Assistance System for Paralyzed Patient Using Eye Blink Movement

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ABSTRACT-Paralysis is defined as the complete loss of muscle function. It occurs only when a problem happen during the transmission of message between the brain and the muscles. Some paralyzed patient cannot move their body parts other than eyes because of some diseases like Quadriplegia, Amyotrophic lateral sclerosis, Guillain – barre syndrome. This paper reveals to lead independent life and too satisfy their needs. By the use of patient eye blink movement their needs are satisfied, the eye blink sensor is a main component which is fixed on the frame. This interactive system satisfies only few of the functions as they are bulky and less portable. This system displays the command by movement of eye blink instead of moving limb or any other parts of the body, then the message is send to the required person whereas the control switching for on and off of the light is used.

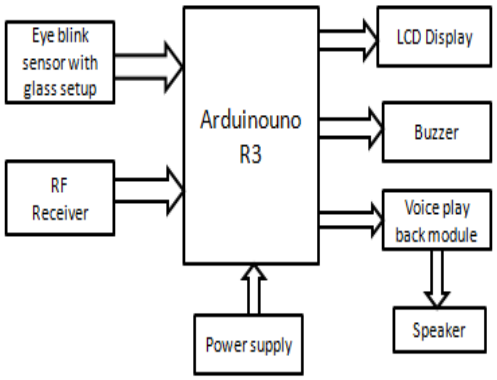
Keywords: Quadriplegia, eye blink sensor, Amyotrophic lateral sclerosis, Guillain – barre syndrome.

I. INTRODUCTION

Nearly most of the people living around the world cannot lead a normal day to day life, due to physical disabilities problem. The conditions such as traumatic brain injury, stroke which may stop muscle activity or one of the physical problem is that the paralysis. This stroke patient can't able to communicate normally with the surrounding. This paper helps to satisfy the needs of the paralyzed patient and the stroke patient can also be independent. This project explains that some of the appliance can be assisting and controlled by the patient like light, fan, object etc. These activities can be done by the eye blink movement.

The eye blink sensor is associated with the frame, when the sensor is active generally each movement and blink is recorded and that record is converted to message form and send to the researcher. Our objective is to track eye blink movement by without using any of the infrared light.

II. BLOCK DIAGRAM



III. DESCRIPTION

This block diagram describes thus the arduino UNO R3 is main heart of the signal. From this each component where connected. The eye blink sensor with glass setup is the function that gives complete process occurring by the eye. LCD display is connected to send message to the researcher. Buzzer is attached so that if any uncomfortable condition occurs to the patient it will act. The speaker reacts during the message sending and receiving time.

- EYE BLINK SENSOR

The working principle of eye blink sensor is as follows. It illuminates the eye and eye elide area with infrared light and monitors the changes in the reflected light with help of photo transistor and diffentiator circuit. As eye blinks the variation occurs. The position and aiming of emitter and detector plays a great role in the functioning of the device. When the eye is in closed condition, the output will be high, otherwise it is low.

- ARDUINO UNO R3

It is an electronic platforms based on software and hardware uses. It is a microcontroller board that can

control the whole circuit based on the programmable chip.

The input is given to the circuit, then the signal is analyzed by programmed based on that output is received.

- LCD DISPLAY

  LCD is an electronically modulated optical device. It do not emit light directly instead of using reflector. It is applicable in computer monitors, instrument panels.

- BUZZER

  The electrical buzzer is a audio signaling device which may include mechanical, electromechanical or piezo electric. The beeper to attract someone's attention.

- VOICE PLAYBACK MODULE

  This module is very easy to control with help of push button on board or by microcontroller. It is multiple message record or playback device. It offers true single chip voice recording no volatile storage and playback capability for 8 to 20 sec. It operates on 3v power supply.

- POWER SUPPLY

  Power supply which converts one type of electrical power to another. Such as, mechanical, electrical and chemical energy.

  It is termed as power blink as well as power adaptor. The power supply unit that supplies power to computer.

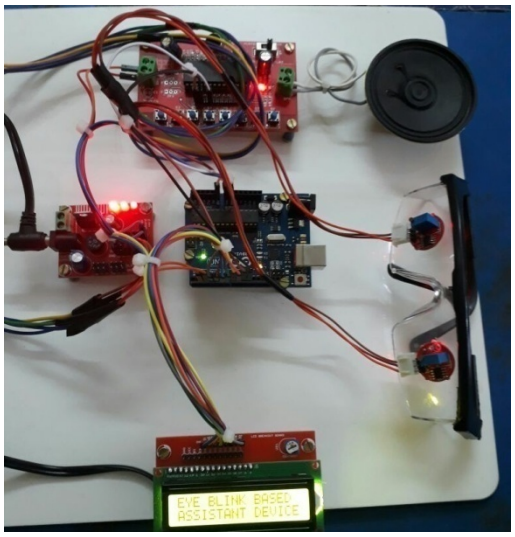
IV. ADVANTAGE

- System is eco friendly
- It is reliable

V. APPLICATION

1. We can also add the number of command to the signal as we need and use for other requirement also.
2. Other than paralysis this method can be used in different application.
3. The signal will be more valuable if we use some other signal like and gestures or movement of our mouth to give command.

VI. RESULT



The paper enables the patient to communicate appropriately. When left eye is blinked the signal is derived to be for toiletry needs. If the right eye is blinked it a means want to go out and if both eyes are blinked it means the person is in need of food.

VII. CONCLUSION

The developed signal helps the paralyzed patient to lead self dependent life to some extent. The signal for the system is given by the eye blink movement. Thought it is less portable and very much cost effective. By using this system the cost value is most probably reduced.

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