Voice Initialized Elevator

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Abstract: **Elevators are controller using the keypad given in the elevator. Either the person wants to go in up direction or bottom or an emergency stop or to open or close the door of the elevator. Now a days we can fine huge number of apartments crowded in nearby area with multi storage building capacity. The apartment consists of several floors. This project better suits for all mainly for physically handicapped and challenged my people. To move from one floor to another by using switches. The main purpose of designing this project is to operate the elevator by voice commands.**

Keywords: **Microcontroller, Speech recognition, Motor, Voice, Elevator, Lift, Embedded System.**

1. INTRODUCTION

Society needs more automation and more easy way to operate machines and electronics devices. People tend to follow the protocols without even considering the possibility of creating something different according to their ability, i.e. they need more and more automation. People have to be dependent on the digital devices and act according to it. With increasing in technological advancement the reliability is getting worse. Some inventions are not even portable and require great efforts to handle. So we have decided to come up with a new idea which is fascinating as well as helpful.
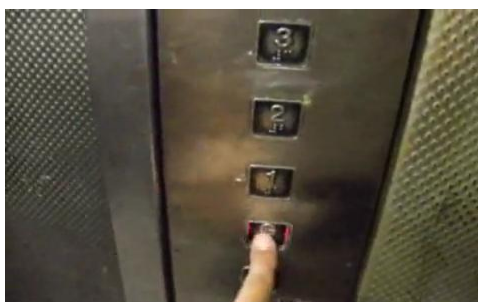

Figure 1: Manually Controlled Elevator

That idea is Voice initialized Elevator. Controlling the elevator by voice is the best idea to operate it. A user or person will just give the voice command and elevator will start moving.

There is a speech recognition IC which is detect the particular speech or sound and match with its database and then give the command to the controller and controller has the interfaced stepper motor with is, so accordingly motor will rotate and lift cabin will reach to the demanded floor.
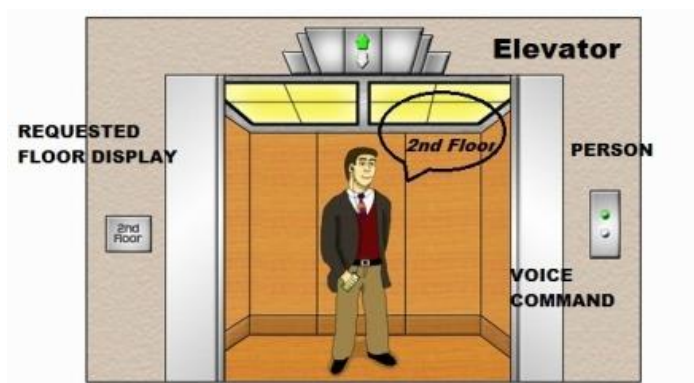

Figure2: Voice Initialized Elevator

Here one thing we have to note that, the speech recognition IC only detect and identify the speak word. It does not know the meaning of that word.

2. SPEECH RECOGNATION

The HM2007 Speech Recognition IC performs speech recognition independently in a stand-alone mode, or it can function as a slave to a host processor in CPU mode. In stand-alone mode, the circuit can recognize up to 40 words lasting one second each. The chip provides the options of recognizing either forty .96 second words or twenty 1.92 second words[1].
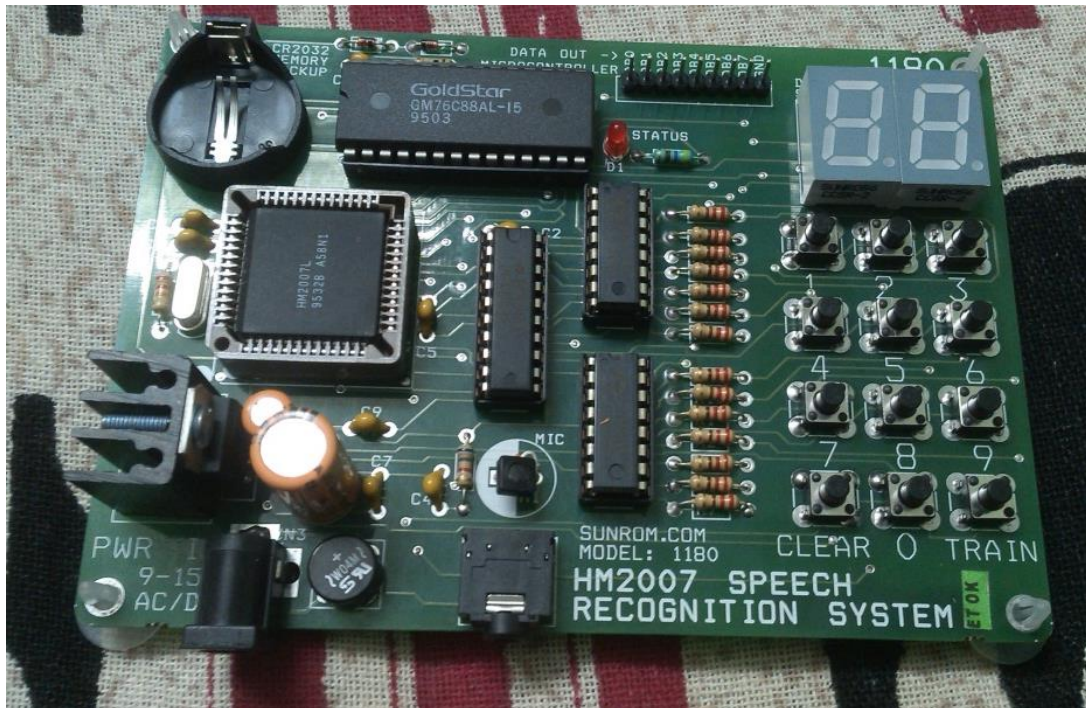

Figure 3: Speech recognition IC

This circuit allows the user to choose either the .96 second word length (40 word vocabulary) or the 1.92 second word length (20 word vocabulary). For memory the circuit uses an 8K X 8 static RAM. The chip has two operational modes; manual mode and CPU mode. The CPU mode is designed to allow the chip to work under a host computer. This is an attractive approach to speech recognition for computers because the speech recognition chip operates as a co-processor to the main CPU. The job of listening and recognition doesn't occupying any of the computer's CPU time. When the HM2007 recognizes a command it can signal an interrupt to the host CPU and then relay the command code. The HM2007 chip can be cascaded to provide a larger word recognition library.

3. MICROCONTORLLER

The NXP (founded by Philips) LPC2148 is an ARM7TDMI-S based high-performance 32-bit RISC Microcontroller. With Thumb extensions 512KB on-chip Flash ROM with In-System Programming (ISP) and In-Application Programming (IAP), 32KB RAM, Vectored Interrupt Controller, Two 10bit ADCs with 14 channels, USB 2.0 Full Speed Device Controller, Two UARTs, one with full modem interface. Two I2C serial interfaces, Two SPI serial interfaces Two 32-bit timers, Watchdog Timer, PWM unit, Real Time Clock with optional battery backup, Brown out detect circuit General purpose I/O pins. CPU clock up to 60 MHz, On-chip crystal oscillator and On-chip PLL[2].

4. STEPPER MOTOR

A stepper motor working is totally different then the simple D.C. motor. Simple DC motors are working on the principle of Faraday's law. Faraday's law states that when a current passing conductor kept into a magnetic field it will feel the force. In the DC motor the current passing coil is there, so it is perpendicular to the direction of stator magnet so according to Faraday's law it will start feeling the force and start rotating[3].
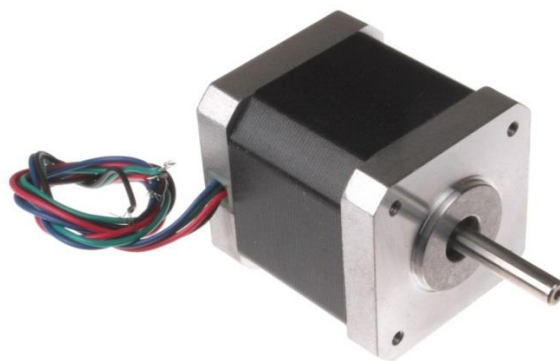
Figure 4: Stepper Motor

But the stepper motor has the permanent magnet in the rotor. And it is having the electro magnet around the stator. So by giving the supply to stator the rotor will move the one by one step angle. Stepper motor moves one step when the direction of current flow in the field coil(s) changes, reversing the magnetic field of the stator poles. The bipolar motor has one coil per phase and needs two changeover switches, or a full-bridge, for each phase. The switches reverse the direction of current flow in the coil.
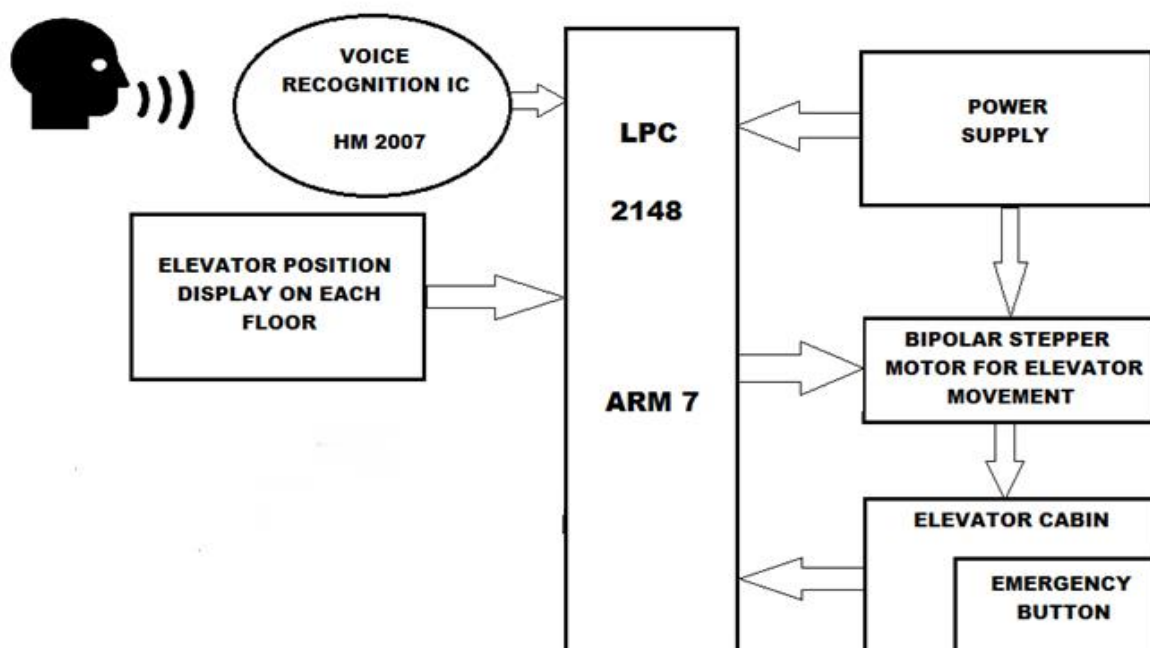
5. WORKING

Figure 5: Block Diagram

The speech recognition system is main part of this project. Speech recognition system provides the communication mechanism between the user and the microcontroller based control mechanism of elevator. This project makes use of a Stepper motor for moving the lift/elevator based on the voice/speech commands given by the user and voice recognition chip is used for recognition of the voice commands which will given by the user .Microcontroller is programmed, with the help of embedded C programming. The microcontroller is capable of communicating with all input and output modules of elevator. The voice recognition system which is the input module to the microcontroller takes the voice instructions given by the user as input and the controller then give the command to the display unit and stepper motor so accordingly demand by the user the lift will move upwards or to the downwards, and according to the users voice the switching mechanism controls the elevator.
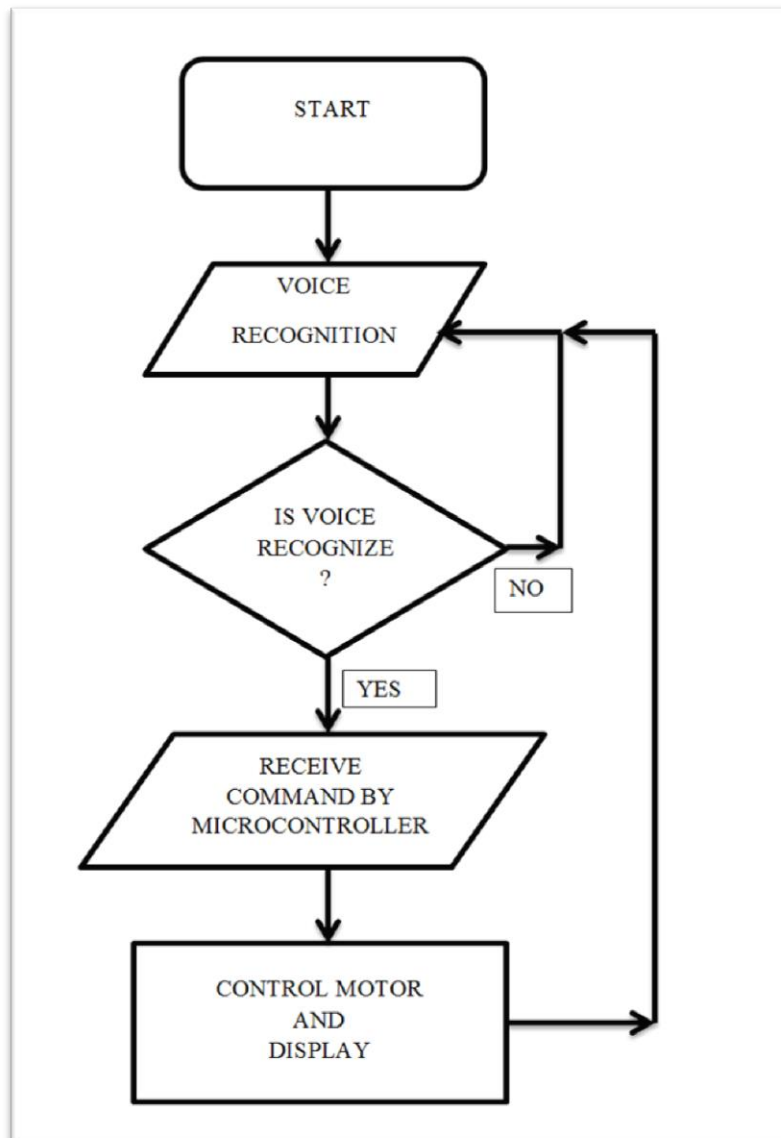
6. FLOW CHART

Figure 6: Flow chart

7. CONCLUSION

In this paper of Voice recognized elevator, we have given the information which describes the voice operated elevator which is also easy in language and important for user. This voice operated elevator mainly useful for handicap person (blind). Elevator operates on voice so maintenance cost for keypad which is used previously also reduced. A voice recognition program and its connection with the controller can supply a sufficient amount of commands necessary for the elevator control on which the elevator will operate. The old elevators were having many drawbacks like there was key press problem and time required to press one key was also more. Voice operated elevator is saving time. This paper gives solution to all these problems.

REFERENCES

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