Voice Controlled Wheel Chair Using Bluetooth

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Abstract- *Normally, the people who are physically disabled due to many reasons such as accidents, severe injuries, paralysis is needed the wheelchairs by which they will be able to move around. But it is difficult for the physically disabled people to operate the wheelchair. For those peoples this voice controlled wheelchair is introduced. Wheelchairs are used when handicapped people needs to travel somewhere. But as we said physically disabled peoples can't operate wheelchair they will need someone's help to operate the wheelchair. This voice controlled wheelchair will help physically disabled peoples to travel anywhere they want without anyone's help by just giving voice commands. This voice controlled wheelchair will also help the aged people who live alone to go anywhere they want without someone's help.*

I. INTRODUCTION

Basically the voice controlled wheelchair is an electronic device which consist of software as well as hardware. The voice control wheelchair uses the voice recognition technology to move around. This voice controlled wheelchair is designed for the people with limited physical disabilities by which they can move more independently and in ease. With the help of voice recognition technology it allows users to move wheelchair around by giving voice commands. This voice controlled wheelchair typically consist of Buck converter, Motor drive, Arduino Uno and HC-05 Bluetooth module. Buck converter convert the high level voltage into suitable voltage required for voice control system. By using mobile app that is sritu hobby commands like "forward", "backward", "left" and "right" are given to the HC-05 Bluetooth module. From Bluetooth module command will pass to the Arduino Uno. As the program is already saved in Physically disabled, voice controlled wheelchair.

Arduino Uno according to that Arduino Uno will give instructions to motor drive and the wheels will move. The Arduino Uno is basically a micro controller in which the program required for the wheelchair is saved. Arduino Unois the main component of the voice controlled wheel chairs system. The power supply is given to the system to operate. Bluetooth module is directly connected to Arduino Uno.

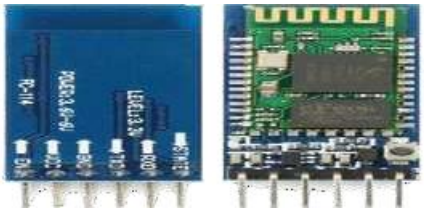
II. HARDWARE DESCRIPTION

Materials we used in designing of hardware are:

ARDUINOUNO:

Arduino Uno R3 is a popular microcontroller board based on the ATmega328P microcontroller. It features 114 digital input/output pins, 6 analog inputs, a 16 MHz Quartz crystal, a USB connection for programming and power, apowerjack, an ICSP header, and a reset button. TheUnoR3iscompatiblewithawiderangeofsensors, actuator, and shields, making it ideal for prototyping and DIY projects.

HC-05BLUETOOTHMODULE



The HC-05 Bluetooth module is a popular choice for wireless communication in electronic projects. It operates on the Bluetooth2.0 protocol and offers a rangeof up to 10 meters.. It uses the 2.45GHz frequency band. The

transfer rate of the data can vary up to 1Mbps.The HC-05 module can be operated within 4-6V of power supply. The HC-05 is versatile and suitable for a wide range of applications such as robotics, home automation, and IOT devices.

L-298NMOTORDRIVE

The L-298N Motor is high power motor driver which controls both speed and direction .This systems control voltageusing square wave .The wider the pulses the motor will rotate fast .It is also known as dual H bridge motor driver.it has voltage between 5V to 35V and with peak current up to 2A.

III. SOFTWARE DESCRIPTION

The supporting software we used for our projects are:

ARDUINOUNOIDE

The ArduinoIDE is an open source software, which is used to write and upload code to the Arduino boards.The IDE application is suitable for different operating systems such as Windows, Mac OS X, and Linux. It supports the programming languages C and C++.

APPWEUSED– SRITUHOBBYAPP

The App Sritu Hobby is installed on smartphone and all the required connections are made properly according to the block diagram and schematics. Using This App we give the Voice Commands to HC-05 Bluetooth.

After connecting HC-05 Bluetooth sensor the text to be displayed is written in the Text box and then transmitted by using the send Button and the information being displayed can be cleared using the Clearbutton. Sometime the list of nearby Bluetooth is not available it's just because denied permissions of Bluetooth. Thus we have to enable all the permissions for Bluetooth and it works successfully as expected.

IV. BLOCK DIAGRAM

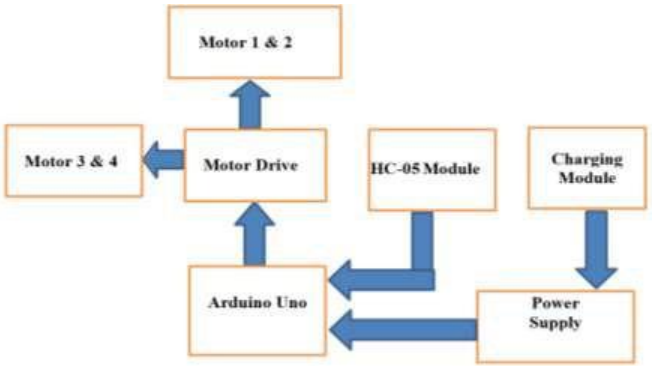


Fig: Block Diagram of Voice Controlled Wheelchair

As shown in the figure above this is the system of Voice Controlled Wheelchair with wireless Bluetooth connectivity. This system consists of, Arduino Uno, Bluetooth and power supply. Here the whole system works on the inputs given via Bluetooth using app used by us. The system will respond as per voice message send via Bluetooth. Here the HC05 Bluetooth module is connected to Arduino Uno which receives the voice message sent from the Bluetooth application. Then Arduino will process the commands and move the wheelchair according to given voice commands.

V. RESULT

The voice-controlled stroller is a modified version of a manual wheelchair. He works based on the patient's vocal team.That is, teams like front, left, right, stops,etc.

Wheel chairs are automated with engines so there is no need to move to one person. The sound of the independent speaker is transmitted via Android application combined with the HC-05, and the interaction of the Arduino and HC-05 converts the audio signal and with the help of the movement of the driver L298D, thus moving the wheelchair in the ordered direction.

VI. CONCLUSION

A wheelchair, controlled by a voice, increases the mobility and independence of disabled people, allowing

navigation without the hands using voice commands. Although there are problems such as noise intervention, constant achievements in the field of voice recognition technology will increase precision and ease of use. This innovation contributes to inclusiveness and autonomy, and becomes a daily life for users

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