AUTOMATIC DANGER DETECTION AND VOICE CONTROLLED ROBOT FOR PHYSICALLY CHALLENGED PEOPLE

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ABSTRACT

In recent years, there has been an excessive need for sophisticated equipment. The field of robotics is growing every day and not all devices can be taken care of by humans. Voice-controlled robots will be a huge boon for physically challenged people who cannot use their limbs properly. They often depend on other's help to move from one place to another. Providing human labour is the biggest problem all over the world. With the help of this device, they can move in a wheelchair on their own by just giving voice commands through Bluetooth. If any obstacle is detected while moving it informs the user and stops. It also detects if any fire and gas occur due to emergency, detects and informs the prescribed number to get the required help. A prototype is developed by incorporating all the features in a single module.

I. INTRODUCTION

Our aim is to make a robot vehicle which can be controlled by the voice command of a person. Normally these types of systems are called as Speech Controlled Automation System (SCAS). Our design is a prototype of the above mentioned system. The idea is to create a sort of robot which going to be driven by voice commands. The robot is remotely controlled by a mobile phone; there are many articles that show the communication between a robot and smart phone. Smart phone is a very good interface for remotely automating the robot. It contains many features that can be helpful. In this design, an android application with a micro controller is used for the required task. The connection between the application and the robot is facilitate with Bluetooth technology. The commands issued will be relayed over through the channel and will be received by the module. The objective of voice controlled robotic vehicle (VCRV) is to listen and act on the commands of the user. Here the system requires accent training, post which the device will start understanding the commands issued; and the commands have been added by codes. The main motive to build a VCRV is to analyze the human voice and act according to the programmed commands. The most basic commands are backward, forward, right, left and also stop the robot. The vehicle is to be controlled wirelessly with the use of android smartphone; our intention is to make a robotic vehicle with use of advanced smartphone technology in a very simple and economic way. In current scenario vehicles are manually controlled and all are done by the person who is driving the vehicle. Every action like start and stop, applying brake, gear transmission, acceleration requires human effort. But nowadays new technologies have been developed that can be integrated with the conventional vehicles to new vehicle form. In the technology era, the space between the physical and the digital world is brought closer by the introduction of gesture concept. For all dangerous tasks, we prefer technology rather than people. Even though these robots are being controlled manually in the early stages, these can now be controlled via voice and gestures. This technology of gesture and voice recognition can be defined by the interaction between the computer and the body language of human beings. This constructs the communication link between technology and mankind. The target of this work is to upgrade the complete security to the robot and to simplify the controlling mechanism [1]. The voice directions are handled, utilizing an

advanced mobile phone. The individual human right hand robot is created on a smaller scale controller based stage and can know about its present area. The viability of the voice control conveyed over a separation is estimated through numerous examinations. Execution assessment is completed with consequences of the underlying investigations. The developments to be forecasted are possibly referring to the applications in ventures, medical clinics and how, including the environmental laboratories [2].Providing human labor is the biggest problem all over the world. With the help of this device, they can move in a wheelchair on their own by just giving voice commands through Bluetooth. If any obstacle is detected while moving it informs the user and stops. It also detects if any fire and smoke occur due to emergency, detects and informs the prescribed number to get the required help. A prototype is developed by incorporating all the features in a single module [3]. The hardware part consists of the mechanical design of the robot, the adequate choice of the motors, and the electronic devices to properly drive the robot joints. The software part contains the high level algorithms that convert the desired word to a sequence of target points, and the control algorithms that ultimately make the robot move according to the specifications. Here the writing mechanism is made by speech recognition technique. This speech recognition can be provided through either by using microphone or by using android applications [4]. Personal robotic assistants help to reduce the manual efforts being put by humans in their dayto-day tasks. The purpose is to implement a voice-controlled system as an Intelligent Personal Assistant (IPA) that can perform numerous tasks or services for an individual. This golem is specially designed for this cluster of individuals as its main purpose is to supply help to associate senior or disabled person [5]. This paper describes easy and simple hardware for implementation of Face, Object and speech detection and recognition. Using an online cloud server. The

speech signal commands converted to text form are communicated to the robot over a Bluetooth network.
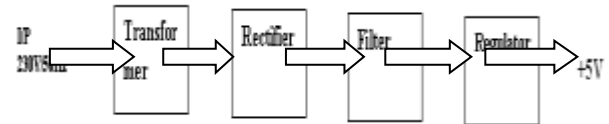
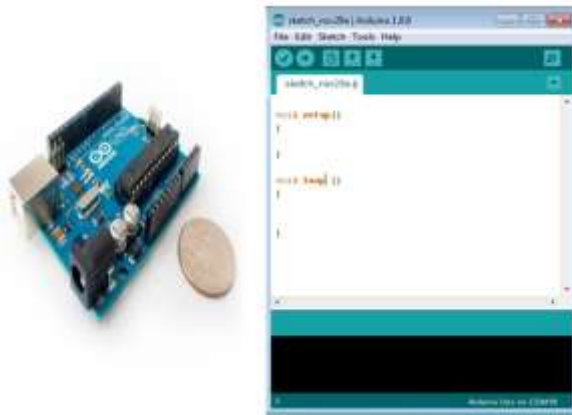## II. POWER SUPPLY

Figure Power Supply

III. HARDWARE
3.1 Arduino

Arduino is a prototype platform (open-source) based on an easy-to-use hardware and software. It consists of a circuit board, which can be programed (referred to as a microcontroller) and a ready-made software called Arduino IDE (Integrated Development Environment), which is used to write and upload the computer code to the physical board.

The key features are −

- Arduino boards are able to read analog or digital input signals from different sensors and turn it into an output such as activating a motor, turning LED on/off, connect to the cloud and many other actions.
- You can control your board functions by sending a set of instructions to the microcontroller on the board via Arduino IDE (referred to as uploading software).
- Unlike most previous programmable circuit boards, Arduino does not need an extra piece of hardware (called a programmer) in order to load a new code onto the board. You can simply use a USB cable.
- Additionally, the Arduino IDE uses a simplified version of C++, making it easier to learn to program.
- Finally, Arduino provides a standard form factor that breaks the functions of the micro-controller into a more accessible package.
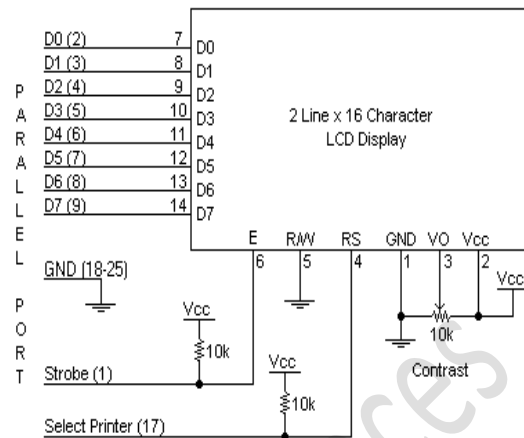
3.3 Schematic Diagram

Board Description:

In this chapter, we will learn about the different components on the Arduino board. We will study the Arduino UNO board because it is the most popular board in the Arduino board family. In addition, it is the best board to get started with electronics and coding. Some boards look a bit different from the one given below, but most Arduinos have majority of these components in common.

A program must interact with the outside world using input and output devices that communicate directly with a human being. One of the most common devices attached to an controller is an LCD display. Some of the most common LCDs connected to the contollers are 16X1, 16x2 and 20x2 displays. This means 16 characters per line by 1 line 16 characters per line by 2 lines and 20 characters per line by 2 lines, respectively.

3.5 L293D

L293D is basically a high current dual motor driver/controller Integrated Circuit (IC). It is able to drive load having current up to 1A at the voltage ranging from 4.5V to 36V. Motor driver usually act as current amplifier because they receive a low current signal as an input and provides high current signal at the output.

Motors usually operates on this higher current. L-293D has to builtin H-Bridge driver circuits and is able to control two DC motors at a time in both clockwise and counter clockwise direction. It has two enable pins and they should be kept high in order to control the motor. By changing the polarity of applied signal motor can be rotated in either clockwise or counter clockwise direction. If L 293D enable pin is high, its corresponding driver will provide the desired out. If the enable pin is low, there will be no output. L-293D has different features including internal ESD protection, large voltage supply range, large output current per channel, high noise immunity input etc. L 293D plays a vital role in electronics era and has several different applications e.g relay drivers, DC motor drivers, stepping motor drivers etc. The further detail about L 293D motor driver/controller will be given later in this tutorial.

L293D Motor Driver

3.6 DC Motors

The brushed DC motor is one of the earliest motor designs. Today, it is the motor of choice in the majority of variable speed and torque control applications.

Advantages

- Easy to understand design
- Easy to control speed
- Easy to control torque
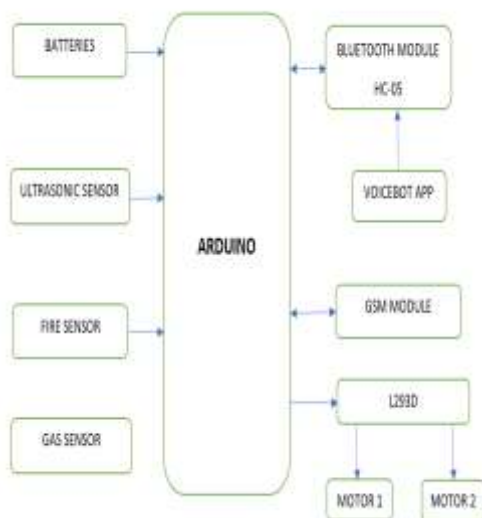- Simple, cheap drive design

Easy to understand design

The design of the brushed DC motor is quite simple. A permanent magnetic field is created in the stator by either of two means:
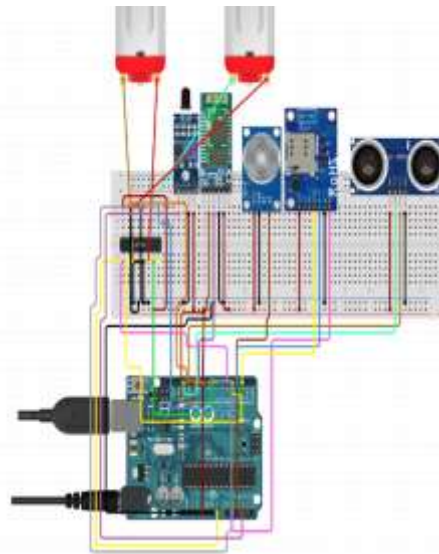
- Permanent magnets
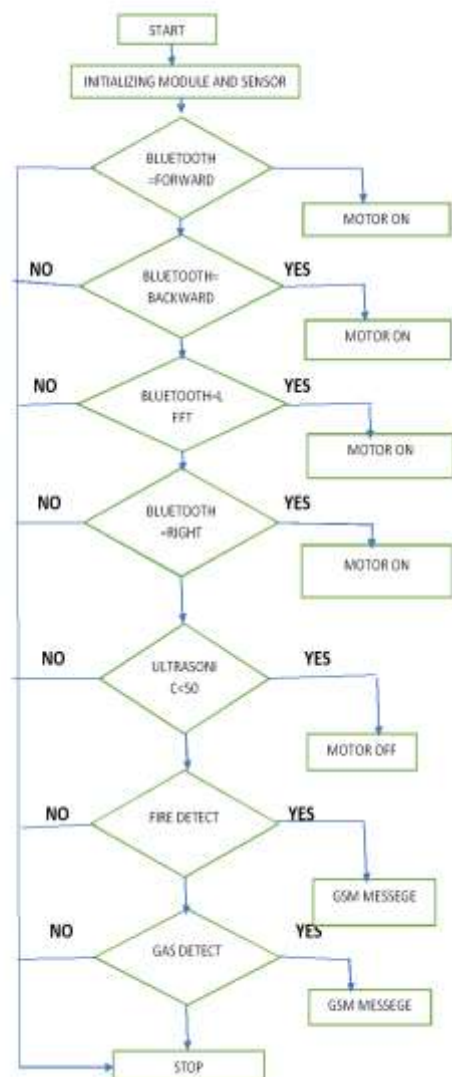- Electro-magnetic windings

IV. Result:

4.1 BLOCK DIAGRAM

4.2 SCHEMATIC DIAGRAM

4.3 FLOWCHART

Working

Bluetooth is equal to forward then motor on ,Bluetooth is equal to backward then motor on ,Bluetooth =left then motor on ,Bluetooth is equal to right then motor on ,ultrasonic is smaller than 50 then motor off ,fire detect then gate gsm message ,gas detection then gate gsm message.

V. CONCLUSION

The "Voice Controlled Robotic Vehicle" project has many applications and in present and future. The project can be made more effective by adding features to it in the future. The project has applications in wide variety of areas such as military, home security, rescue missions, industries, medical assistance etc. We were successful in implementing a simple model of voice controlled robotic vehicle using the available resources. The implementation of this project is easy, so this robot is beneficial for human life. The Voice Control Robot is useful for disable people and monitoring purpose. It works on simple voice command, so it is easy to use. It is useful for those areas where humans can't reach. The size of this robot is small, so we can use this robot for spying purpose. It can be used for surveillance. We can implement web cam in this robot for security purpose. The voice recognition software has an accuracy and for identify a voice command and it is also highly sensitive to the surrounding noise.

VI. References

[1] M. Meghana et al,2020, Hand gesture recognition and voice controlled robot, Materials Today: Proceedings, 2214-7853.

[2] M.Bhanu chandu, Kirupa Ganapathy,2020, Voice Controlled Human Assistence Robot, International Conference on Advanced Computing & Communication Systems (ICACCS), 978-1- 7281-5197-7/20.

[3] P. Mahesh Reddy, Suram Pavan Kalyan Reddy, G R Sai Karthik, Priya B.K,2020, Intuitive Voice Controlled Robot for Obstacle, Smoke and Fire Detection for Physically Challenged People, International Conference on Trends in Electronics and Informatics (ICOEI), ISBN: 978-1-7281- 5518-0.

[4] Ms. M. Ramjan Begum, Mr. S. Chandramouli, Mr. T. Gowtham,2020, Design And Development Of Dual Axis Control Robot For Writing Robot Through Speech Recognition, International Research Journal of Modernization in Engineering Technology and Science, e- ISSN: 2582-5208.

[5] Linda John et al,2020, Voice Control Human Assistance Robot, National Conference on Technical Advancements for Social Upliftment, Proceedings of the 2 nd VNC; VNC-2020;

[6] Anurag Mishra, Pooja Makula, Akshay Kumar, Krit karan, and V.K. Mittal, 2015, A voicecontrolled personal assistant robot, International Conference on Industrial Instrumentation and Control (ICIC).