

DESIGN AND IMPLEMENTATION OF VOICE CONTROLLED WHEEL CHAIR

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ABSTRACT

The main aim of this project is to design and development of an effective and efficient Voice controlled wheel chair for the people with disabilities.

The aim at incorporating the modern ways of wheel chair dynamics and control and at the same time making it cost effective, so that it is affordable to the common masses. The goal of this research is to develop a wheelchair system which controls its movement by the voice command. A mobile app and Bluetooth technology is used in order to achieve the desired goal. In this research a prototype of an affordable and technologically advanced wheelchair is to be designed and developed. This is to aid the communication of severely disabled people and enhance the maneuvering of the vehicle with the use of their speech.

The proposed prototype will be communicating wirelessly between the controller and the Person it will also replace the traditional joystick by the implementation of Bluetooth speech control. The Android App installed in the mobile phone can sense the sound waves and convert into command, the Bluetooth module receives the command and output is given to the

controller. The controller sends the signals to the motor driver which is placed in the wheelchair. The command received from the Arduino, according to the signals the motor is running which changes the wheel movement.

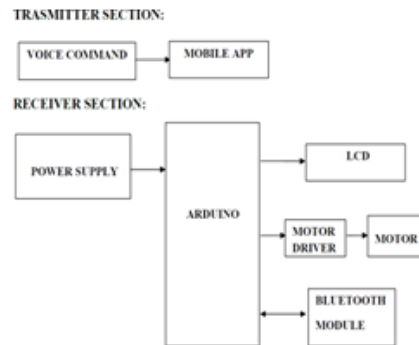
INTRODUCTION

The project aims at controlling a wheelchair by means of human voice. It enables a disabled person to move around independently, using a voice recognition application which is interfaced with motors. The prototype of the wheelchair is built using a micro-controller, chosen for its low cost, in addition to its versatility and performance in mathematical operations and communication with other electronic devices. The system has been designed and implemented in a cost effective way so that if our project is commercialized the needy users in developing countries will benefit from it.

The goal of this smart wheelchair project is to enhance an ordinary powered Wheelchair using sensors to perceive the wheelchair's surroundings, a speech interface to interpret commands. Intelligent wheelchair will play an important role in the future welfare society. The use of intelligent wheelchair encourages the view of the machine as a partner rather than as a tool. The population of people with disabilities has risen markedly during the past century. As the data come from the National Health Interview Survey (NHIS), two distinct trends have contributed to the increasing overall prevalence of disability: a gradual rise, due largely to demographic shifts associated with an aging population, as well as a rapid increase that is due to health impairments and accidents.

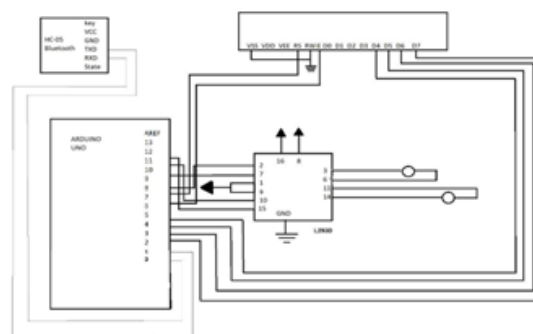
METHODOLOGY AND IMPLEMENTATION

The Block diagram of "A Novel model of Wheelchair for Handicapped using android and Webcam" consists of following blocks. They are:-Arduino Uno, Webcam, Bluetooth Module, Power Supply, LCD Display, Motor Driver, Accelerometer Module and Buzzer.



A Novel model of wheelchair for handicapped/elderly people is an assembly of wheelchair that enables for automated motion which can be controlled by Microcontroller. The microcontroller here used in this system is Arduino Uno. It is responsible for monitoring and generating the inputs and outputs respectively. The voice given to the Android mobile is converted to text by using mobile application and is given to the controller through Bluetooth. The movement is controlled by using Bluetooth module with the help of DC motors. Ultrasonic sensor is also made a part of the design and it helps to detect obstacles lying ahead. Proper LCD display is obtained through programming and LCD interface design. Accelerometer module is interfaced with Arduino so as to detect the tilting of the chair.

IMPLEMENTATION



RESULTS

The following are the results obtained by the implementation of Project using Bluetooth Module, Arduino Uno, DC motor, LCD display etc. The below kit represents the Wheelchair for Handicapped using android.

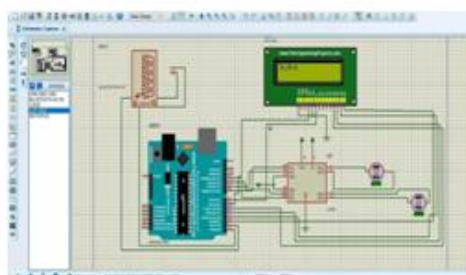


Fig 5.1 : Schematic Diagram

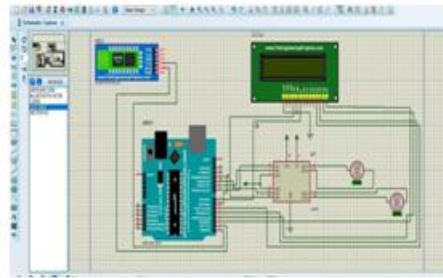


Fig 5.2 : LCD Display when the Power Supply is ON

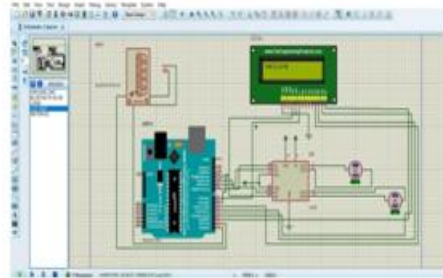


Fig 5.3 : LCD Display when the Input Command is Left

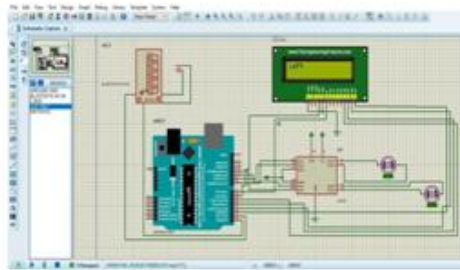


Fig 5.4 : LCD Display when the Input Command is Right

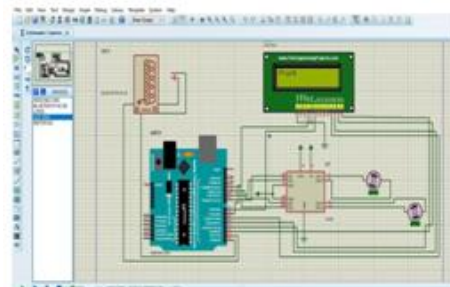


Fig 5.5 : LCD Display when the Input Command is Front

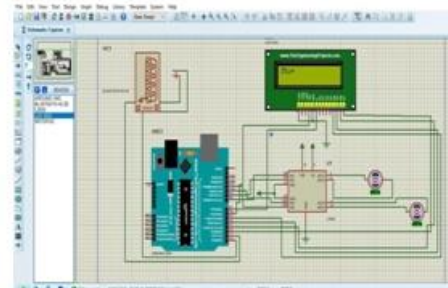


Fig 5.6 : LCD Display when the Input Command is Stop

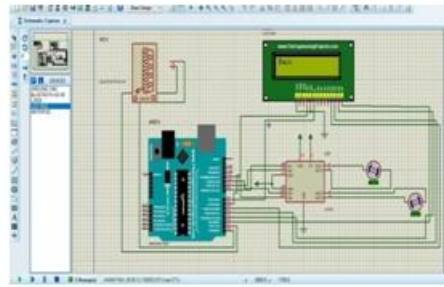


Fig 5.7 : LCD Display when the Input Command is Back

CONCLUSION

“Voice controlled Wheelchair for Handicapped using Android” is a Prototype Model successfully designed for the physically challenged people. As the Bluetooth module is a wireless connectivity for recognizing voice commands from the android. helps to indicate the tilting of the Wheelchair.

A voice-controlled wheelchair makes it easy for physically disabled person who cannot control their movements of hands. The powered wheel chair depends on motors for locomotion and voice recognition for command. The circuit comprises of an Arduino, Voice recognition module and Motors.

Our proposed smart wheel chair provides a safe and reliable system with the presence of line follower and obstacle detector. It provides an easily accessible and a variety of functionalities.

References

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