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Voice Operated Automatic Elevator System for Visually Blind Peoples

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ABSTRACT: Blind individuals face several daily obstacles. Using elevators in buildings with several floors is one of these difficulties. Blind individuals ought to have access to a more enjoyable means of assisting with elevator use. In order to help blind persons overcome this obstacle, we need to be concerned with the following: Make sure the blind person in front of the elevator door is Verify that the needed floor for the blind is recorded. - Tell the blind when they arrive at the elevator to their required floor or standing area. - Ensure that the elevator door closes when the blind enters or departs. - Tell the blind how many floors are passing. The proposed system will try to satisfy these problems using smart voice sensing technology.

KEYWORDS: Arduino, Voice Sensor, Motor Driver

I. INTRODUCTION

The majority of elevators on the market today are geared at the blind and disabled. The elevators intended for the visually impaired lacked audio confirmation to let them know how they were doing. All the aforementioned problems were resolved by our suggested system. There are two primary components to the suggested system: The first is an elevator unit, while the second is a remote device with blind functionality. Each device has a transceiver module that allows for wireless communication between the two units. In order to manage the movement of the elevator, the remote unit must handle speech commands and voice confirmations and transmit them to the elevator unit via a transceiver.

Elevators have become an indispensable part of our everyday existence throughout time. It is a typical mode of transportation that may be applied to the movement of both goods and people. In today's packed cities, multistory buildings are essential. Enabling voice command control of the elevator is the main objective of this project. Consequently, we have decided to build a fresh idea, which is both entertaining and useful. Our objective has been to develop an elevator system that recognizes voice and uses it to direct the elevator to the right place by receiving destination input. Speech recognition technology makes it possible to operate the elevator using voice commands.

II. METHODOLOGY

The voice recognition system and ESP 8266 are the two primary parts of the proposed system. The voice recognition system is the primary component of the project. The voice recognition system transmits instructions from the user to the control mechanism. All input and output devices can communicate with the ESP 8266 at the same time. DC motors are utilized to move the elevator upward or lower in response to human commands. The voice command that the user specifies as input is received by the ESP 8266 through its input voice module.

After the controller decides whether to move the lift upward or downward, the control mechanism moves the elevator in line with the user's instructions. Based on the user's input, the ESP 8266 decides which lift should be moved to the appropriate floor. In the suggested system, an elevator model's functioning is corroborated using the ESP 8266 Board, and visual information about the accomplished work may be shown on an LCD thanks to a voice recognition module.

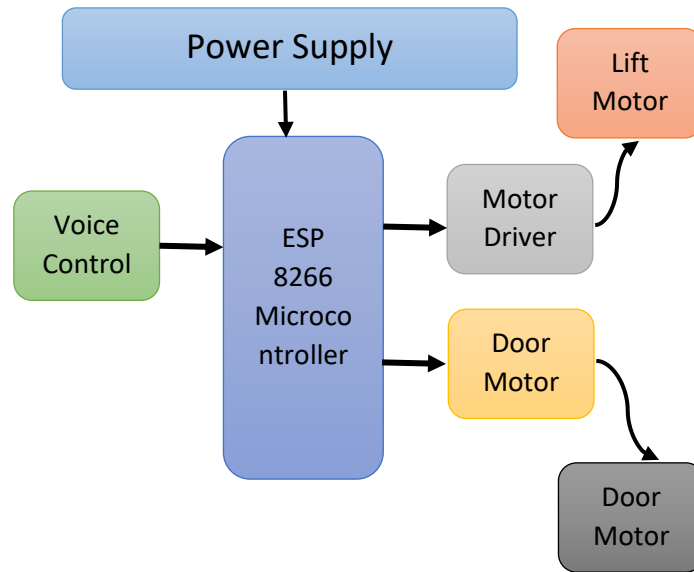


Fig. 1. Block Diagram of Proposed System

The ESP 8266 is used in this project to process the instructions and other parts such an LCD display, motor driver, and speech recognition module. The ESP 8266 turned off the motor and initialized the LCD after turning on the electricity. The speech recognition module recognizes the vocal command that the user provides. Voice recognition software allows voice

III. LITERATURE SURVEY

Various techniques have been implemented to address the difficulty faced by blind and visually impaired individuals when use elevators. The initial system was created in 2014 and was a voice-operated intelligent lift/elevator that recognized spoken phrases and responded accordingly [1]. It functioned as a human-machine communication system. The device, with its high circuit complexity and medium speech recognition efficiency, was beneficial for those with paralysis and disabilities. For those who are visually or physically disabled, the second system debuted a voice-controlled elevator in 2015 called the Smart Lift [2].

He finds it very challenging because the system recorded the necessary blind floor using a Braille keyboard in the elevator cabin. In addition, the system is expensive, has just ten voice commands, and has poor speech recognition accuracy. The voice-activated elevator, which was deployed in 2016, is the third system [3].

The system is inexpensive, does not include voice confirmation, and has a very high speech recognition efficiency. The fourth system, which debuted in 2017 [4], is a voice recognition-based attentive elevator. The technology employed voice instructions to operate an elevator for the benefit of the crippled, the handicapped, and the dwarf population, but not for the blind.

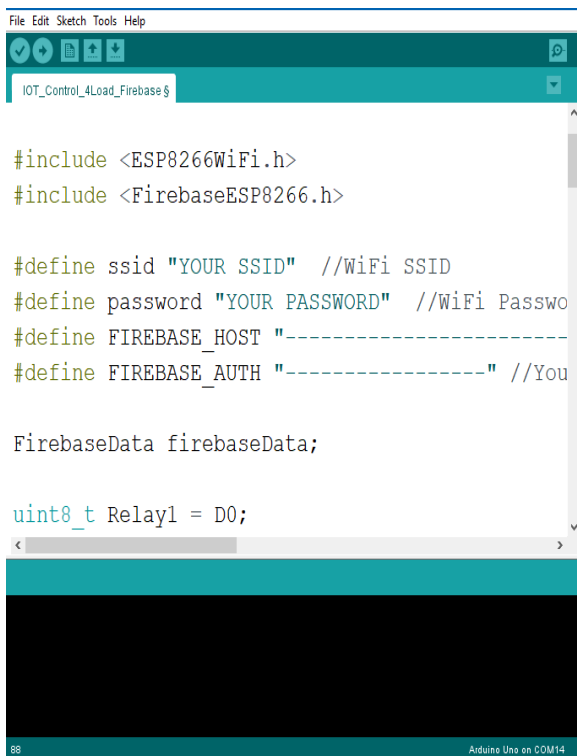
Though it has been effectively considered since the 1950s, voice recognition capabilities have recently improved due to advancements in Personal Computer (PC) and telecommunications technologies [1]. Discourse recognition has addressed problems, enhanced benefits, and purchased a more noticeable change in the existing state of affairs, according to a useful viewpoint [1].

Push-button functionality can be effectively replaced with voice control [2]. Speech recognition is a very difficult problem. It involves a lot of calculations that need a lot of processing power [2]. A large academic group's research was motivated by the combination of using human-computer interfaces, robotics, telephony, and programmed speech recognition systems several decades ago [3]. Applications for automatic voice recognition include data recovery, contact center conversation systems, gaming control, and medical transcription [4].

The majority of voice-activated systems employ this automated speech recognition technique. In 2002, a voice-activated wheelchair for those with physical disabilities was suggested [7]. This paper presented a study that examined the use of voice control by able-bodied and impaired people to operate force wheelchairs with and without route assistance, where the wheelchair's sensors helped the navigators detect and avoid obstacles in its path [7]. In 2003, the voice recognition-based intelligent lift control paradigm was introduced [8]. Speech recognition and a sensor panel were used to operate this suggested elevator system [8]. It was necessary to modify the well-known DTW (Dynamic Time Warping) method [8]. Eight Lithuanian words made up the model's collection of different voice instructions.

IV. RESULT & PROGRAMS

Software implementation includes the interfacing of esp8266 with the motors and standard voice sensor module.



```

IOT_Control_4Load_Firebase

#include <ESP8266WiFi.h>
#include <FirebaseESP8266.h>

#define ssid "YOUR SSID" //WiFi SSID
#define password "YOUR PASSWORD" //WiFi Passwo
#define FIREBASE_HOST "-----"
#define FIREBASE_AUTH "-----" //You

FirebaseData firebaseData;

uint8_t Relay1 = D0;
    
```

Fig. 2. Software Implementation

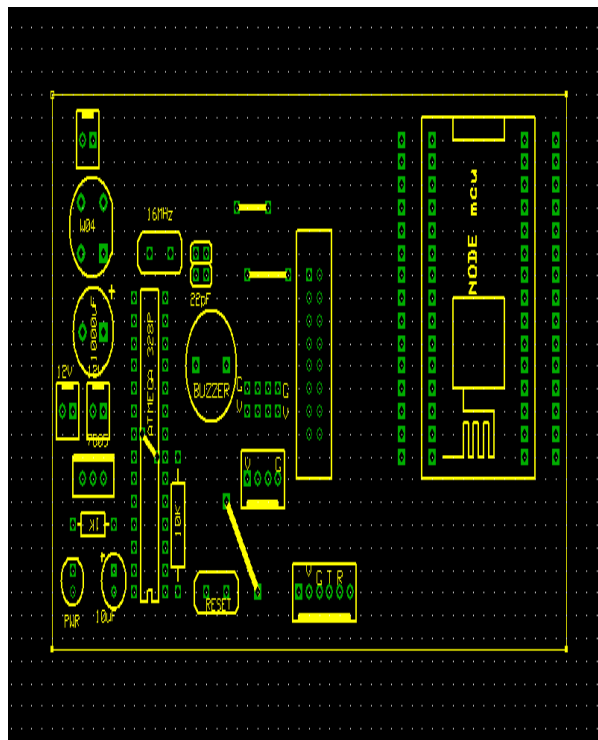


Fig. 3. PCB Designing

This PCB design in made using eagle software and panel is developed for elevator circuit. With the panel the entire operation is controlled. The program for the given operation is as shown bellow,

```

#include <ESP8266WiFi.h>
#include <FirebaseESP8266.h>
#define ssid "YOUR SSID"
#define password "YOUR PASSWORD"
#define FIREBASE_HOST "-----"
#define FIREBASE_AUTH "-----"
FirebaseData firebaseData;
uint8_t Relay1 = D0;
uint8_t Relay2 = D1;
uint8_t Relay3 = D2;
uint8_t Relay4 = D3;
uint8_t LED = D4;
int load1, load2, load3, load4, Power;
void setup() { Serial.begin(9600);
pinMode(Relay1,OUTPUT); digitalWrite(Relay1, HIGH);
pinMode(Relay2,OUTPUT); digitalWrite(Relay2, HIGH);
    
```



```

pinMode(Relay3,OUTPUT); digitalWrite(Relay3, HIGH);
pinMode(Relay4,OUTPUT); digitalWrite(Relay4, HIGH);
pinMode(LED, OUTPUT);
WiFi.begin (ssid, password);
while(WiFi.status() != WL_CONNECTED) { delay(500); Serial.print("."); }
Serial.println("");
Serial.println ("WiFi Connected!");
Firebase.begin(FIREBASE_HOST,FIREBASE_AUTH);
digitalWrite(LED,HIGH);
delay(100); } void loop() {
if(Firebase.get(firebaseData,"/P1")) {
if (firebaseData.dataType() == "string") {
Power = firebaseData.stringData().toInt(); }
} if(Firebase.get(firebaseData,"/L1")) {
if (firebaseData.dataType() == "string") {
load1 = firebaseData.stringData().toInt();
} } if(Firebase.get(firebaseData,"/L2")) {
if (firebaseData.dataType() == "string") {
load2 = firebaseData.stringData().toInt();
} } if(Firebase.get(firebaseData,"/L3")) {
if (firebaseData.dataType() == "string") {
load3 = firebaseData.stringData().toInt();
} } if(Firebase.get(firebaseData,"/L4")) {
if (firebaseData.dataType() == "string") {
load4 = firebaseData.stringData().toInt();
} } if(Power==0){
digitalWrite(Relay1, load1);
digitalWrite(Relay2, load2);
digitalWrite(Relay3, load3);
digitalWrite(Relay4, load4);
} else{
digitalWrite(Relay1, HIGH);
digitalWrite(Relay2, HIGH);
digitalWrite(Relay3, HIGH);
digitalWrite(Relay4, HIGH); } }

```

A prototype for proposed system is developed using arduino and the photographs of the system is as follows which includes the structure of the lift entire elevator system is mounted on the metal frame which displayed on Fig. 4. Actual photograph of the implementation is shown in Fig. 5 where the actual circuit displayed in Fig. 6.



Fig. 4. Structure for lift mechanism



Fig. 5. Actual Working Model of Lift



Fig. 6. Circuitry used in the lift

V. CONCLUSION

The voice-activated elevator is quite helpful and operates well. This project attempts to employ speech recognition technology to provide commands, which might be used to alter the traditional elevator and improve its functionality and use for those with physical disabilities. The elevator prototype is a valuable tool for doing research in the areas of speech signal acknowledgment, computerization, and control advancements. It may also be used to identify possible uses for these technologies. An example of a human-machine communication system is this project.

REFERENCES

1. J. F. A. O. L. Å. R. Oskar Edwertz, Smartlift: Voice-Activated Elevator, Gothenburg: Chalmers University of Technology, 2015.
2. S. M. J. B. VrajeshPrajapati, "Voice Initialized Elevator," International Journal of Electrical and Electronics Research, vol. 4, no. 1, pp. 154-157, 2016.
3. IJIRCCE, "Automated Elevator-An Attentive Elevator to Elevate using Speech Recognition," IJIRCCE, pp. 9486-9490, 2017.
4. Atmel, "ATmega328/P data sheet," 2016. [Online]. Available: http://ww1.microchip.com/downloads/en/DeviceDoc/Atmel-42735-8-bit-AVR-Microcontroller-ATmega328-328P_Summary.pdf. [Accessed 2018].
5. N. matic, "mikroelektronika," 2014. [Online]. Available: <https://download.mikroe.com/documents/add-on-boards/click/speakup/speakup-click-manual-v100-a.pdf>. [Accessed 2017].
6. Parallax Inc, "Emic 2 Text-to-Speech Module (#30016)," 2015. [Online]. Available: <https://www.parallax.com/sites/default/files/downloads/30016-Emic-2-Text-To-Speech-Dokumentation-v1.2.pdf>. [Accessed 2017].
7. TRANSCIEVER,"2016.[Online].Available: <https://www.silabs.com/documents/public/data-sheets/Si4464-63-61-60.pdf>. [Accessed 2016].
8. M. P. Jones, "HC-SR04 User Guide," 2015. [Online]. Available: https://www.mpja.com/download/hc-sr04_ultrasonic_module_user_guidejohn.pdf. [Accessed 2017].



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