

Eye Controlled Aiding Wheel Chair for Differently Able People

Roll Numbers:

- 1406131
- 1406133
- 1406136
- 1406137
- 1406156

Objective:

In this project, we will control a wheel chair prototype using eye blinks for differently able people who have disability of body movement. We will count eye blinks for generating wheel chair movement command. To detect eye blinks from eye image we will use image processing in raspberry-pi and wirelessly transmit data from pi to arduino controlled wheel chair prototype. Our prototyped wheel chair will receive data transmitted from raspberry-pi and makes decision to control wheel chair. It will have also obstacle detection feature to avoid collision. Overall, our eye controlled based aiding wheel chair will have humanitarian impact on the lives of those people who have difficulty to move their body.

For image processing part we will use raspberry-pi to process and detect eye blink. We will use our own algorithm for detecting blinks. After processing and detecting blinks we will generate command that will indicate what to do and as we are using prototype wheel chair we will transmit command wirelessly to the wheel chair using Bluetooth. We will use HC-05 Bluetooth arduino module to receive data from pi and to control the prototype wheel chair. Wheel chair need to be safe and should avoid obstacle and so we will use APDS 9960 proximity sensor to detect obstacle along with an indicator led light.

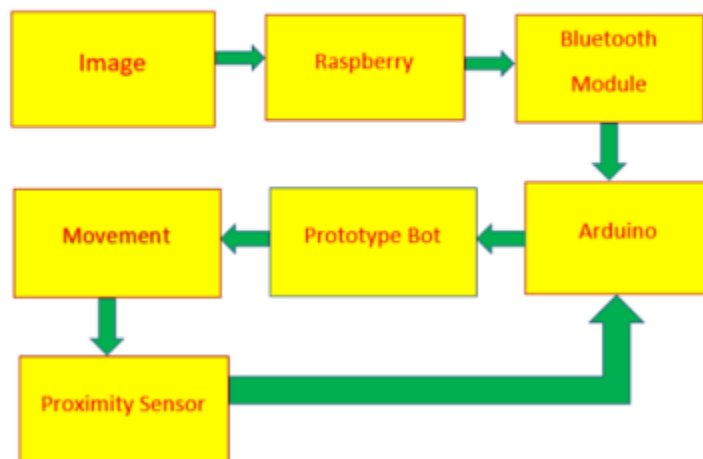
Equipment Used

These are the equipment's we have used in our project.

- Webcam
- Raspberry Pi
- Bluetooth Module HC-05
- APDS 9960 Proximity sensor
- Arduino uno
- Motor Driver L293D
- Motor
- Wheel
- Proximity Sensor
- 800 mAh 7.4 Lipo Battery

Block Diagram

Here, is the complete block diagram of our system. All the blocks are placed sequentially and their description will be explained later.



Cost Table

Components Name	Price (BDT)
Raspberry Pi	3500
Webcam	1000
Bluetooth Module HC-05	250
Arduino Uno	450
Lipo Battery	800
Motor	2x80
Motor Driver	50
Wheels	2x80
Memory Card (16Gb)	400
Transport	200
Ethernet Cable	150
Total =	7120 BDT (\$70)



Figure 1 Raspberry-Pi Image Processing Unit



Figure 2 Prototype wheel chair controlled by Arduino