The Drawbacks of the system is the system only works in the places of good reception of signal and remote areas where there is no strong GSM signal, the equipment does not respond always There should be always continuous power supplied to the equipment so that the microcontroller and phone connected to it works".

An Elegant Home Automation System Using the GSM And ARM-Based, V.L.K. Bharadwaj Manda (2016)[4]
"Home automation system uses multiple communication methods, such as GSM, Internet. This method involves comunication between the home apliances using radiofrequency identification communication.

The system uses the NXP LPC11U24 microcontroller system. it is often referred to as the mbed microcontroller. It is designed to model with the low-cost usb devices, GSM SIM 300 Module can accept the SIM card of any mobile network operator. It is same as to a mobile having unique phone number. It can send and receive messags and send and receive calls.Fourchannel realy boards are used to open/clos electronic circuits.LEDs correspond to the status of home appliances, Sensor modules home automation includes the control of electrical appliances and detection of the leakage of gas (LPG)

The advantage of the system is sms are quickly and directly sent to the user's mobile. The drawback of the system is it network dependent which requires continues good network connection Hence, network congestion can reduce the reliability of the system.

Voice Controll System For ZigBee Based Home Automation, Jieming Zhu, Xuecai Gao (2016)[5]
"One or multiple voice recognition modules have been added to the ZigBee-based networks.This speech recognition controls the system. The recognized system controls the messages that are sent by these modules then is sent to the target device, and lastly carried out by controlling circuit.

The system uses wireless sensors and actuator network that easily control the all the home appliances in the network. and a function of speech recogition for ordering the songs is realized which is based on the memory card.

The advantages of this system are easy to set up the network, control and monitor the home appliances. The drawback of the system is it is not secure like WIFI based secured system".

SMS based home management system Amruta Patil, Pooja Potnis(2017)[6]
"In the system to provide security, convenience, comfort to the people living in environment. The main idea behind the system is to develop a system for dealing and good management. It will also be remotely maintained.

The system uses Arduino and GSM, Arduino is a microcontroller board that is based on the ATmega328P (datasheet). It has 14 input and output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. GSM MODEM is a class of wireless MODEM devices that are designed for communication among computer with the GSM and GPRS network. It requires a SIM (Subscriber Identity Module) card just like mobile phones to activate communication with the network.

The advantage of this system is can be controlled from long distance. The Drawback is the system is network dependent."

Voice Controlled Home Automation Using Bitvoicer Ishan krishna(2017)[7]
Bitvoicer software which is compatible with Arduino board, it is very cheap and power effective. It controls the devices using Voice based dynamic commands that can be used for directly controlling the room brightness and the fan speed automatically.

The system uses the LDR (Light Dependent Resister) it checks the light intensity of room.

DHT (Digital Humidity Temperature sensor*)* it sense the environment. Arduino *is* a board to communicate with home appliances. Ethernet shield it allow an Arduino board to communicate with internet.

The advantage is flexible, cost saving and comfort the drawback of the system is it is only compatible with Arduino".
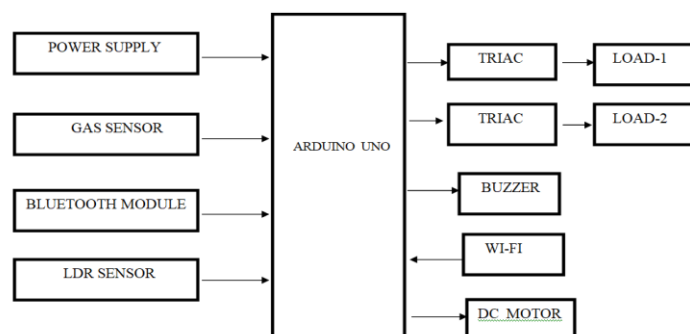
3.Methodology

Fig 3.1: Block diagram of Proposed System

IOT or "Internet of Things" is an advanced technology which helps user to control their home appliances through the internet which is very fast and covers a wide coverage area. In this proposed system IOT is used to control home appliances, thus helps in automating modern homes through the internet.

The fig.3.1. depicts the proposed system block diagram in the proposed system we focused on different process of operating or controlling electronic appliances remotely with the help of Arduino board. such method of controlling house appliances referred as home automation. The system uses two loads to demonstrate, which are house lights and control of a fan and uses android app to turn off/on lights and fans, to open and close the door using voice commands. and also using the sensors, sensor to turn on the light depending upon LDR's and giving a power supply of ±5v.

In the proposed system a gas sensor module is used to safeguard the lives , as and when gas leakage is detected it will activate the buzzer, such that the people will get alert of gas leakage.it is very user friendly allowing the user to easily control the home appliances.

Author Name & Year	Paper Name	Methodology	Advantage	Drawback
Dhirtaj sunehra and Visual tejaswi (2015)	Home Automation Using Bluetooth And Gsm.	Home automation;raspberry pi;python language;bluetooth;gsm/gprs; pirsensor.	The advantage is it is wireless and easy to implement.	The main drawback of the system is by using Bluetooth it will take a limited to short distance.
Y Swetha1, M Saritha2 (2016)	Home automation through email.	Interactive home automation, Raspberry phi, Python language, Arduino Uno , Bluetooth.	The advantage of the system is email is free tool and accessible from anywhere.	The Drawback of the system is Delay of loading. Email cannot be ignored for a long time.
R. A. Johar, E. Fakieh (2016)	Smart home appliances control system based on GSM network.	Interacts using GSM Module sending and receiving a message, Bluetooth,DTMF.	The advantage of this system It is easy to control home appliances when the user is not at the home.	This method is There should be always continuous power supplied to the equipment so that the microcontroller and phone connected to it works.
V.L.K. Bharadwaj Manda (2016)	An Elegant Home Automation System Using GSM And ARM-Based.	GSM ,Four-channel relay board are special switches that open and close electrical and electronic circuits.	The advantage is it is wireless and easy to implement.	The main drawback of the system is by using Bluetooth it will take a limited to short distance
Jieming Zhu, Xuecai Gao (2016)	Voice Controll System For ZigBee Based Home Automation.	automation;voice control,speach recognition,zigbee based wireless sensor.And actuator network,ordering a song through speech recognition,File system,sd memory card	The advantages of this system is easy to set up the network, control and monitor the home appliances.	The drawback of the system is it is not secure like wifi based secured system.
Amruta Patil, Pooja Potnis (2017)	SMS based home management system.	Home Control, Monitoring system, Internet Of Things ,Arduino ATMEG328 with GSM , Bluetooth , GSM, Wi-Fi and DTMF.	The advantage of this system is can be controlled from long distance.	The Drawback is the system is network dependent.
Ishan krishna (2017)	Voice Controlled Home Automation Using BitVoicer.	Home automation system for sit sensor, arduino, Ethernet shield.	The advantage is flexible,cost saving and comfort	The drawback of the system is it is only compatible with Arduino.

5s.conclusion

Most of the already existing home automaton system that follow a specific set of commands or some procedures in order to interact with the home appliances. These umanagable procedures distance the users from the technology. To overcome all of the already existing issues and give the solution The project proposes using of the voice commands to use the home appliances using Arduino board and a mobile. It eliminates the disadvantage of wireing that provides

complications also the range of voice commands can be extended by using wireless routers .In future, the use of Arduino can make enable the control using the centralized server through smart phones

References

[1]Home Automation Using Bluetooth And Gsm Dhirtaj sunehra and Visual tejaswi (2015)

[2]Home automation through email Y Swetha1, M Saritha2 (2016)

[3]Smart home appliences control system based on GSM network, R. A. Johar, E. Fakieh (2016)

[4]An Elegant Home Automation System Using GSM And ARM-Based, V.L.K. Bharadwaj Manda (2016)

[5]Voice Controll System For ZigBee Based Home Automation, Jieming Zhu, Xuecai Gao (2016)

[6]SMS based home management system Amruta Patil, Pooja Potnis(2017)

[7]Voice Controlled Home Automation Using Bitvoicer Ishan krishna(2017)