



Voice Operated Intelligent Lift With Emergency Indicator

Anu K G, Anupriya K S,
Arathy Suresan, Arjun Biju

Electronics and Communication Department
Ilahia Collage of engineering and technologies
Muvattupuzha, India
anukg95@gmail.com

Lekshmi M S
Assistant professor

Electronics and Communication Department
Ilahia collage of engineering and technologies
Muvattupuzha, India.
lekshmims@gmail.com

ABSTRACT-This project presents the design and construction of voice operated lift/elevator with emergency indicator. This device acts as human-machine communication system. Speech recognition is the process of recognizing the spoken words to take the necessary actions according to the commands. The main purpose of designing this system is to operate the Elevator by using voice commands by the user. It aims at helping paralyzed, short height people and physically challenged persons.

Keywords :: Microcontroller, voice command.

I. INTRODUCTION

The speech recognition system provides the communication mechanism between the user and the microcontroller based lift control mechanism. This project makes use of a DC motor for moving the lift/elevator based on the voice/speech commands given by the user and recognition of voice commands is done using MATLAB. Microcontroller is programmed, with the help of embedded C instructions. The microcontroller is capable of communicating with all input and output modules. The voice recognition system which is the input module to the microcontroller takes the voice instructions given by the user as input and moves the lift vertically according to the commands. The vertical movement of the lift is enhanced by the DC motor. LCD display is available for visual information of operations being performed. If there is any failure main power supply, the buzzer connected to the microcontroller turns on and produce sound as an emergency indication. People with moving disabilities can control various devices by speech input. One of smart house elements could be the control of a lift by voice commands.

II. LITERATURE SURVEY

[1] Speaker independent discrimination of 4 confusable

consonants in the strictly fixed context of six vowels is considered. The consonants are depicted by features of consonant's stationary part and changing rate of features (delta features) in transition from consonant to the following vowel. The mel frequency cepstrum (MFCC), linear prediction cepstrum (LPCC), recursive filter (F12) features and set of discriminants were evaluated seeking for better phoneme discrimination. It is postulated that Gaussian mixture capabilities are similar to k-means (kMN) capabilities and several discriminants including regularized discriminant analysis (RDA) were analysed too. The experiments showed that the discrimination error averaged per environments of six vowels decreases from 23.3% using KMN to 7.0% using RDA for the best F12 features. Consonant discrimination error rate decreases from 21.6% to 3.6% in the open vowel context and from 27.9% to 11.4% in closed vowel context.

[2] Lithuanian speech database ltdigits is well known fact that speech corpora are of crucial importance for speech technology development. Work to develop methods and approaches for speech corpora has been started nearly two decades ago (Fisher, 1986). One of the first systematic speech signal databases was TIMIT. It became standard tool for speech technology research worldwide. Other popular speech signal databases used in various countries are YOHO, OGI Spelled and Spoken Words (Cole, 1992), Switchboard, etc. Another well-known factor influencing progress in speech technology is incorporation of specific properties of particular language. Speech corpora LTDIGITS have been developed. It contains patterns of Lithuanian speech pronounced by native Lithuanian speakers. These data are Lithuanian digits (0-9) and words that could be used to control computer or some other devices (e.g. home appliances).

But some details of LTDIGITS could be of more general interest. First, this corpora contains nasal – vowel syllables before open, middle and close vowels. Second, the database includes special continuous phrase with nasal vowel pairs that are located in the stressed positions in the



front of short 2 – 3 syllable words. Third, both the utter ancestor words and words to phones marking and labeling N procedures were developed and are presented at conference. Importance of acoustic realizations of nasal consonants in various vowel environments lies in the fact that better discrimination of phonemes should lead to significant progress in speech recognition.

III. CHARACTERISTICS OF VOICE OPERATED ELEVATOR

Elevator has to be moved vertically by recognizing our voice commands. By giving different commands lift can be moved from one floor to another automatically. If voice command is received successfully by Elevator then the number is displayed in the lcd display. Important factors in speech recognition:

1. Speaker – each voice is unique; hence creating techniques that can accurately and reliably recognize anyone's voice and any dialect of a given language is a major challenge.
2. Coarticulation – the spectral characteristics of a spoken word (or sounds within the word) vary depending on what word (or sounds) surround it.
3. Speaking rate and style – people speak at different rates and with different pronunciations of the same sounds, thereby making it difficult to get stable patterns for sounds or words that can be used with all speakers and speaking rates and styles.
4. Environmental conditions – speech can be difficult to recognize in home environments (background speech from radios or TV), when in a mall or in big buildings background noise is high. Each of the above factors contributes some degree of variability to the speech signal.

IV. EXISTING SYSTEM

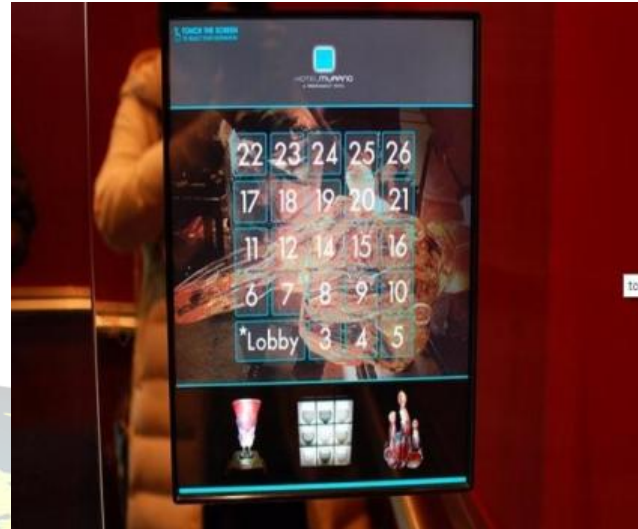
1. Normal lifts having number keypads to enter the number:

An elevator or lift is a type of vertical transportation that moves people or goods between floors of a building, vessel, or other structure. Elevators are generally powered by electric motors that either drive traction cables or counter weight systems like a hoist, or pump hydraulic fluid to raise a cylindrical piston like a jack.

2. Escalators:

An escalator is a type of vertical transportation in the form of a moving staircase. It is a conveyor transport device for carrying people between floors of a building. The device consist of a motor driven chain of individually linked steps that move up or down on tracks, allowing the step threads to remain horizontal. Escalators are used around the world to move pedestrian traffic in places where elevators would be

impractical. Principal areas of usage include department stores, shopping mall, airports, hotels, convention centers and public buildings.



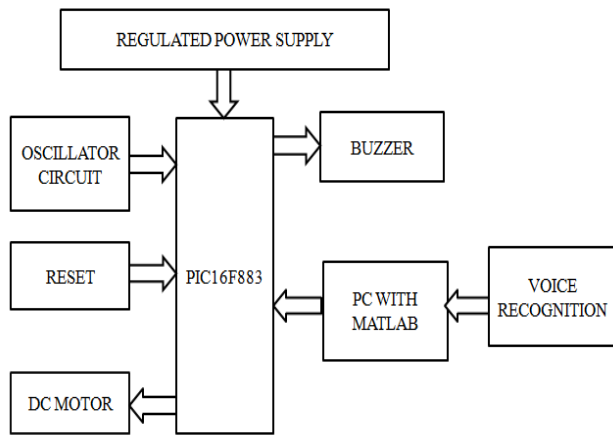
Escalators are used around the world to move pedestrian traffic in places where elevators would be impractical. Principal areas of usage include department stores, shopping mall, airports, hotels, convention centers and public buildings.

V. PROPOSED DESIGN

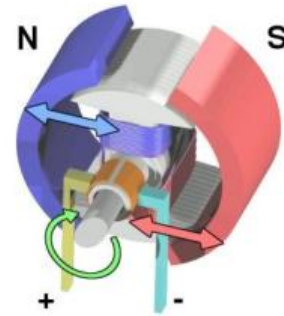
The speech recognition system is main part of this project. It provides the communication mechanism between the user and the microcontroller based control mechanism of elevator. This project makes use of a DC motor for moving the lift/elevator based on the voice/speech commands given by the user and 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 judges whether the instruction is to lift upwards or to the downwards. According to the users voice, the switching mechanism controls the elevator. The similar voice based commands are also used to turn on/off the fan inside the elevator.

V. METHODOLOGY

This project makes use of a DC motor for moving the lift/elevator based on the voice/speech commands given by the user. Voice recognition system is used for recognition of the voice commands. Microcontroller is programmed, with



Motors convert electrical energy (battery or voltage source) into mechanical energy for cause of rotation.



DC motor Control

the help of embedded c instructions. The voice recognition system which is the input module to the microcontroller takes. Instructions given by the user as input and the controller judges whether the instruction is to lift upwards or to the downwards, and according to the users voice the switching mechanism controls the lift. The similar voice based commands also used to turn on/off the fan inside the lift. LCD display is available for visual information of operations being performed.

MICROCONTROLLER

Microcontroller is the very important part of this project. Here we are using PIC16F883 Microcontroller. It has 28 pins. And it is 8 bit controller. Operating voltage is 2.0V - 5.5V. Inbuilt A/D converter, timer, USART. It has 14 KB program memory, 363 byte RAM and 3 general purpose I/O ports. Microcontroller is programmed, with the help of embedded c instructions. The microcontroller is capable of communicating with all input and output modules. 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 judges whether the instruction is to lift upwards or to the downwards, and according to the users voice controls the lift operates.

DC MOTOR CONTROL

DC motor is also important in our project. It is useful for rotating the elevator. In DC motor the wires which carries the current are placed in the region of the space of magnetic field, the wire carries the current and it also experiences a force by which the elevator will be rotated. All the factors like the size of the force of motor, which will decide that how fast the motor will spins, depends on the amount of current in the wire. the length of the wires of Dc motor and the strength of the magnetic field and the direction of the force, that will decide in which direction motor is going to spins, depends on the direction of the current in the wire and the direction of the magnetic field. Here The Right Hand Rule is also used to

BUZZER

decide the direction of the force when the direction of the current and the direction of the magnetic field are known.

A buzzer or beeper is an audio signalling device. It can be mechanical, electromechanical, or piezoelectric. Uses of buzzers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.

VI. SOFTWARE DESCRIPTION

PROTEUS

Proteus is a Virtual System Modelling and circuit simulation application. The suite combines mixed mode SPICE circuit simulation, animated components and microprocessor models to facilitate co-simulation of complete microcontroller based designs. Proteus also has the ability to simulate the interaction between software running on a microcontroller and any analog or digital electronics connected to it. It simulates Input / Output ports, interrupts, timers, USARTs and all other peripherals.

MP LAB

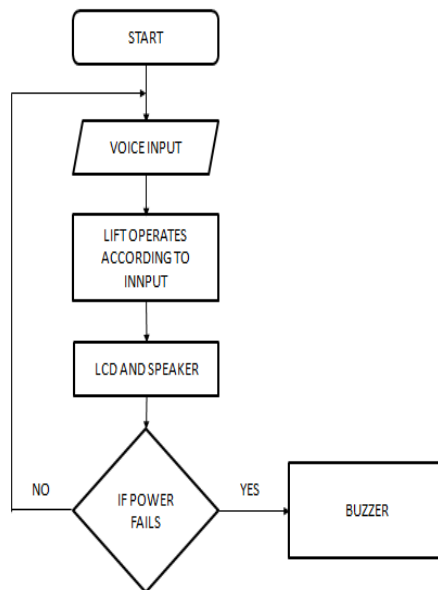
MPLAB X IDE is a software program that runs on a PC (Windows®, Mac OS®, Linux®) to develop applications for Microchip microcontrollers and digital signal controllers. It is called an Integrated Development Environment (IDE), because it provides a single integrated "environment" to develop code for embedded microcontrollers. MPLAB X Integrated Development Environment brings many changes to the PIC® microcontroller development tool chain. Unlike previous versions of the MPLAB IDE which were developed completely in-house, MPLAB X IDE is based on the open source NetBeans IDE from Oracle.



MATLAB

MATLAB is an on-line system providing machine aid for the mechanical symbolic processes encountered in analysis. It is capable of performing, automatically and symbolically, such common procedures as simplification, substitution, differentiation etc. It also supplies fairly elaborate book keeping facilities appropriate to its on-line operation.

FLOWCHART



VII. CONCLUSION

In Voice operated elevator with emergency indicator, we have given the information which provides an emergency indication to the security while lift gets fail due to any problem like cut of power supply. This paper 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

failure and here indication given to the security person who will be inside security cabin. Voice operated elevator is saving time but there was problem of security. This paper gives solution to all these problems.

VIII. REFERENCE

- [1] Intelligent Control of the Lift Model- Cernys, P. ; Dept. of Control Technol., Kaunas Univ. of Technol. ; Kubilius, V. ; Macerauskas, V. ; Ratkevicius, K. ,Sept 2003 ,pp.428-431.
- [2] A Voice driven scene-mode recommendation for portable digital imaging devices - Oh,Y.R. ; Gwangju Institute of Science and Technology (GIST) ; Yoon, J.S. ; Hong Kook Kim ; Kim, M.B, November 2009 , pp. 1739-1747.
- [3] Voice-Controlled Human-computer interface for disabled - Mu-Chun Su ; Dept. of Comput. Sci. & Inf. Eng., Nat. Central Univ., Taiwan ; Ming-Tsang Chung, Oct 2001 ,pp. 225-230.
- [4] Large-Vocabulary Continuous Speech Recognition Systems -Saon, G. ; IBM T. J. Watson Res. Center, Yorktown Heights, NY, USA ; Jen-Tzung Chien , Nov 2012 , pp. 18-33.
- [5] Theoretical Analysis of Diversity in an Ensemble of Automatic Speech Recognition Systems-Audhkhasi, K. ; Electr. Eng. Dept., Univ. of Southern California, Los Angeles, CA, USA ; Zavou, A.M. ; Georgiou, P.G. ; Narayanan, S.S , March 2014, pp. 711-726.
- [6] The Application of DC motor controller in the test system of intelligent Elevator - Jian Huang Key Lab. of Special Purpose Equip. & Adv. Manuf. Technol.,Zhejiang Univ. of Technol., Hangzhou, China Guo-jun Zhao ; De- qiang Gu; Jun-hui Wang, April 2011, pp.1765-1767.