International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Eye Blink with Gesture Controlled Wheel Chair System for Physically Challenged People

R.Krishnaveni[a] , N.Revathi [a], Kumaresan L[b], Kishore Kumar L[b], Eswaran T[b]

[a] *Assistant faculty member, Department of ECE, Panimalar Institute of Technology ,Chennai, India*
[b] *UG Student, Department of ECE,Panimalar Institute of Technology, Chennai, India*

A B S T R A C T

Eyes base electrical Wheel Chair Control:

- BEWC is projected. The projected NEWS is controlled by human eyes solely. Thus a disabled person will manage the EBOOK by themselves. Most of the pc input systems with human eyes solely take into account the precise condition and don't work on a time period basis.
- Moreover, it's not strong against varied user races, illumination conditions, EWC vibration, and user movement. Through experiments, it's found that the project.
- BEWC is strong against the aforesaid influencing factors.

Keywords: Eye Blink Sensing Element, Gesture Sensing Element, IR Sensor, Supersonic Sensing Element, Python Idle, Electrical Chair Management

1. Introduction

- According to a brand new report ready collectively by the globe Health Organization and therefore the IBRD, fifteen % of the world's population is disabled. The utilization of hopped-up wheelchairs with high steering intelligence is one amongst the nice steps towards the combination of severely physically disabled and mentally incapacitated folks.
- Driving a chair may be a tedious task for severely incapacitated persons, unless they use the tongue to manage the joystick. At the same time blind and paraplegic folks contend with 2 issues, that creates uneasy scenarios for them, i.e. locomotion and localization.
- Different systems are being developed to beat the issues represented higher than, permitting the end-user to perform safe movements and attain some lifestyle necessary tasks. Our Robotic chair uses inborn reflex and gesture, IR sensing elements to steer the chair.
- In addition, we are able to offer additional independence to the disabled person by mistreatment the attention blink sensing element with gesture sensing element, IR sensing element and supersonic sensing element.

2. Ways and Material

Literature Survey:
a) Robotic Wheel Chair Using Eye Blink Sensors and Accelerometer Provided With Home Appliance Control -Colleen Nelson, Nikitha S Badas, Saritha I G, Thejaswini S.

* *Corresponding author.*
E-mail address: kishorel1807@gmail.com

According to a brand new report ready collectively by the globe Health Organization and therefore the IBRD, fifteen % of the world's population is disabled. The utilization of hopped-up wheelchairs with high steering intelligence is one amongst the nice steps towards the combination of severely physically disabled and mentally incapacitated folks. Driving a chair may be a tedious task for severely incapacitated persons, unless they use the tongue to manage the joystick. At the same time blind and paraplegic folks contend with 2 issues, that creates uneasy scenarios for them, i.e, locomotion and localization. Completely different systems are being developed to beat the issues represented higher than, permitting the end-user to perform safe movements and attain some lifestyle necessary tasks.

b) Sensor Based Eye Controlled Automated Wheelchair -Ms.KaleTaibai D., Ms. Patil Aishwarya S.,Ms. Kamble Madhuri H., Prof. S. A.Jagtap

The project discusses a few wheelchairs supported eye gesture and hand gestures. This project is facilitated to those that aren't in a position doing any moment thanks to their health problem, injury, or incapacity. They will move the wheel chair left or right by simply wanting to the specified direction, they will additionally begin and stop the wheel chair, with different eye and hand gestures.

c) Robotic Wheelchair Controlled byEye Blink and Face Orientation-Andreena Joseph1, D Antonio Thapeetha

This paper describes and evaluates intelligent robotic chair primarily for handicapped person patients. Every year vast variety of individuals suffers with a medulla spinalis injury and about half these injuries end in palsy. The loss of non-public quality is one amongst the main life changes brought on by palsy, quality becomes a womb-to-tomb struggle. Quadriplegics think about power wheelchairs for quality, however the hands-free controller systems presently offered are obtrusive and high-priced. The target of this project was to style an influence chair with a unique system for quadriplegics with Face Orientations and inborn reflex.USB camera and inborn reflex sensing element was mounted before of user's face. Face space was detected and supported the ADABoost learning formula. Then facial landmarks were detected mistreatment Flandmark Detector.

3. Existing System

- In the existing system, we can control the wheel chair using eye blink sensors based on direction of the eyelid motion. The wheel chair can be started and stopped by the eye blink movements.
- Eye blink sensor senses whether the eye is open or closed. The eye-blink sensor works by illuminating the eye and/or eyelid area with infrared light and then monitoring the changes in the reflected light using a phototransistor and differentiator circuit.
- When the eye can blink two times means the wheel chair can move forward. And three times means left turn four times means right turn.

4. Proposed System

- We have implemented the concept for the purpose of physically challenged people to move comfortably with the help of eye-blink sensor and gesture sensor.
- We use the eye-blink sensor to control the movement of the wheelchair which gives the signal to the gesture sensor only when the eye is opened and turns off the signal when the eye is closed.
- Here we are using the Gesture sensor to control the direction of the wheel chair to move forward, backward, left and right.
- By using an Ultrasonic sensor we are giving out a buzzer alarm and a notification via GSM module to the concerned number for intimating that obstacle has been detected.
- The IR sensor here detects the movement of the wheelchair from one area to another. Once the movement is detected it notifies us with the help of buzzer alarm and GSM module to the concerned number about the movement.

5. Block Diagram
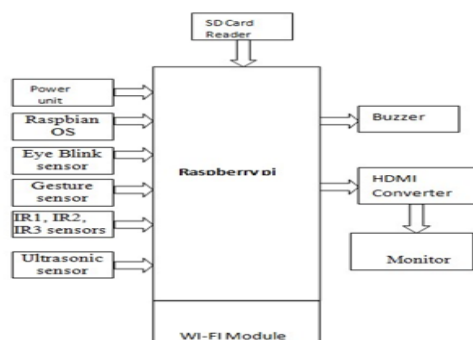
6.   Component and Function

a) Eye Blink Sensor:

This wink device is IR based mostly, the Variation Across the attention can vary as per wink. If the attention is closed means that the output is high otherwise output is low. This to understand the attention is closing or gap position. This output is offered to the logic circuit to point the alarm.This can be used for projects involving dominant accidents thanks to the unconscious through the attention blink.

Eye= 0.0… (gesture off)

Eye= 7.0… (gesture on)
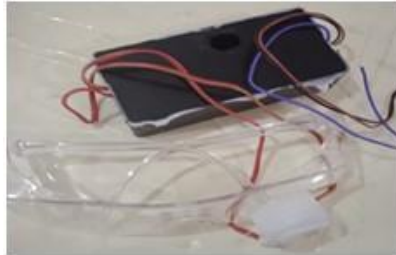
Eye blink sensor

b) IR Sensor:

An infrared device is an Associate in Nursing device that emits so as to sense some aspects of the environment. Associate in Nursing IR devices will live the warmth of Associate in Nursing objects moreover as detects the motion. Sometimes within the spectrum, all the objects radiate some sort of thermal radiations. These sorts of radiations are invisible to our eyes that may be detected by Associate in Nursing infrared devices.The electrode is just Associate in Nursing IR diode and therefore the detector is just Associate in Nursing IR photodiode that is sensitive to IR lightweight of an equivalent wavelength as that emitted by the IR diode. once IR lightweight falls on the modification in proportion to lightweight received.

IR Sensor

C) Ultrasonic Sensor:

Ultrasonic transmitter emitted an Associate in Nursing supersonic wave in one direction and commenced temporal arrangement once it launched. supersonic unfold within the air and would come back directly once it encountered obstacles on the means. finally the supersonic receiver would stop temporal arrangement once it receives the mirrored wave. The gap of the device from the target object is calculated. It offers wonderful non-contact vary detection with high accuracy Associate in Nursing stable readings in an easy-to-use package. Its operation isn't full of daylight or black material. The provision voltage to the device is 5VDC. a supersonic device comes with a UART interface and works at a high output sound pressure level. supersonic UART distance measures could be available TTL format from that the user will simply get the obstacle distance.

Ultrasonic device

d) Gesture device:

Position-based gesture sensing involves finding gestures supporting the calculated location of the Associate in Nursing object whereas phase-based gesture sensing is predicated on the temporal arrangement of the changes in signal to see the direction of the Associate in Nursing object's motion. This application note focuses on detection gestures created by a user's hand.

Gesture Sensor

e) Raspberry Pi 3:

- The Raspberry Pi three is the third generation Raspberry Pi. It replaced the Raspberry Pi, a pair of Model B in February 2016. The Raspberry Pi three has an even kinder issue to the previous Pi, a pair of (and Pi one Model B+) and has complete compatibility with Raspberry Pi one and a pair of.

- The best half concerning all this is often that the Pi three keeps an equivalent form, connectors, and mounting holes because the Pi a pair of.Dual Core VideoCore IV® transmission Co-Processor.

- Provides OpenGL E a pair of.0, hardware-accelerated Open VG, and 1080p30 H.264 high-profile decrypt.

Raspberry Pi 3

f) Buzzer:

- A buzzer or electronic device is Associate in Nursing audio signalling device, which can be mechanical, mechanical device, or electricity. Typical uses of buzzers and beepers embody alarm devices, timers, and confirmation of user input like a depression or keystroke.

- It generates consistent single tone sound simply by applying D.C voltage. employing a fittingly designed resonant system, this kind is used wherever massive sound volumes are required. At Future physics we have a tendency to stock several of the foremost common varieties categorised by kind, Sound Level, Frequency, Rated Voltage, Dimension and Packaging kind.

Buzzer

g) GSM:

This GSM electronic equipment will settle for any GSM network that acts as SIM card and is a bit like a portable with its own distinctive sign. Advantage of victimisation of this electronic equipment is going to be that you just will use its RS232 port to speak and develop embedded applications. The SIM800C may be a complete Dual-band GSM/GPRS answer {in a|during a|in Associate in Nursing exceedingly|in a very} SMT module that includes an industry-standard interface, the SIM800CS may be a quad-band GSM/GPRS module that works on frequencies GSM850MHz, delivers performance for voice, SMS, Data, and Fax in a very tiny kind issue and with low power consumption.

GSM

7. Prototype Module

8. Result

When you offer a power offer to the raspberry pi three you've got to attend for a few seconds to begin the method of the wheelchair. Subsequently after you blink the attention the wheel chair is prepared to begin, otherwise it doesn't begin. With the assistance of a gesture device to manage the direction of the wheel chair and with the assistance of an IR device to detect the movement of the wheelchair from one space to another. To avoid the collision here we have a tendency to use the supersonic device. a supersonic device detects the objects by emitting supersonic waves, and converts the mirrored sound in electrical signals, these signals reach the monitor and mechanically the buzzer is processed. Here we have a tendency to use HDMI to VGA adapter and

this is often connected with raspberry pi three and monitor and these transfer the HDMI signal to VGA or audio signal.
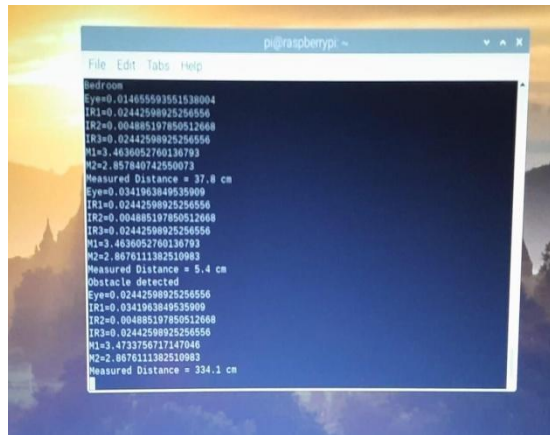
9.   Conclusion

In this paper, we've enclosed the sensors and therefore the operations for the security of the physically challenged individuals and a simple manner to manage the wheel chair and update the movement via buzzer alarm and SMS victimisation GSM module. This paper chiefly focuses on the security and convenience of the physically challenged individuals.

REFERENCES

[1.]Teodiano F. Bastos-Filho, Fernando Auat Cheein, Member, IEEE, Sandra M.T. M¨uller,Wanderley C. Celeste, Celso de la Cruz, Daniel C. Cavalieri, Mario Sarcinelli Filho,Paulo F. S. Amaral, Elisa Perez, Carlos Soria, Ricardo Carelli, Senior Member, IEEE, ―Towards a New ModalityIndependent Interface for a Robotic Wheelchair‖, May 2013.

[2.]Poonam S.   Gajwani   & Sharda A.Chhabria ―EyeMotion   Tracking   for Wheelchair Control.

[3.]Elisa Perez, Natalia López, Eugenio   Orosco, Carlos Soria, Vicente Mut, and Teodiano Freire-Bastos ―Robust Human Machine Based on Head MovementsApplied to AssistiveRobots.

[4.]Manuel Mazo, Francisco J. Rodriguez, Josi l. L,Zaro, Jesus Ureia, Juan C. Garcia ―Wheelchair for Physically Disabled People with Voice, Ultrasonic and Infrared Sensor Controll‖, Autonomous   Robots,1995, Volume 2, Issue 3, pp 203-224.

[5.]P Sheelarani, SP Anand, S Shamili, K Sruthi "Effective car parking reservation system based on internet of things technologies", 2016 World Conference on Futuristic Trends in Research and Innovation.

[6.] V Sridevi, T Jayanthy "Minimization of CNTFET ternary combinational circuits using negation of literals technique", Arabian Journal for Science and Engineering 39 (6), 4875-4890.

[7.] MRE Jebarani, T Jayanthy "An analysis of various parameters in wireless sensor networks using adaptive FEC technique", International Journal of Ad-Hoc, Sensor and Ubiquitous Computing 1 (3).

[8.] V Viknesh, PR Prashanth "Matlab implementation of ECG signal processing", IOSR Journal of VLSI and Signal Processing 3 (1).

[9.]R.Krishnaveni,Shruti.P.S,ShanmathiAnuRadha.S,"Intelligent Shopping Cart and Economic Analysis using IoT and Cloud Server", International Research Journal of Engineering and Technology (IRJET), e-ISSN: 2395-0056, p-ISSN: 2395-0072, Volume 07, Issue 03, Page 3952-3955, 01-03-2020.

[10.]R.Krishnaveni,P.Darmentraa, V.Suryavarman and K.Avinaash, "Sensor Device with Highly Pure Phloem Sap Extraction for Analysis of Direct Components in Nutrition Plants using NIR"in International Journal of Electronics and Communication Engineering, Volume 5, Issue 3-2018, ISSN: 2348-8549.

[11.]Mrs.R.Krishnaveni,S.Dharani,K.Mahalakshmiand B.Kanimozhi' Identification and Prevention of Pregnant Women at Risk for Preeclampsia" published in march 2017 Volume-24 Issue-4 in IJETCSE, Print ISSN: 0976-1353.

[12.]R.Krishnaveni,M.Aishwarya,R.Nadhiya,   M.S.Nandhini   "AudioClassification using Artificial Neural Network with Denoising Algorithm(Intelligent Music Player)" published in International Research Journal of Engineering and Technology (IRJET) Journal volume 4 Issue 3 March 2017,Impact Factor 5.181.

[13.]M.Arun, R.Krishnaveni, K.Banumathi, A.SelvaAgnes, "Design and FPGA Implementation of Modified DA Based Processor for Image Compression" published in International Journal Of Advanced Research in Electrical, Electronics and Instrumentation Engineering, on 20.03.2015, Organized by IJAREEIE ISSN (Online): 2278-8875. ISSN (Print) 2320-3765.