

SMART SECURITY SYSTEM WITH SPEECH RECOGNITION USING IOT TECHNOLOGY

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ABSTRACT

Communication can be done in many ways; speech is a form of it. To have an effective communication between humans, speech is an important aspect. The technology has come up such that to recognize this speech and perform task based on it. The Speech recognition technology is continuously improving which is making way for innovative ideas to come up. This technology is widely used and implemented across various platforms. The communication between the human speech and the computer application which recognize the speech is only possible by interfacing. The interface can be done by lot of ways by using hardware devices which accepts speech as its input and provide the computer application in the form in which it can recognize. Using these kinds of technology replacement of automation can be made instead of the manual process in the various fields.

I. INTRODUCTION

Home automation refers to handling and controlling home appliances by using micro-controller or computer technology. Automation is popular now days because it provides ease, security and efficiency. In this, a sensor senses the status of appliances and updates to web server. If user is far away from home, he can access and change status of appliances i.e. switches it on/off. User can use local PC. This paper will describe approach of controlling home appliances by using web server. This IOT based smart security and smart home automation systems are trying to achieve comfort combined with simplicity. Wireless Home security and Home automation are the dual aspects of this project. The currently built prototype of the system sends alerts to the owner over E-mail using the Internet if any sort

of human movement is sensed near the entrance of his house .On the other hand if the owner identifies that the person entering his house is not an intruder but an unexpected guest of his then the user/owner can make arrangements such as opening the door, switching on various appliances inside the house, which are also connected and controlled by the micro-controller in the system to welcome his guest. The same can be done when the user himself enters the room and by virtue of the system he can make arrangements from his doorstep such that as soon as he enters his house he can make himself at full comfort without manually having to switch on the electrical appliances or his favorite T.V. channel for an example. Thus using the same set of sensors the dual problems of home security and home automation can be solved on a complementary basis. One of the main advantage of this IOT is even though Wi-Fi is not available we can go through 3G or 4G services. In other existing methods it is not possible so, by overcoming all the drawbacks we have implemented a project IOT based Smart security and Smart Home Automation. This project provides more comfort combined with simplicity.

II. POWER SUPPLY

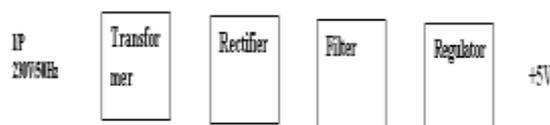


Figure: Power Supply

III. HARDWARE

3.1 Arduino

Arduino is a prototype platform (open-source) based on an easy-to-use hardware and software. It consists of a circuit board, which can be programmed (referred to as a microcontroller) and a ready-made software called Arduino IDE (Integrated Development Environment), which is used to write and upload the computer code to the physical board.

The key features are –

- Arduino boards are able to read analog or digital input signals from different sensors and turn it into an output such as activating a motor, turning LED on/off, connect to the cloud and many other actions.
- You can control your board functions by sending a set of instructions to the microcontroller on the board via Arduino IDE (referred to as uploading software).
- Unlike most previous programmable circuit boards, Arduino does not need an extra piece of hardware (called a programmer) in order to load a new code onto the board. You can simply use a USB cable.
- Additionally, the Arduino IDE uses a simplified version of C++, making it easier to learn to program.
- Finally, Arduino provides a standard form factor that breaks the functions of the micro-controller into a more accessible package.



3.2 Liquid Cristal Display

A liquid crystal display (LCD) is a thin, flat display device made up of any number of color or monochrome pixels arrayed in front of a light source or reflector. Each pixel consists of a column of liquid

crystal molecules suspended between two transparent electrodes, and two polarizing filters, the axes of polarity of which are perpendicular to each other. Without the liquid crystals between them, light passing through one would be blocked by the other. The liquid crystal twists the polarization of light entering one filter to allow it to pass through the other.

A program must interact with the outside world using input and output devices that communicate directly with a human being. One of the most common devices attached to an controller is an LCD display. Some of the most common LCDs connected to the controllers are 16X1, 16x2 and 20x2 displays. This means 16 characters per line by 1 line 16 characters per line by 2 lines and 20 characters per line by 2 lines, respectively.

Many microcontroller devices use 'smart LCD' displays to output visual information. LCD displays designed around LCD NT-C1611 module, are inexpensive, easy to use, and it is even possible to produce a readout using the 5X7 dots plus cursor of the display. They have a standard ASCII set of characters and mathematical symbols. For an 8-bit data bus, the display requires a +5V supply plus 10 I/O lines (RS RW D7 D6 D5 D4 D3 D2 D1 D0). For a 4-bit data bus it only requires the supply lines plus 6 extra lines (RS RW D7 D6 D5 D4). When the LCD display is not enabled, data lines are tri-state and they do not interfere with the operation of the microcontroller.

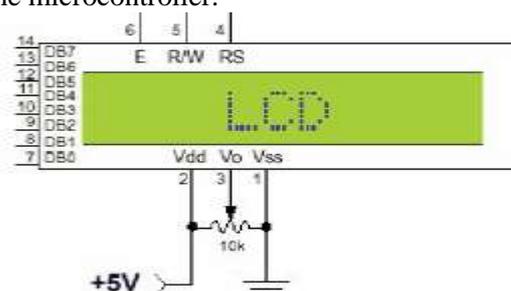


Figure Pin diagram of 1x16 lines LCD

3.3 L293D

L293D is basically a high current dual motor driver/controller Integrated Circuit (IC). It is able to drive load having current up to 1A at the voltage ranging from 4.5V to 36V. Motor driver usually act as current amplifier because they receive a low current signal as an

input and provides high current signal at the output.

Motors usually operates on this higher current. L-293D has to builtin H-Bridge driver circuits and is able to control two DC motors at a time in both clockwise and counter clockwise direction. It has two enable pins and they should be kept high in order to control the motor. By changing the polarity of applied signal motor can be rotated in either clockwise or counter clockwise direction. If L 293D enable pin is high, its corresponding driver will provide the desired out. If the enable pin is low, there will be no output. L-293D has different features including internal ESD protection, large voltage supply range, large output current per channel, high noise immunity input etc. L 293D plays a vital role in electronics era and has several different applications e.g relay drivers, DC motor drivers, stepping motor drivers etc. The further detail about L 293D motor driver/controller will be given later in this tutorial.

L293D Motor Driver



Bluetooth Module:

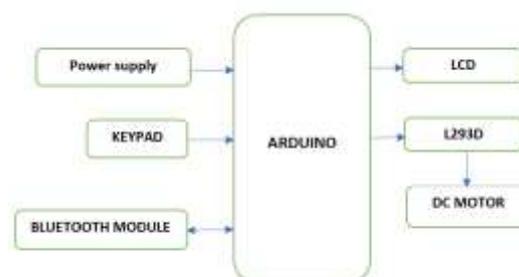
Generally, the HC-05 Bluetooth Module, or the HC-05 Sub Module, to be precise, comes with the BC417 IC along with a flash memory. Such Modules come as surface mount board and several third-party manufacturers use these board to build a more complete system with necessary pins and components.

The following image shows one such HC-05 Bluetooth Sub Module (the green board mounted on the blue board) being used as a part of a complete Bluetooth Module.

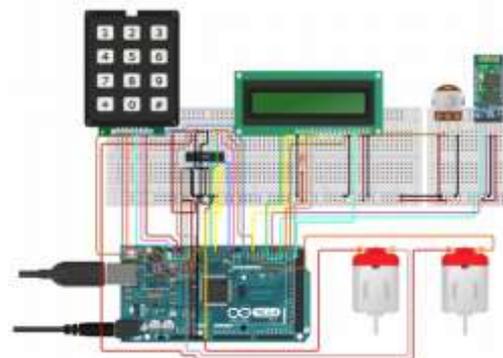


IV. RESULT

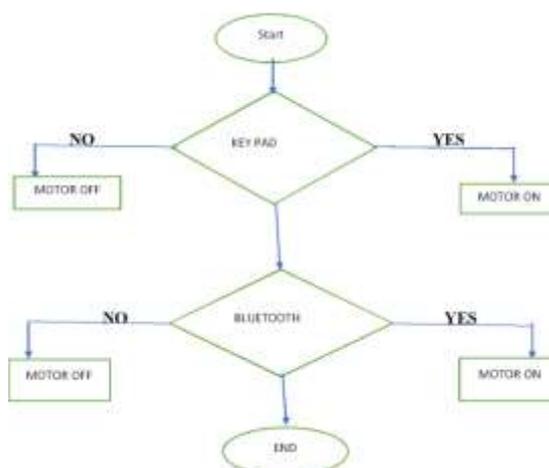
4.1 Block Diagram:



4.2 Schematic Diagram



4.3 Flowchart:



WORKING:

- If we type right password the system get access otherwise system get denied.
- Transmit voice signal to Bluetooth to Arduino. This signal is yes then the motor is on otherwise motor is off.

V. CONCLUSION

Internet of things-based home automation system can only work in the presence of internet. The rapid growth of IoT devices brings concerns and benefits. Even though Wi-Fi is not available we can go to 3G or 4G services. This is one big advantage of IOT in this project for the future development, the use of a camera connected to the microcontroller might help the user in taking decision whether to welcome the guest after receiving the of the guest or intruder, If the user identifies he is an unknown person then the user can further forward the same photograph to the police station by explaining his situation. This project can also be implemented by using raspberry pi.

VI. REFERENCES

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