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A Report on Voice Control Lift using Arduino

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Abstract

Nowadays, usage of the lift becomes more in day to day life. The existing lift cannot be used by blind people. The voice controlled lift comes with the technologies of controlling the lift by using the voice command. This system is added with IR sensor to count the floors. In the existing methodologies like RF modules, Ultra sonic sensors, HM2007, USB cables are used for speech recognition and a microcontroller like ATMEGA328P and Arduino Uno are used for the movement of the drivers. The projects developed uses applications like Blynk for interfacing.

Keywords: *Lift Automation, Voice Recognition, Wireless Technology, Arduino sand Bluetooth.*

1. Introduction

The usage of lift has been increased in different applications, for example in carrying goods and carrying people in buildings like offices, shopping malls. Some existing inventions are unable to move and do not have the required efforts to handle. The lift can be designed with new technology with automatic speech recognition. This technique is used by which an Arduino takes a speech/text signal with the help of the Bluetooth model and Converts it into electrified signals. Those signals are used by different types of motors which give the appropriate command to the lift and help the lift to handle accordingly. The predefined signals will make the lift move either upwards or downwards. Also, an LED display is attached for visual information of operations being performed.

2. Literature Review

Sangole .K. Mosam et al[1] In this paper, the authors used microcontroller AT89S52 for elevator control. This system uses voice commands by the users for the movement of the real-time elevator. The microcontroller used in this system can also be used for various security and emergency applications.

P.Cernys et al[2] In this project, the author provides the analysis of the lift model controlled by voice and sensor model. The proposed system results output with integration of voice recognition and logical lift program. The authors used Dynamic Time Warping algorithms for the modification of the existing models. Authors incorporated eight-voice commands which are used to control the movement of the lift.

Aboli Gatane1 et al[3] Right now utilized a discourse acknowledgment framework utilizing Microcontroller with an engine alongside a controller power supply. The discourse acknowledgment framework is for the most part a piece of this venture. The discourse acknowledgment framework gives the correspondence component between the client and accordingly the microcontroller-based control system of the lift.

Chintan Patel et al[4] Right now, Lift is worked on voice robotization, which could assist handicap with peopling without the help of the other individual. The usage of microcontrollers is to control various gadgets and coordinate every module, in particular voice module, engine module and LCD. LCD is to display this status of the lift. The output resulted has a highest accuracy than expected. This is done using speech recognition.

Yongtae et al[5] In this paper, the authors developed a robotic arm that can lift the weight up to 10kgs. The designed robotic arm is called Exosuit which can be controlled by voice commands. The maximum weight to lift is observed based on its performance measures. The muscular effort is represented in percentages for lifting the load to maximum weight.

Farouk Salah et al[6] Right now, have proposed a programmed lift framework. This framework is utilized to follow the visually impaired individuals' status by utilizing voice compliance. This framework comprises of

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two sections. An initial segment is a remote unit with visually impaired and a subsequent part is a lift unit. The remote unit is answerable for dealing with the voice arranges and sends the data to the lift unit to control the lift development.

Mohamed Saod L et al[7] In this paper With the assistance of the proposed system,
the visually impaired individuals can utilize the lift effectively and stop any cumbersome circumstance in front of the conventional individuals. The proposed framework comprises of two units The remote unit uses a voice recognition module to eliminate the utilization of keypad. The ultrasonic sensors mounted ahead of the elevator are used for guiding the blind for the movement of the elevator door. The proposed system is economize and friendly.

Vineeth Teeda et al[8] In this paper, authors designed a voice-controlled robot which can be used as personal assistant. The input to the robot is given through microphone. The proposed prototype can also give an audio output. This robot is also used to perform actions like wakeup and shutdown processes, place an object from one place to other. The speech input is given to the robot using USB cable. This system is designed using microcontroller technology.

Khyati Meena et al [9] In this paper, authors designed an automatic wheelchair-using voice recognition. The designed system can be used by physically disabled people for their impossible movements. The output of this prototype is achieved by voice command and motor movements. The design uses an Arduino, HM2007 Voice recognition module and driver Motors. The voice recognition module is used to identify the command from the user. Microcontroller controls the movement of the chair. The wheelchair can also be used as joystick for physically disabled people.

Mukesh Kumar et al[10] In this paper, authors have designed a low value voice acknowledgment based locally established mechanization framework for the truly disabled individuals. The proposed framework utilizes a voice acknowledgment module, Arduino Uno and a transfer circuit. The voice commands are pre loaded in the voice recognition module. This system is mainly developed for handicapped people without any other people help.

Devyani Randive1 et al[11] In this paper, authors developed a voice activation system. This system contains a Bluetooth module, LCD display, RF transmitter, Arduino UNO, Motor driver unit. The input voice command is given from the bluetooth module and based on the command the movement of the motor is done.

N. U. Alka et al[12] In this paper, authors designed a pick and place robotic arm using an android application. The control of this robotic arm is done using voice commands. The authors developed this robotic arm with the usage of ATMEGA328P controller. To recognize the voice command a Bluetooth module is used. The prototype designed can lift the weight of about 250gms for a height of 12m.

B. Kanchanet al[13]In this paper a Voice functioned elevator is designed extra indicators, authors provided knowledge regarding crisis sign to the security while lift gets bomb on account of any issue like the cut of intensity supply. Right now, worked lift recognizes the input from the user. The designed elevator is mainly useful for physically people. The designed robot reduces the cost for the maintenance.

Shimi S.L et al [14] In this paper authors proposed a system that consists of a voice recognition module, Arduino Uno microcontroller and a relay circuit. The voice recognition module must be preloaded with the existing commands. After the successful recognition of voice the microcontroller drives the motors accordingly.

Vijay Khare et al[15] In this paper, the authors described the successful implementation of a wheelchair controlled by a joystick or through voice recognition. The voice recognition system worked for many of the commands. The proposed system need to recognize the exact vocal commands rather than the misspelling the words.

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S.no	Title and Author Name	Methodology	Components	Advantages
1.	**Voice Operated Elevator with Emergency Indicator.**Sangole .K. Mosam.	This undertaking utilizes a DC engine for contacting the lift/lift upheld the voice/discourse tips given by the client and voice acknowledgment chip is utilized for acknowledgment of the voice orders which can given by the client .Microcontroller is modified, with the assistance of installed C programming.	Microcontroller, Voice Module, RF Module.	This system is very useful For the people who are disabled to reach safely.
2.	**THE MODEL OF A VOICE-CONTROLLED LIFT** P.Cernys, V.Kubilius.	The model is made by utilizing normal fueled controller, it's voice acknowledgment, programmable terminal and intelligent lift program, which associate every one of them	Controller, driver, frequency converter, voice command, speech recognition.	Enhancement of the enclosure halting and speed during a feeling of productivity and force utilization.
3.	**Using Speech Recognition Create Smart Elevator Controlling** Aboli Gatane1, Arati Dalvi2.	They actualize discourse recongnization framework and that we equipment like Micro controller, stepper engine and controller power supply.	Controller, driver, voice command, speech recognition	1 This System is worked on the Voice of any individual which will help the debilitation individual to Travel structure one spot to another.
4.	**Automated Elevator-An Attentive Elevator to Elevate using Speech Recognition ,** Chintan Patel1, Anshul Maathur2	The method that the utilization of microcontroller is to regulate different devices and integrate each and each module, namely – voice module, motor module & LCD. LCD is to display this status of the lift.	Arduino Uno; Smart Elevator; Voice Controlled; Embedded system.	This task attempts to illuminate voice acknowledgment framework which can be utilized to alter the regular lift and make it progressively productive and usable for truly tested individuals.
5.	**Intelligent Control of the Lift Model ,** P.Cernys, V.Kubilius.	The paper provides the analysis of the lift model controlled by voice and sensor instrument panel.	controller, driver, frequency converter, voice knowledge, speech recognition	This system is very useful For the people who are disabled to reach safely.

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6.	**Elevator for blind people using voice recognition**, Farouk Salah, Mohamed Saod	The utilization of discourse acknowledgment and content to discourse frameworks make utilizing the lift would be extremely simple and charming. There will be a remote unit with the visually impaired client.	Microcontroller, Voice recognition, Ultrasonic sensor, communication module, Embedded System	This System is worked on the Voice of any individual which will help the impairment individual to Travel structure one spot to another with no assistance of other.
7.	**Elevator for blind people using voice recognition,** Mohamed Saod	The proposed framework has two primary units: a remote unit with the visually impaired and a lift unit to manage the development of the lift lodge	Microcontroller, Voice recognition, Ultrasonic sensor, communication module	The visually impaired individuals can utilize the lift effectively and stop any clumsy circumstance in front of the customary individuals
8.	**Robot Voice A Voice Controlled Robot using Arduino**, Vineeth Teeda, K.Sujatha, Rakesh Mutukuru	The technique utilized is the human voice orders are taken by the robot by its own inbuilt mouthpiece	Robotic assistants, operations, wakeup/shutdown, USB cable, personal assistant and industries, systems, Performance.	Potential improvements additionally are bantered towards potential applications in home, clinics, vehicle frameworks and ventures.
9.	**Voice Controlled Wheelchair,** Khyati Meena,Shubham Gupta	This paper presents an automatic wheel chair using voice recognition. A voice controlled wheelchair makes it easy for physically disabled one that cannot control their movements of hands	Voice recognition, wheelchair, HM2007 module, DC motor, Microcontroller Arduino.	The wheelchair also has provision for joystick for physically disabled people that can move their hands. .
10.	**Voice Recognition Based Home Automation System for Paralyzed People,**Mukesh Kumar, Shimi S.L	The proposed framework comprises of a voice acknowledgment module, Arduino Uno microcontroller, hand-off circuit to and a flexible bed	Home Automation System, Physically Challenged People, Voice Recognition Module V3, Arduino Uno, Adjustable Bed Motorized Jack.	Ease voice acknowledgment based home computerization framework for the truly tested individuals. influenced by quadriplegia or paraplegia (who can't move their appendages yet can talk and tune in) to control the changed home apparatuses and may incite the bed rise just by the voice orders

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				steady with their need and extravagance
11.	**Arduino Based Voice Controlled System,** Devyani Randive1, Parag Mane2, Priti Khapre3, Aniket Dange	The voice order is given by utilizing portable to the Bluetooth which has certain highlights like controlling the speed of the engine and so on.	Home Automation System, Physically Challenged People, Voice Recognition Module V3, Arduino Uno, Adjustable Bed Motorized Jack.	1. This system is a home automation system.
12.	**A Voice Controlled Pick and Place Robotic Arm Vehicle Using Android Application,** N. U. Alka, A. A. Salihu, Y. S. Haruna and I. A. Dalyop .	This paper is designed and developed a pick and place robotic arm vehicle using an android application to regulate the robot through voice commands	Robotics, android, accuracy, intelligent, controller and precision.	It can be applied in areas such as seaports, manufacturing industries and also in military. .
13.	**Voice Operated Elevator with Emergency Indicator**, Sangole .K.Mosam.	Right now Voice worked lift with crisis pointer, we've given the information which gives a crisis sign to the wellbeing while lift gets bomb on account of any issue like cut of intensity.	Microcontroller, Voice Module, RF Module	This voice worked elevator mainly useful for handicap person (blind). elevator works on voice so maintenance cost for keypad which is employed previously also reduced
14.	**Voice Recognition Based Home Automation System for Paralyzed People,** Mukesh Kumar, Shimi S.	The voice acknowledgment based home mechanization framework [3] utilizes Lab VIEW to perform discourse acknowledgment and Zig-honey bee module with a controller is utilized to control the gadgets remotely	Home Automation System, Physically Challenged People, Voice Recognition Module V3, Arduino Uno	It is very bit of leeway for that the Buzzer permits impaired individual to advise the gatekeepers at whatever point the individual needs assistance.
15.	**Voice Controlled Wheelchair,**Vijay Khare	This paper described the successful implementation of a wheelchair controlled by a joystick	E-ticketing, NFC, Mobile APP, Cheat proof, public Bus, GPS, Sensors.	The powered wheel chair depends on motors for locomotion and Voice Recognition for command which is helpful for a physical disabled people.

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3. Conclusion

The voice controlled elevator can be done using many existing technologies. The usage of microcontrollers in this module drives the motor movement in the different stages of the lift. The Bluetooth module can be used for getting the input voice commands from the user. In compassion for these both circuits a relay circuit is developed for the stabilization of the whole circuit.
In conclusion, from the discussed methodologies an automated voice controlled elevator can be developed with the usage of IR sensors along with the bluetooth module for the movement of the driver motors with the help of microcontroller. The usage of IR sensors is used to count the number of floors the elevator is passed.

References

[1] sooxma technologies, "Voice operated intelligent Lift/Elevator, "my college projects, 2014.

[2] Oskar Edwertz, Gothenburg: Chalmers University of Technology, "Smartlift: Voice-Activated Elevator", 2015.

[3] Vrajesh Prajapati, International Journal of Electrical and Electronics Research, vol. 4, no. 1, pp. 154-157, 2016."Voice Initialized Elevator".

[4] IJIRCCE, "Automated Elevator-An Attentive Elevator to Elevate using Speech Recognition," pp. 9486-9490, 2017.

[5] Atmell, "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].

[6] n. matic, "mikroelektronika," 2014. [Online]. Available: https://download.mikroe.com/documents/add-on- boards/click/speak up/speakup-click-manual-v100-a.pdf. [Accessed 2017].

[7] 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-Documentation-v1.2.pdf.[Accessed 2017].

[8] TRANSRECIVER,"2016.[Online]. Available: Ehttps://www.silabs.com/documents/public/data-sheets/Si4464-63- 61-60.pdf. [Accessed 2016].

[9] M. P. Jones, "HC-SR04 User Guide," 2015. [Online]. Available: https://www.mpja.com/download/hc-sr04_ultrasonic_module_user_guidejohn.pdf. [Accessed 2017.

[10] P.Cernys, V.Kubilius, V.Macerauskas, K.Ratkevicius, Intelligent Control of the ElevatorModel, IEEE lntemetional Workshop on Intelligent Data Acquisition and Advanced Computing System: Technology and Applications810September2W3, Lviv,ulvdlne.

[11] Li Deng, Fellow, IEEE, and Xiao Li, Member, IEEE ,Machine Learning Paradigms for Speech Recognition:An Overview IEEE Transaction on audio ,speech,and language processing , VOL. 21, NO. 5, MAY 2013.

[12] Richard V.Cox,Fellow IEEE, Candace A. Kamm, Senior member, IEEE,Lawrence R. Rabiner, Fellow, IEEE,JuergenSchroeter,Senior member, IEEE ,and Jay G. Wiplon, Fellow, IEEE,Speech and language processing for next –millennium communication services proceeding of the IEEE, VOL. 88, NO. 8, AUGUST 2000.

[13] Roger K. Moore, Member, IEEE, PRESENCE: A HumanInspired Architecture for Speech-Based Human-Machine Interaction IEEE Transactions of computer, VOL. 56, NO. 9, SEPTEMBER 2007.

[14] Punit Kumar Sharma, Dr. B.R. Lakshmikantha and K. ShanmukhaSundar, Real Time Control of DC Motor Drive usingSpeech Recognition 978-1-4244-7882-8/11/$26.00 ©2011 IEEE.

[15] D. Kornack and P. Rakic, "Cell Proliferation without Neurogenesis in Adult Primate Neocortex," Science, vol. 294, Dec. 2001, pp. 2127-2130, doi:10.1126/science.1065467. [7]M. Young, The Technical Writer's Handbook. Mill Valley, CA: University Science, 1989.