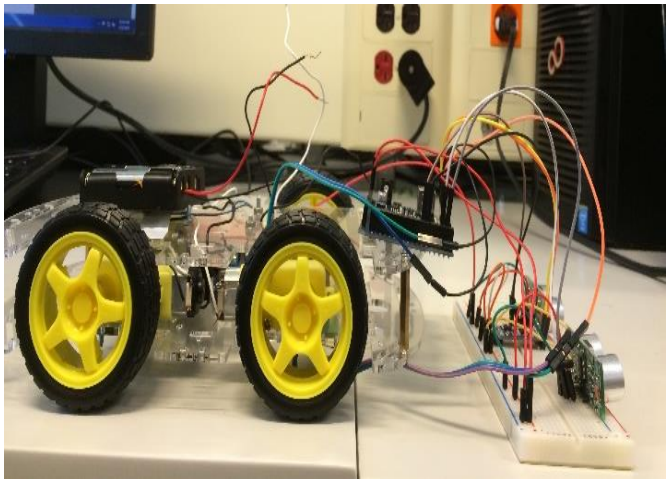

RHE WHEELCHAIR

User Manual and Quick Start Guide

Abstract

The basics and instructions on how our product works and how it can make your life better

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Group 3

Introduction

Many wheelchairs' users are individuals with motor disabilities having problems that range from cardiovascular problems, vision impairment, fatigue, and slow reflexes. This instrument is designed to improve the lives of these individuals; hence, it focuses on improving the traditional electric wheelchair to meet the user needs.

The main objective behind designing this instrument is to control the speed of the wheelchair in different situations. Once installed on the electrical wheelchair, the designed instrument ensures the safety of the disabled user in several ways. All functionalities are performed without the need of user intervention, that is, the system is automated.

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Please use the vehicle for its intended use.

Connectors and Cables

The Arduino should be connected to a 12 V battery.

The motor requires 6 V battery or equivalently 4 AA batteries which are sold separately.

How it works

An embedded ultrasonic sensor enables this instrument to detect nearby obstacles within a range of 10 centimeters and stop the wheelchair in case the user lacks the ability to do so. That is, whenever an obstacle is detected by this sensor, the instrument takes the wheelchair's motor speed to zero.

Another ultrasonic sensor is used to control the wheelchair's speed in case any gap is detected. The ultrasonic sensor, installed with a specific inclination, notices the presence of a gap when it reads a distance larger than 50 centimeters and again takes the wheelchair's motor speed to zero. As a result, this instrument protects the user from falling into unseen obstacles.

In addition to this, an optical encoder is connected the wheelchair motor's shaft for the sake of keeping track of the wheelchair speed. This encoder used to find the rpm speed of the motor at any instant.

Moreover, this instrument, when installed on the electric wheelchair, is capable of detecting the angle of an inclined path on which the wheelchair travels. The inclination angle, which is a significant factor, is determined by the embedded accelerometer. This main factor is used for the wheelchair speed control. The motor speed increases linearly with the increase in the inclination angle when the user goes up an inclined path and decreases if the change in this angle is negative.

Contact Information

If you have questions and concerns please contact us

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Rhe Wheelchair™