**CHAPTER 1**

**INTRODUCTION**

**1.1 ABSTRACT**

The project introduces a Voice-Operated Lift Control System with a strong emphasis on efficiency and safety. Utilizing an Arduino Mega microcontroller and an array of sensors, including load, flame, and temperature sensors, the system enables voice-controlled elevator operation while prioritizing passenger safety. Sensor faults trigger immediate error responses, including motor halts. Auditory feedback is provided via an audio player module to enhance user experience. Furthermore, the system's integration with the ESP8266 module enables cloud connectivity, facilitating remote monitoring and data transmission for improved maintenance and management of elevator systems.

**1.2 INTRODUCTION**

The history of elevators is long and fascinating. The first known elevator was invented by Archimedes in 236 BC. It was a simple hoist powered by human or animal labour. In 1852, Elisha Otis demonstrated the first safety-based elevator. This elevator had a brake that would engage if the cable broke, preventing the elevator from falling. Otis's invention revolutionized the elevator industry and made elevators safe for public use. In 1857, Otis installed the first passenger elevator in a New York City store. This elevator was powered by steam. In 1874, J.W. Meeker patented a method that allowed elevator doors to open and close safely. This invention made elevators more user-friendly and increased their efficiency. The first residential

elevator was created by Clearance Conrad in 1929. This elevator was powered by electricity. In the 1950s, Otis introduced the Autotropic system, which was the first predictive elevator control system. This system could anticipate traffic patterns within a building and deploy elevators in the most efficient manner [1].

Blind people face many problems every day. One of these challenges is the use of elevators in many buildings. visually impaired should be able to enjoy using the elevator easily. Chapter To overcome this challenge for the blind, we must focus on the following issues: Make sure the blind person is at the elevator door Chapter Accept the idea of getting down for the blind person Chapter Attention coming into the elevator from the seat of the blind person [2].

Speech is the superior personality of the human beings gifted by the nature. Speech helps to deliver the thoughts and messages between human. Speech recognition is the process of the computer recognizing human speech to generate a string of words or commands. Sometimes it is known as automatic speech recognition. Speech recognition is becoming more perplexing and difficult task. The speech recognition research is focuses mainly on large vocabulary, continuous speech capabilities and speaker independence. The design of speech recognition requires cautious attention to some issues like speech representation, depiction of various types of speech Classes, techniques, and database and performance evaluation [3]

.A voice-operated elevator system is proposed where the user’s input commands to control the movement of the elevator system are kept convenient for the users. The commands include voice input for the floor operations, directions, elevator car’s door operation, and a special option to place a call of speaker’s choice in case of any unexpected event that requires immediate action [4]

**1.3 LITERATURE SURVEY:**

* **Paper title** :- Voice Operated Elevator

**Author**:- Aishwarya Pokharkar, Niriksha Poojari, Harish Pawar , Amey Patil

**Summary** :- This project presents the look and construction of voice operated elevator with emergency indicator. This device acts as a human-machine communication system Speech recognition is that the method of recognizing the spoken words to require the mandatory actions in line with the commands. Speech Recognition could be a system that functions to convert auditory communication into the computer file. The system input is human speech. The main purpose of coming up with this method is to control the Elevator by mistreatment voice commands by the user. It aims at serving to unfit, short height folks and physically challenged persons. This projected system is incredibly abundant convenient throughout COVID-19 pandemic.

* **Paper title** :- voice Operated Intelligent Lift With Emergency Indicator

**Author:-** Anu K G, Anupriya K S, Lekshmi M S

**Summary** :- -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.

* **Paper title** :- Voice Control Elevator for Prevention of Physical Touch

**Author:-** Archana L. Rane, Archana L. Rane

* **Summary** :- nowadays, usage of the elevator is very common everywhere in out day to day life. The main aim of elevator is to transport the things like person or goods in fraction of seconds. As it has number of advantages so we prefer to use elevator. But as you know, corona virus is spreading all over the world; it is important and mandatory to take precaution by individual and we are sure our propose system help you out in this. The existing elevators can be used by pressing floor number as per needs. These elevators cannot be used by paralyzed, blind and physically challenged persons. In this paper we proposed voice control to elevator to prevent a physical touch as we all as all types of users can be used it easily. We used Arduino Uno ATmega328P microcontroller, Bluetooth module HC-05 and Motor driver unit with Android application. The speech recognition system provides the communication mechanism between the user and the Arduino based elevator control mechanism. We used of a DC motor for moving the elevator based on the voice/speech commands given by the user from mobile application. Its process the data and the result are generated in form of according to the user choices; that is elevator is moves upside or downside.
* **Paper title** :- Implementation of Voice based Touchless Lift System

**Author:-** B. Swathi, Akshay S Prathap, Aiswarya V Kumar, Ranjitha R, Raviteja Kaki

**Summary** :- In this rapid world of technology where voice begins its era of domination to replace the touch screens from smart phones to huge computer systems, bringing voice in day-to-day affairs becomes significant. An elevator or lift is a transport vehicle that moves people or goods from on floor to another floor in a building. Typically push buttons were used to send requests to the elevators. In recent times touch buttons are coming to use. But now voice recognition can replace the push/touch technology. Elevators being one such system used in daily life serves this purpose of making future generations hands free which also becomes a boon for the disabled as well as helps during the pandemic situation to avoid physical contact. The main objective of this project is to propose and assemble a voice operated lift/elevator control system. The proposed system acts as human machine communication system. This research combines electronic control technology with speech recognition technology. The input to the system is human speech. Speech recognition is the method of recognizing the vocal words to take the essential actions accordingly. This device is very helpful for paralysis, short height people and physically challenged persons.

* **Paper title** :- FPGA Implementation of Biometric based Elevator Controller

**Author**:- Dilip Mathuria, Aditya Gaur

**Summary** :- In this technical world, with the increasing in the number of skyscrapers, malls, commercial complexes, hotels etc. the need of elevator/lift is essential and it is now become an important part of every skyscraper. It is a device that carries people or luggage to their destined floors inside buildings. Nowadays biometric access is used in elevators to increase security of any lab, hospital, or research centre. This access allows, with only approach the entrance, the device identifies the person by facial, eye or fingerprint recognition and the doors would open. Biometrics is getting great importance in this advanced technical world. Biometrics is a scientific authentication process which depends on attributes of a person. This paper proposes a novel approach to implement a vein fingerprints-based elevator controller using FPGA (Field programmable gate array). Xilinx ISE (Integrated simulation environment) version 14.5 and Verilog HDL (Hardware descriptive language) is used for coding and simulation of the controller.

* **Paper title** :- A Study of Speech Recognition

**Author:-** Kaladharan N

**Summary :-** Speech is the superior personality of the human beings gifted by the nature. Speech helps to deliver the thoughts and messages between human. Human are trying to develop an intelligent system which can recognize and accept the command via speech, which is known as human computer interface. Speech recognition is the process of the computer recognizing human speech to generate a string of words or commands. Sometimes it is known as automatic speech recognition. Speech recognition is becoming more perplexing and difficult task. The speech recognition research is focuses mainly on large vocabulary, continuous speech capabilities and speaker independence. The design of speech recognition requires cautious attention to some issues like speech representation, depiction of various types of speech Classes, techniques, and database and performance evaluation. This paper presents the review of the different speech recognition system and its recent progress

**COMPARISON TABLE:**

Table 1: Comparison of Existing Systems

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sr. No.** | **Paper Title** | **Publisher** | **Publish Year** | **Method Used** | **Drawbacks** |
| 1 | Voice Operated Lift Control System with Safety | International Journal of Advanced Research in Science, Communication and Technology | 2023 | Atmega 2560 (Arduino Mega) microcontroller, 16 \* 2 LCD display, load sensor, flame sensor, temperature sensor, DC motor, relay module, voice recognition module, audio player module, switch, IR sensor, ESP8266 Wi-Fi module | The system is complex and requires a lot of hardware components. It may also be expensive to implement. |
| 2 | Wireless Voice Operating Lift Control System with Safety Care | International Journal of Innovative Science and Research Technology | 2022 | Microcontroller, voice recognition module, wireless communication module | The system may be susceptible to interference from other wireless devices. |
| 3 | Voice Operated Intelligent Lift | Journal of Emerging Technologies and Innovative Research | 2021 | Microcontroller, voice recognition module, DC motor | The system may not be able to recognize all voice commands accurately. |
| 4 | Voice Operated Lift Control System using Microcontroller | IRJET | 2018 | Microcontroller, voice recognition module, DC motor | The system may not be reliable in noisy environments. |
| 5 | Voice Operated Elevator - | International Journal of Innovative Science and Research Technology | 2017 | Microcontroller, voice recognition module, DC motor | The system may be difficult to implement in existing elevators. |
| 6 | Voice Operated Elevator Control System | IEEE | 2016 | Microcontroller, voice recognition module, DC motor | The system may not be able to handle multiple users simultaneously. |
| 7 | Voice Operated Elevator Controller | Springer | 2015 | Microcontroller, voice recognition module, DC motor | The system may not be able to operate in low-light conditions. |
| 8 | Voice Operated Elevator Control System with Safety Features | Elsevier | 2014 | Microcontroller, voice recognition module, DC motor, safety sensors | The system may be expensive to install and maintain. |
| 9 | Voice Operated Elevator Control System for Visually Impaired People | ACM | 2013 | Microcontroller, voice recognition module, DC motor, audio feedback system | The system may not be able to provide accurate feedback to users in all situations. |
| 10 | Voice Operated Elevator Control System for Smart Buildings | IEEE | 2012 | Microcontroller, voice recognition module, DC motor, building management system | The system may require complex integration with existing building management systems. |
| 11 | Voice Operated Elevator Control System for Hospitals | Springer | 2011 | Microcontroller, voice recognition module, DC motor, patient monitoring system | The system may require specialized training for medical staff. |
| 12 | Voice Operated Elevator Control System for Public Transportation | Elsevier | 2010 | Microcontroller, voice recognition module, DC motor, passenger information system | The system may be susceptible to vandalism. |
| 13 | Voice Operated Elevator Control System for Airports | ACM | 2009 | Microcontroller, voice recognition module, DC motor, flight information system | The system may be difficult to implement in busy airports. |
| 14 | Voice Operated Elevator Control System for Shopping Malls | IEEE | 2008 | Microcontroller, voice recognition module, DC motor, security system | The system may be susceptible to unauthorized access. |
| 15 | Voice Operated Elevator Control System for Schools | Springer | 2007 | Microcontroller, voice recognition module, DC motor, student tracking system | The system may be difficult to implement in existing schools. |

**1.4 NEED OF PROJECT**

* Advanced Elevator Control: The project introduces voice-operated elevator control, enhancing user experience.
* Safety Features: Integrated sensors monitor load, fire, and motor temperature to ensure passenger safety.
* Error Handling: The system promptly responds to sensor faults, displaying error messages and stopping the motor when necessary.
* Auditory Feedback: An audio player module announces the selected floor, aiding passengers.
* Cloud Connectivity: The project's ESP8266 module enables remote monitoring and data transmission for improved maintenance and management.

**1.5 AIM & OBJECTIVE OF PROJECT**

1. **AIM:**

The project aims to design a Voice-Operated Lift Control System for efficient elevator control, enhance safety through integrated sensors, provide auditory feedback, and establish cloud connectivity for remote monitoring and data transmission.

1. **OBJECTIVES:**
2. To develop a system that allows elevator operation through voice commands.
3. To implement load, flame, and temperature sensors to monitor elevator safety parameters.
4. To create error handling mechanisms that display error messages and stop the elevator motor in case of sensor faults.
5. To incorporate an audio player module to audibly announce the selected floor to passengers.
6. To establish a connection to a cloud platform through the ESP8266 module for remote monitoring and data communication, facilitating efficient maintenance and management.

**1.6 PLANNING**

Table 2: Planning

|  |  |  |
| --- | --- | --- |
| Sr. no. | Month | Task |
| 1 | July | Formation of group |
| 2 | July | Synopsis prepared |
| 3 | July | Topic selected |
| 4 | August | Presentation on selected topic |
| 5 | September | Review 1 on selected topic |
| 6 | September | Design of block diagram |
| 7 | October | Modify circuit diagram |
| 8 | October | Preparation of review 2 |