Home Automation Chat Bot using IOT

[1]Arun Francis G, [2]Kishorekumar M, [2], [2]Thilakram T , [2]Hariprasath R

[1]Assistant professor, [2]Student
Department of Electronics and Communication
Engineering, Karpagam College of Engineering,
Coimbatore-641032.

[1]ja.arunji@gmail.com, [2]kishoremadhes@gmail.com, [2]thilakcric946@gmail.com
[2]hariprasathr147@gmail.com

Abstract—**Home automation gives the power of accessing your home from any part of the world and, it has come a long way since its inception. While many of its functions were very basic in the past, in this paper we are going to discuss a home automation system that not only controls your electrical appliances but also adds safety to your home and can be accessed using Telegram. Users can use telegram application and chat with the system to control their home appliances by choosing their corresponding bot.**

Keywords — **Home Automation, Raspberry pi, Chat bot, Telegram, IOT.**

I.INTRODUCTION

Home Automation is otherwise called as the Domotics. The term Domotics has been from the Latin word 'Domos'. The rise of Information Technology industry and electronic industry is making home smart. Home Automation enables us to ON or OFF the home appliances which are used frequently. Home Automation is advancing now-a-days and automation is often seen in several fields. Now-a-days many technology platforms are available for home automation process. With the help of those platforms, the sensible home is often built in the universe. The important role of this platform is to make every devices in the home connected and take necessary actions when a certain command is given.

There are too many common home automation protocols that enables the different devices to speak up the common language to interact with them easily. The Protocol is must because the user get their product or devices from different brand , only with the help of protocol functions the devices can be communicate with other devices. Selection of protocol is a difficult task. Choosing right protocol will help us to connect many devices of different brand. It must also reduce the consumption of power and reduces the cost for the user. There are popular technologies which include these are

- UPB
- Wi-Fi
- Bluetooth
- INSTEON
- Z-WAVE
- Thread(Connect upto 250 Devices)
- ZigBee and other dependable protocols which are used for Home Automations.

UPB(Universal Powerline Bus), it is a well-standard protocol for connecting the electronic devices. UPB, it can be a Wire technology almost like the X10. Due to the evolve of latest technology like wi-fi and smartphone the reliable power system like X10 and UPB will find difficult to engage with these latest technologies.

The main advantage for using Z-wave protocol is that it uses very low band. The normal wireless household products will use 2.4 GHz while Z-wave is reduced to 908.42 MHz. The other advantage is that it can be connected to smartphone and commands can be shared easily. so the cost of buying normal wireless household products will be reduced.

ZigBee is one of the protocol which is widely used for wireless home automation. It is designed to work on low power digital radio signal for the local area network. ZigBee is a IEEE 802.15.4 based device and consume low power to work.

Bluetooth is a standard protocol for sending and receiving the data wirelessly. Different types of Bluetooth device or Technologies are Bluetooth Headset, Bluetooth Keyboard, Bluetooth GPS devices and Bluetooth enabled Web-cameras. After the innovation of new Bluetooth

technologies which uses a very low power and energy it is being widely used around the world nowadays.

INSTEON, it is a communication language for the home automation device control. It acts as the bridge between the powerline-based and wireless protocols. It is suitable with the X10 Devices. The simplest manner to cut back miss rate is to increase the block size [6]. The protocol X10 is generally used for communication between electronic components and which is used in home. X10 is primarily uses power line wiring for signaling and controlling.

Home automations using the Wi-Fi and LAN mades the foremost reliable systems. Transmission lines that are designed to carry electromagnetic waves whose wavelengths are shorter than or comparable to the length of the line [5]. It uses radio frequency for the communication It is generally used for connecting internet but it can be also used for Home automation. The LAN uses cables , so it works slightly faster than a wireless connection. The Wi-Fi-based systems are a bit slower, but it provides a convenience of using it within range.

The Chatbot applications is making a world even better and smart and it will be very easy for the users to communicate. It is changing the usage of other small devices. It will be more convenient for the user to use a chatbot rather than using a traditional handheld devices. Chatbot is replacing the customer care and BPO industry as well. Using machine learning and AI is making chatbots more smarter and take intelligent decisions. Nowadays people's are preferring to use chatbot and it has a huge market in the upcoming world. This is reducing the employees work and many people will become unemployed. The Protocol is must because the user get their product or devices from different brand , only with the help of protocol functions the devices can be communicate with other devices .

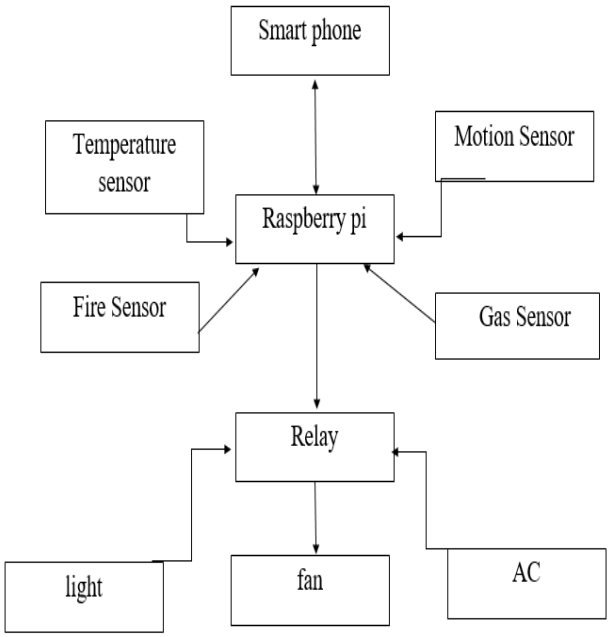
II. PROPOSED SYSTEM

A general Home Automation System does not add security to our home, but our system has security alerting systems that help us to take necessary actions before anything serious happens. Using chatbot to control our home makes it easy and brings interest for the users to use home automation system, rather than using mobile or web applications. Using Telegram to chat with the system, users can access their home appliances from anywhere around the world and will be safe and secure such that nobody hackers can intrude.

ADVANTAGES OF PROPOSED SYSTEM**:**

- Password Secured
- Stores the data in cloud
- Have Intruder , fire , gas leakage alerting system
- Many user can able to control the home

III.BLOCK DIAGRAM



IV. COMPENENTS

Software Requirements

• Raspbian OS:

Raspbian is a Debian based operating system which is specially made for Raspberry Pi single-board computer. It is a Linux based open source operating system.

• Python:

Python is a powerful multipurpose high level programming language. It is generally used to develop software solutions. In this paper we use python for creatinon and communication of chatbot.

•Telepot:

Telepot is the framework for Telegram Bot API. IT helps for the communication between telegram server and the chatbot.

Hardware Requirements

• Raspberry Pi:

Raspberry Pi is a credit card sized computer that specially made for prototyping. Raspberry pi runs on Linux based operating system and it is a great tool for learning about computers.

• Temperature Sensor DHT11:

DHT11 is a sensor which is used for measuring Temperature and humidity. It uses thermistor for measuring temperature and capacitive humidity sensor for measuring humidity .It generates a calibrated digital output.

• Gas & Fire Sensor MQ2:

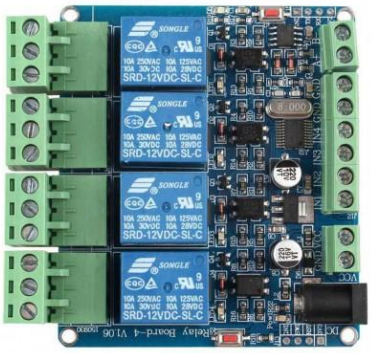
MQ2 is a sensor module which uses flammable gas and smoke sensors to detect fire and gas leakages. It is capable of detecting H2, LPG, CH4, CO, Alcohol and smoke.

• PIR Motion Detector:

Passive Infrared sensor commonly known as PIR sensor detects intruders by measuring the variation of infrared light radiation from objects in its field of view.

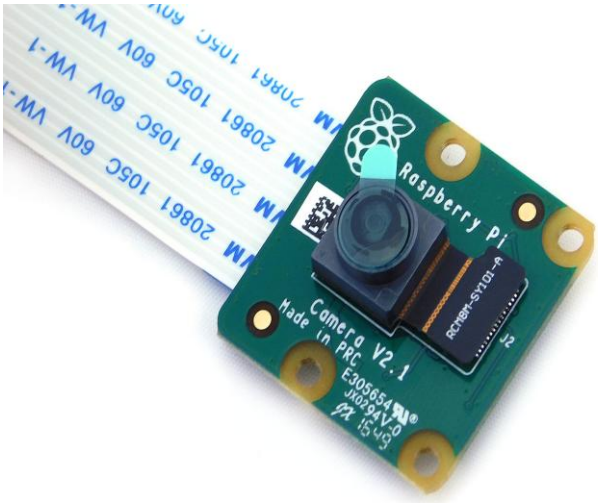
• Relays:

Relays are automatic switches that opens and closes circuits electromechanically. We will use output from Raspberry pi digital pins and control home appliances using relays as a switch.



• **Raspberry Pi Camera:**

Raspberry Pi camera is camera with fixed focal lens with a very high quality sony image sensor camera of 5 mega pixel.



V.RESULT AND OUTPUT

V. SETTING UP BOT IN TELEGRAM

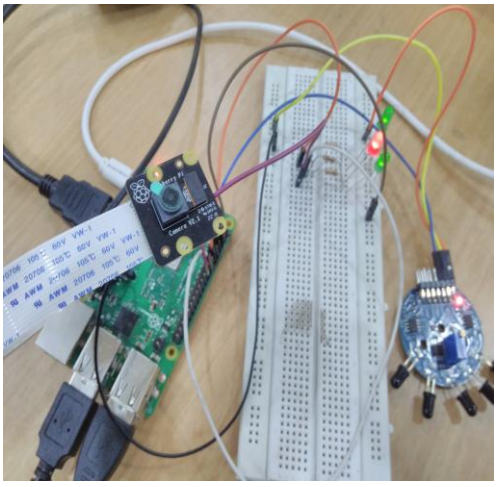
Step 1: Search and select BotFather in Telegram

Step 2: Give the start command to BotFather by typing /start .

Step 3: You'll see a list of commands that help you create, edit, and manage your bots. Since it's your first time, you'll want /newbot .

Step 4: After giving the /newbot command, you get to pick a name and username for your bot. The name is what your users will see the bot as in their contacts list, and the username is how they'll find it.

Step 5: With that done, you'll be given your bot's API key. The API key is how Telegram knows the code you write is associated with this particular bot. Every bot has its own API key



V. CONCLUSION

Thus, in this work we have successfully developed a chatbot that controls varies appliances in home. The user will have access to his/her home from anywhere in the world just by sending message to the system. This system helps user to be more interactive with their home appliances and helps in saving electricity and it also helps in emergency system.

For future work

- Machine Learning & AI
- Voice Command
- Natural Language Processing
- Other chat applications like Whatsapp & Facebook Messenger

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