

“Design and Implimentation Of wheelchair Controlled using Eye Movement”

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Abstract: The important part of our project is to implement the wheelchair with the control of eye movement. This wheelchair is used for the elderly and different abled people. In this project eye blinking and tracking technology is used. This method consists of hardware which eliminate work using IR sensor. The proposed model uses eye blink movement tracking system to control wheelchair. When movement is captured it is given to the Arduino. Then this output given to the motor driver circuit, IR sensor controlled to the proper operation system of wheelchair. All wheels connected to motor driver circuit to move wheel chair based on eye blink movement.

Keywords : Arduino Kit ,Motor Driver IC,IR sensor ,Wheels ,Buzzer.

INTRODUCTION: We are introducing the design and implementation of wheelchair controlled using eye movement. This wheelchair is easy for differently abled and paralyzed people to make their life more easier. The first IR sensor is mounted in front of the wheelchair for detection of obstacle. If obstacle is very close to the wheels then it is detected by IR sensor. This output is given to the Arduino. Then buzzer is activated which is connected to the Arduino. The second IR sensor is mounted on goggle for capturing the eye blink movement. This sensor captured his eye blink movement and this signal sends to motor driver circuit to move and stop the wheelchair. As per the counting of number of eye blink movement the circuit will perform different operations like left, right, forward, backward and stop.

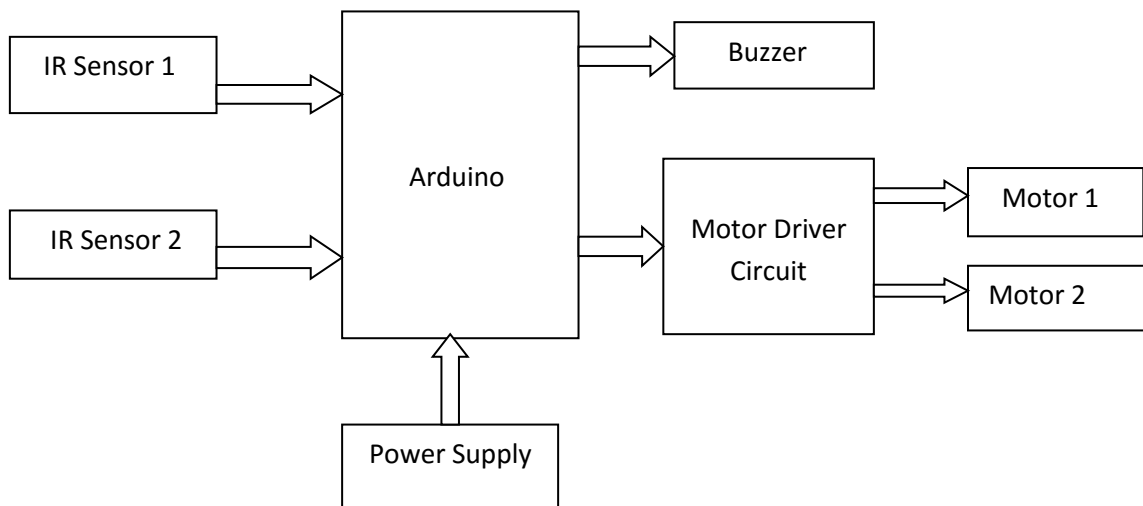


Fig. Proposed Model

Problem statement : The Main objctive of our system is to differntly abled and paralyzed people becomes independent.They do their motion with the help of eye blink movement.

1.1 Proposed Work :

In this proposed system Arduino is used to control the IR sensor and Motor driver circuit.IR sensor is used to find the difference between obstacle and user.The wheelchair consist of two IR sensors,one motor driver circuit,buzzer.Out of

the two IR sensors, one IR sensor is used for obstacle detection and another is used for eye blink movement. IR sensor work by using specific light sensor to detect light wavelength infra-red spectrum. When object is not present no IR light detected by sensor. When object is present reflected IR light detected by sensor. When power supply is given to Arduino kit then process is start for obstacle detection and eye blink movement signal given to the Arduino.

Hardware and software components:

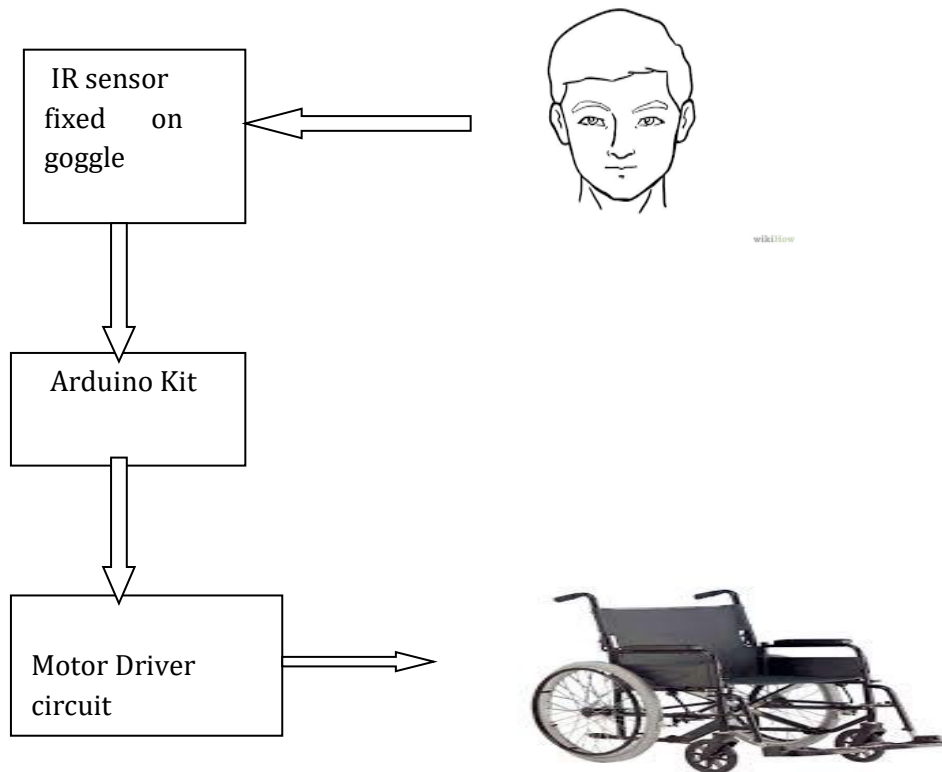
Hardware:

- Arduino Kit
- Motor Driver IC
- IR Sensor
- Buzzer
- LED
- wheelchair

Software:

- Arduino software

1.2 System Architecture :



CONCLUSIONS: According to the real time condition the evolution of life for differently abled and paralyzed people can be saved from accident. To detect the obstacle with the help of IR sensor it is useful for recognize obstacle and implement low cost. Inside the house paralyzed people reaching a desired destination is little bit difficult. So this system is easy for these people.

REFERENCES:

- [1] K. Sudheer, „Voice and Gesture Based Electric-Automated Wheelchair Using ARM“ ,International Journal of Research in Computer and Communication technology, IJRCCT, ISSN 2278-5841, Vol 1, Issue 6, November 2012.
- [2] Luis A. Rivera, Guilherme N. DeSouza, et al, and Senior member, „A Automatic Wheelchair Controlled using Hand Gestures, IEEE, University of Missouri on April 2010.
- [3] Ituratte, J. Antelis, J. Minguez, „Synchronous EEG brain-actuated wheelchair with automated navigation,“Kobe, Japan, May 2009.
- [4] Bong-Gun Shin, Taesoo Kim, Sungho Jo, et al, „Noninvasive brain signal interface for a wheelchair navigation“, International Conference on Control, Automation and Systems, Gyeonggi-do, Korea, October 2010.
- [5] Eyeball and Blink Controlled Robot with Fuzzy Logic Based Obstacle Avoidance System for Disabled K.S.Sabarish, A.M. Suman, (ICEEE'2012) June 16-17, 2012, Bangkok.
- [6] Wei-Chung Cheng ‘An Electro-Oculography Circuit for Detecting Eye Movements for Low-Power Displays’.