International Journal of Future Innovative Science and Engineering Research (IJFISER)
Volume – 3, ISSUE – 3 ISSN (Online):2454- 1966

Research Manuscript Title

A SURVEY ON IOTBASEDCONTROL SYSTEM FOR SMART HOME

R.Raja Gopal[1] ,R.Monisha[2]

[1]Assistant Professor,Vivekanandha College of Engineering for Women, Namakkal

[2]PG Student,Vivekanandha College of Engineering for Women, Namakkal

E-Mail-ID:rajagopalrmail@gmail.com,monisha9596@gmail.com

Sep – 2017

www.istpublications.com

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E-Mail-ID:rajagopalrmail@gmail.com,monisha9596@gmail.com

ABSTRACT

Internet of Things (IoT) is a technology that connects all things and the Internet in smart spaces.The implementations of intelligence with sensing devices, IoT has been widely applied to different fields, such as smart homes, the application fields in smart homes incorporate smartness into home areas for relief, safety, security, healthcare, and energy conservation. The need for comfort and convenient life are especially important in smart homes. Thus, home automation is one of the most important and critical components for the IoT-based smart home technology. Home automation systems are used to control home devices or appliances in smart homes and provide automatic remote control inside or outside homes. With the help IOT we can see the status of the home appliances and also we can control the home appliance like (fan, tv, light, etc.,).

Keywords:*Smart Home,Arduino, Sensor System, User-friendly Interface.*

1.INTRODUCTION:

The concept of home automation has been around since the late 1970s.A home automation system means to grant the endusers to manage and holder the electric appliances. If we look at different home automation systems over time, they have always tried to provide efficient, convenient, and safe ways for home citizens to access their homes.

In today's world, Internet serves to be a popular means of message. From the end user's point of view, Internet based Home Automation System is very convenient, easy flexible and cheap. Many devices now have Wi-Fi and can connect to Smartphones or home System. Thus, these devices need to be allied, such

that they can be monitored and controlled using one single program or device, e.g. controlling lights, fans, air-conditioners, oven, refrigerator etc. It also provides home security and emergency system to be activated. Home automation not only refers to reduce human efforts but also energy efficiency and time saving.The main objective of home automation and security is to help handicapped and old aged people who will enable them to control home appliances and watchful them in critical situations. Day to day the interest for home me automation among customers are increasing. It controls and represents report of connected home appliances.

There are different techniques with different advantages and also can be used for same application. Our aim is to develop a system to provide people a living environment with security, convenience, comfort, environmental protection and intelligence. The main idea is to develop a system for fair dealing and better management. It should also provide a user- friendly interface on the host side, so that the devices can be easily setup, monitored, and controlled. Furthermore the overall system should be summary enough to realize the true power of wireless technology.As given the popularity and pervasiveness of mobile phones among today's young generation of students, the App seems to hold great potential for attracting a new generation of students to computing and computational thinking.The system should be reasonably cheap, easy to configure, and alsoeasy to run.

2. LITERATURE SURVEY

In[1]authors PoojaN.Pawar, ShrutiRamachandran, NishaP.Singh, VarshaV.Wagh"**A HOME AUTOMATION SYSTEM USING INTERNET OF THINGS"**In Bluetooth based home automation system the home appliances are connected to the Arduino BT board at input output ports using relay. The Bluetooth connection is established between Arduino BT board and phone for wireless communication. The password protection is provided so only authorized user is allowed to access the appliances. Various appliances such as air conditioners, home theatres, cellular phones etc., are interconnected, thus creating a Personal Area Network in Home Environment. 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.

In[2]authorsPoonam B. Patil, Rupali R. Patil, Swati V.Patil , AvadhootR.Telepatil**"GSM BASED HOME AUTOMATION SYSTEM USING CELL PHONES"**Using GSM they can control the home appliances using 3 ways GSM network , The internet , Through speech It is used as a communication

medium between server and pc which connect the server and pc using SMS. GSM based home automation is used where there is not proper internet connectivity. GSM provide the M2M communication which includes DTMF (Dual Tone Multi-Frequency), SMS (Short Message Service), and GPRS (General Packet Radio Service). Bluetooth module is connected to the microcontroller and sends the appropriate signal using text command and microcontroller performs the required function. The sensors of system convert the physical qualities like sound, temperature and humidity into some other quantity like voltage. The microcontroller analysis all signal and convert them into command to understand by GSM module.

In[3]authors AmrutaPatil, PoojaPotnis, KarishmaKatkar "**SMS BASED HOME AUTOMATION SYSTEM"**This system is designed for secured wireless communication, the system is based on the WSN user can access the system from android mobile using GSM module .This system contain the two ways one is transmitter and another section is receiver. Transmitter section is defined the android mobile and Receiver section is defined the actual controlling electronic system for home automation which is designed using the Arduino circuit containing the GSM module for secured wireless communication. GSM module is used to wireless communication between android mobile as well as the Arduino circuit.

In[4] authorsPrachi T. Deokar, Dr. Manoj S. Nagmode**"CLOUD BASED HOME AUTOMATION SYSTEM"** While many of those spend a many days away from their homebut they don't have any control over the home appliances in their homes. Some devices may be remains switched on or some other appliances have to be switched on at some interval of time e.g electric motor on well. Home automation may include centralized control of lighting, heating, ventilation and air conditioning, appliances, and other systems, to provide improved convenience, comfort, energy efficiency and security. The current system consists of three important units: the first part is cloud server, handle and controls the data and information of client and users and the status of devices The hardware interface module is the second part which implement the relevant connection to the actuators and sensing devices which give the physical service. Last part is Home Server, which construct the hardware device and gives the user interface. The current system is cost efficient, reliable and comfortable which also gives a secured home automation system for entire family. The system is made up of various client modules for various platforms.

- Cloud server
- Embedded Program for Hardware Circuit Microcontroller, and.
- Internet Client for any desktop or mobile phones.

In[5]authors S. Benjamin Aru,,Dr. Manoj, S. Nagmode**"WIRELESS HOMEAUTOMATION SYSTEM USING ZIGBEE"** Home Automation industry is growing rapidly; this is fuelled by provide supporting systems for the elderly and the disabled, especially those who live alone. The system consists of two modules one is Handheld Microphone Module which incorporates a microphone with RF module (ZigBee protocol) and voice recognition unit and another one is Appliance Control Modules with relay controlling circuits. The device performance is record and store by network coordinators. The message for security purpose first process by the virtual home algorithm and when it is declared safe it is re-encrypted and forward to the real network device of the home. The safety and security of all messages that are received by the virtual home algorithm. To reduce the expense of the system and the intrusiveness of respective installation of the system Zigbee communication is helpful.

In[6]authors R.Saranya,Dr.J.Preethi**"WIRELESS SENSORS FOR HOME MONITORING SYSTEM USING IOT"**The main area of this method is using Arduino Mega 2560 small controller which acts as a micro internet server and also as an interface for all the hardware modules. There are two modules used: hardware interface module and package communication module. This system uses mobiles or computers to control basic home control and function automatically through internet from anywhere around the world globally, an automated home is sometimes called a smart home. Server controls and monitors the various sensors, and can be easily configured to handle more hardware interface module (sensors). Detection of temperature using LM35 sensor and based on which the fan rotates. Arduino micro-controller acts as a shopper and also the PHP can act as a server as a result of PHP isn't a client based mostly programming language. The Wi-Fi protect connected with the Arduino board are going to be the link between the net.

In[7] author ThoratMadhuri, B.Pokale N.B **"A INTELLIGENCE COMMUNICATION PROTOCOL BASED MONITORING AND CONTROL HOME APPLIANCES"**Home automation is the control of any or all electrical devices in our home or office. There are many different types of home automation system available. The internet has been widely use for the processes such as surfing on the pages, searching information, chatting, downloading and installation. By the rapid developments of new technologies, monitoring, controlling services have been started to be served along with internet as an instrument providing interaction with machinery and devices. This used connecting sensors and Internet of Thing (IoT). Devices uses internet to connect to each other and operate further. Internet of Thing is a dust that turns the automated home into the smart home. Home automation system requires computers

which are large as well as heavy to carry around. They are using Raspberry Pi which works as a card size computer and remove the overhead of carrying heavy size tools from one place to another place.

In[8]authorsP BHASKAR RAO,S.K. UMA**"RASPBERRY PI HOME AUTOMATION WITH WIRELESS SENSORS USING SMART PHONE"** Home automation or Smart Homes can be described as introduction of technology within the home environment to provide convenience, comfort, security and energy efficiency to its occupants. Home appliances mainly focus to helping users to operate the appliances with their own smartphones and to help elderly or handicapped people live a more independent life as long as possible. This application will allow the user to control a device that is connected to any home appliance that is Pi enabled. Suppose an employee who has gone to work and during this period a thief sneaks up into the house breaking through a window. The system would enable the client to monitor his home when a door or a window sensor triggers the alarm. Client monitors his home with webcam and could immediately inform local authority or a policeman. These devices would also benefit users with limited mobility that may have a difficult time getting to or even reaching their light switch. These objectives require a large amount of technology. The user interface must be as simple and powerful as possible and operate in a self-organized way.

In[9]authors Bulbul Bhaskar, R. Swarnalatha**"SMART HOME AUTOMATION SYSTEM USING AVR MICROCONTROLLER"**The main objectives of the Smart Home Automation System are to provide a low-cost solution to minimize the energy consumption, provide support and comfort, and make life easier. The system can monitor the changes in temperature, lighting, detect fire and keep a check on the safety of the house. In today's scenario, most homeowners already have at least one smartphone having Bluetooth compatibility (oreven a tablet, or PC for that matter).he proposed Smart Home Automation System incorporates the use of Bluetooth technology for wireless communication. The user can monitor and control their lighting, fan, and door lock and security system with the help of a user-friendly application.. The smart home automation integrates four modes of home automation: lighting, heating and air conditioning, security and fire detection. The light sensor senses the light levels andinputs them to the microcontroller. The microcontroller, that is the brain of the system, reads the values and varies the output current values to the LED, altering the brightness levels and thereby providing lighting automation. The smart home automation system provides a temperature control solution that serves to provide the switching on/off of the fan in accordance to the room temperature. Heating and Air-conditioning System makes use of a temperature sensor. Thesensor is connected as an input to the ADC

pin 23 of the microcontroller.Security System consists ofThe smart home automation system employs home security system to restrict the entry of any intruder into the house.

In[10]authorsAmrit Kumar Panigrahi, ReshavRanjan, SubhasishBhoi, NehaKumari**"DTMF BASED HOME AUTOMATION"**Controlling of home appliances using Dual Tone Multi Frequency (DTMF) technology. DTMF has enabled the long distance signaling of dialing numbers in voice frequency range over telephone lines.DTMF as name suggests uses a combination of two sine waves tones to represent a key.Operating voltage range 2.5V~5.5V.so Minimal external components and No external filter is required. It has been possible to control all home appliances automatically using our own mobile phones. The control of all appliances is possible even from a wide range. The DTMF decoder generates a binary output which is given to the microcontroller. Thus, when the relay drive is activated by the microcontroller, the device either gets ON or is switched OFF as per the requirement. The DTMF Decoder, Arduino UNO and the relay module gets the DC supply from the power supply unit. The DTMF decoder (MT8870) is connected to the Arduino UNO which in turn is connected to the relay module. The output of the relay module is connected to various loads. They have used four loads (bulbs) for demonstration. The entire connection is made through jumper wires. This project can be further extended to the High voltage A.C appliances by changing the ratings of the relay. Monitoring of the high speed induction motors as well as synchronous motors would also be possible. We can also add some security features in the system.

3.ANALYSIS

This section presents the study on what type of system which we reviewed in previous section. Based on this study results we can find the finest scheme used for user interface.

Serial no.	System	Communication Interface	Controller	User Interface	Applications
1	Bluetooth Based Home Automation System	Bluetooth	Arduino	android Application	controlling
2	GSM Based Home Automation System Using Cell Phones	SMS	Arduino	Mobile app	controlling appliances
3	SMS Based Home Automation System	GSM	Arduino ATMEG328	Mobile app	save money and time

4	Cloud Based Home Automation System	API	Smart Socket	Android phone	Help healthcare organizations
5	Wireless Home Automation System Using Zigbee	Zigbee	AT89c51 micro controller.	Mobile app	The system should be reasonably cheap, easy to configure.
6	Wireless Sensors For Home Monitoring System Using Iot	Wi-fi	Arduino	Android phone	controlling the devices.
7	A Intelligence Communication Protocol Based Monitoring And Control Home Appliances	Raspberry	Arduino	Mobile app	communication or the transfer of information
8	Raspberry Pi Home Automation With Wireless Sensors Using Smart Phone	Wi-fi	Raspberry pi	Smart Phone	low cost and flexible
9	Smart Home Automation System Using Avr Microcontroller	Avr	ARM1176JZFS 700 MHz processor	Smart Phone	low-cost solution to minimize the energy consumption
10	DTMF Based Home Automation	DTMF	Arduino UNO,	Android phone	control various home appliances

4. POSSIBLE SOLUTION

Point-n-Press addresses the directionality feature, which enables easy and intuitive control by pointing to the target device to display the target's control interface on the screen of the remote controller. By leveraging the state dependencies of home device/appliance operations, only functional buttons that are relevant to the current context are utilized. So, in our proposed solution control the home appliances inside or outside homes. IoT has been widely applied to different fields, such as smart homes, the application fields in smart homes incorporate smartness into home areas for comfort, safety, security, healthcare, and energy conservation. The need for comfort and convenient life are especially important in

smart homes. Thus, home automation is one of the most essential and critical components for the IoT-based smart home technology. Home automation systems are used to control home devices or appliances in smart homes and provide automatic remote control inside or outside homes.

V.CONCLUSION

A sensitive control system with a set of user-friendly operations, called Point-n-Press, is proposed for controlling connected devices/appliances in IoT-based smart homes. This design disables buttons that are irrelevant to the current context to prevent users from performing mal-operations. Thus, home automation is one of the most essential and critical components for the IoT-based smart home technology. Home automation systems are used to control home devices or appliances in smart homes and provide automatic remote control inside or outside homes.Due to its performance, simplicity, low cost and reliabilityhome automation system is making its position in global market, that day is not so far when every home will be the smart home.

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