

# VOICE AUTOMATION FOR ELEVATOR

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**Abstract :** Elevators have become a very important part of our daily life it can be considered as a type of transporting device which is used by us on daily basis .So we have performed a study on how can the elevator be updated with voice command since all the lifts have switches it becomes quite difficult to access the elevator when it is crowded and also physically-disabled people face difficulties in accessing it.So the elevator can be further modified that is instead of using switches for moving the elevator there would be a voice recognition chip which will accept the speakers command either to move the elevator up or down or even want to use the fan or light facility then this voice command would be processed by the microcontroller and would be fed to the DC motor and the necessary actions would be performed.

**Keywords:** microcontroller, voice recognition chip ,speaker(user), DC motor

## 1. INTRODUCTION:

In our society elevator has become an ineluctable part. All lifts are switched based and requires manual input for it to function.So the basic idea being considered here is to develop a system in the elevator which will perform the task of moving the elevator up and down just by a voice command and will also perform the task of switching ON/OFF fans and lights just by a voice command which in turn will reduce the manual work and provide an ease to use the lift services to users and also during peak hours in high buildings,apartments,malls elevators are usually crowded and pressing the switches everytime to reach certain floor becomes difficult so it will solve this problem and most importantly it will provide an ease to the physically-disabled people to easily use the lift services even if they are entering the elevator alone.

## 2. LITERATURE REVIEW:

The system uses a compatible controller along with voice recognition chip for accepting voice command and uses a logical lift program to connect[1]. The microcontroller AT89S52 is used in this system .On the microcontroller the elevator controller is constructed for simulating the elevator. This paper elaborates the voice operated elevator which is easy to use by the users[2]. Controlling The paper consists of voice acknowledgment and programmable terminal and has a coherent elevator program. It uses Dynamic Time Wrapping Technique. It consists of words such as up,down etc.. The speech recognition system is main part of this project along with this microcontroller,motor etc also plays an important role.[3]

## 3. MAIN COMPONENTS :

- Voice Recognition Chip
- Microcontroller
- DC motor
- Motor Driver
- Battery

### 3.1 VOICE RECOGNITION CHIP:

To implement this project a Voice recognition chip named ELECHOUSE SimpleVR would be used.It is a speaker independent chip.The speakers commands would be fed as an input to the chip and then the chip will produce a digital signal as output which will be fed to the microcontroller.

- MIC Jack: to connect the MIC coming with SimpleVR
- MIC Port: to connect other kind of MIC
- CNT Button: to connect SimpleVR to PC
- Micro-USB port: to connect SimpleVR to PC
- Serial Port: to connect with controller such as Arduino

#### Features:

- Support maximum 64 groups, each group can contain maximum 2000 sentences.
- Support American English and Chinese (Mandarin)
- Each command could be a word or a sentence.



Fig -1: ELECHOUSE SimpleVR

**3.2 MICROCONTROLLER:**

The microcontroller to be used here is Arduino Mega. An operating voltage of 5V and a DC current of 40mA would be required. The output from the voice recognition chip would be taken as an input by the Arduino and after the processing of the input is done the command would be passed to the DC motor to perform the task respectively. It will also accept the command for switching ON/OFF the light and fans present accordingly.



Fig-2: Arduino Mega

**3.3 DC MOTOR:**

A low rpm DC motor will be needed. The motor that can be used is a 30rpm motor which requires 5-10 Volts and 10mA current to operate. A motor driver L293D can be used to control the motor.



Fig-3:DCMotor



Fig-4: L293D

**3.4 BATTERY:**

All the components can be operated by a 12V battery.



Fig-5: 12V Battery

#### 4. WORKING:

In this implementation Voice Recognition chip plays a very important role. It is the most important building block of the entire system to be developed. The speakers entering the lift would command their desired get-off floor and also may give the command to ON/OFF the fan or light then the chip would sense and take that input provided by the speaker and would convert it to digital signal and in turn would be fed as an input to the microcontroller.

The microcontroller will compare the input from the stored input and if the result says to move the elevator downwards then it will accelerate the motor downwards and if the result says to move upward then the motor would be accelerated in upward direction thereby leading to the movement of the lift and allowing the speaker to get-off at the desired floor and if the result also says to ON/OFF the fan or light then the microcontroller will perform this task without any further action to other components.

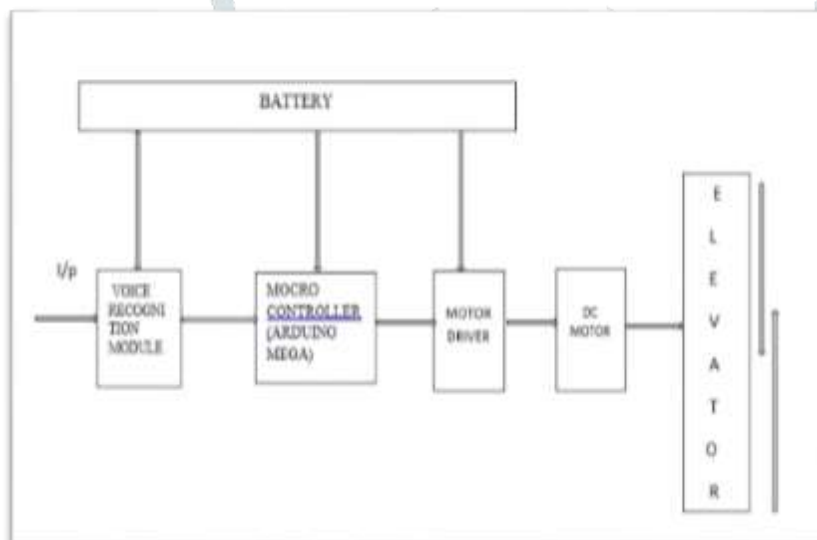


Fig-6: Model of the voice recognition elevator

- a) **Voice Recognition tool:** For the working of the elevator using voice command the first task that comes into account is matching the continuous speech signal with the sets of commands groups programmed in the chip accordingly. The matching is done by accepting an input signal with a set of words or sentences according to some optimality criteria and then by using parametric process the data would be converted into parameters and then it would be matched with the set of commands groups present.

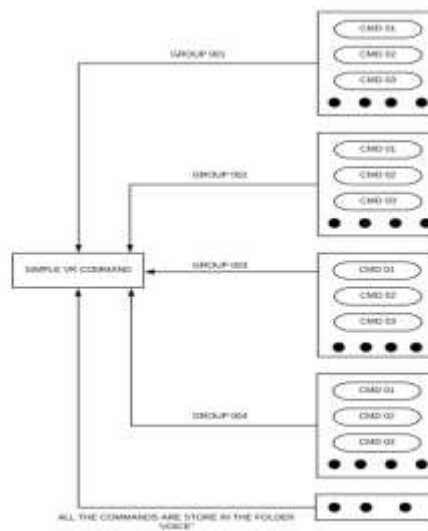


Fig-7: Grouping Of Voice Commands

- b) **Arduino:** The voice recognition chip communicates with an attached Arduino through software serial library. The TX pin sends information to the Arduino. The Arduino has to rely on this pin to know when to read the instruction when it is available. After reading the instruction received, the Arduino will drive the motor accordingly.
- c) **Motor driver:** L293D is a dual H-bridge motor driver integrated circuit (IC). The motor connected operations would be controlled by input logic at pins 2 & 7 and 10 & 15. Input logic 00 or 11 will stop the corresponding motor. Logic 01 and 10 will rotate it in clockwise and anticlockwise directions, respectively. Enable pins 1 and 9 must be high for motors to start operating. When an enable input is high, the associated driver gets enabled. As a result, the outputs become active and work in phase with their inputs. Similarly, when the enable input is low, that driver is disabled, and their outputs are off and in the high-impedance state.
- d) **Motor:** A DC motor is any motor within a class of electrical machines whereby direct current electrical power is converted into mechanical power. The speed of a DC motor is being controlled using a motor driver. The motor would drive the elevator as per the instruction received from the Arduino.

## 5. Conclusion:

Our paper describes a new way in which an elevator can be operated without the use of switches; only a voice command would be enough to reach the desired destination. It will provide ease to the user for using the elevator service and would also provide great benefit to physically-impaired people thereby resolving their dependencies on others for using the elevator. It resolves the issue of pressing the switches all the time for moving up or down, which becomes quite difficult in crowded hours. The problem of switches being damaged.

## 6. References:

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