

EYEBALL CONTROLLED WHEEL CHAIR

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ABSTRACT:

- This project is a **smart wheelchair** based on **eye tracking** which is designed for people with locomotor disabilities.
- The smart wheel chair consists of four modules including **imaging processing module, wheelchair-controlled module, SMS manager module and appliance-controlled module.**
- The coordinate of eyeball movement is then **wirelessly transmitted** to **wheelchair-controlled** module to control the movement of wheel chair.
- The wheelchair-controlled module is **two dimensional rotating stages** that installed to the joystick of the **electrical wheelchair** to replace the manual control of the wheelchair.
- The **motion of eyeball** is also used as the cursor control on the arduino screen to control the operation of some equipped appliance and **send message to smart phone.**

Keywords : *Electrical module.wheelchair, Imaging processing module, Wheelchair-controlled*

INTRODUCTION:

- The ability to exercise freedom of mobility affects an individual's sense of dignity and Confidence. If census 2001 is to be believed, of the 2.1 percent of India's disabled, 0.6 percent.
- (equivalent to almost 61 lakhs) is suffering from movement disability. Increases the ambit of the disabled
- People, the absence of a more comprehensive assistive technology act causes a chronic non-use,
- Abandonment and discontinuance of rehabilitation technology. since most disabled people view their
- Assistive devices as an extension of themselves, it has become a subject of utmost necessity to
- Develop devices that users can successfully integrate into their lifestyle. A large variety of electric
- Powered wheelchairs that use different human machine interfaces(HMI) such as head motion,
- chin control, sip-n-puff control, voice recognition and EEG signals, are available. chin control technology
- uses a force-sensing joystick shaft that doesn't require very accurate head movements. A little different
- force each time suffices in moving the wheelchair in different directions. The force required is generally in
- the range of 0.2 to 0.8 pounds (0.09 to 0.3 kilograms) .



- users can adjust the wheelchair speed by touching the front and back pads varied. A major limitation of such a
- controller is that they have to be constantly removed before eating and even drinking water. It can prove to be quite
- a discomfort to be constantly worn inside the mouth.EOG(electroculography) technology measures the electric
- potential differencebetween the cornea and the pupil, with respect to a reference electrode placed on the
- forehead.Five more electrodes are placed near the eye to detect eyeball rotation. A change of 20 microvolts is
- Measured for each degree of eye movement. Changing light conditions have negligent effect on EOG Signals but
- they are prone to signal noise drifting. The variability of the electrooculogram reading Depends on many difficult-to
- measure factors such as perturbations caused by other biopotentials Like EEG,ECG,EMG(electromiogram).plus
- those caused due to the positioning of electrodes,Skinelectrode contacts lighting conditions, head movements, blinking, etc.,

EXISTING

- The problem of the existing system is the robustness against different usertypes, illumination changes, user's movement, vibration, and accuracy.
- In order to consider these as vehicle system, if the user changes, the system should be works without any input parameter changes.
- In accordance with EWC movement, illumination condition may change.
- Also, disturbances due to EWC vibration is potentially problem.

PROPOSED

- In proposed system as wheel chair is operating on eye motion tracking & using sensor operation all the drawbacks of exisiting system get minimized.
- As eye is the only organ that can be provide signal to sensors in paralysed person.
- In this system model is prepared using goggle to monitor the direction of eye pupil using IR sensors.
- One another facility is provided for monitoring the pulse rate of person sitting on chair in order to get the information about the health condition of paitient.

ARDUINO

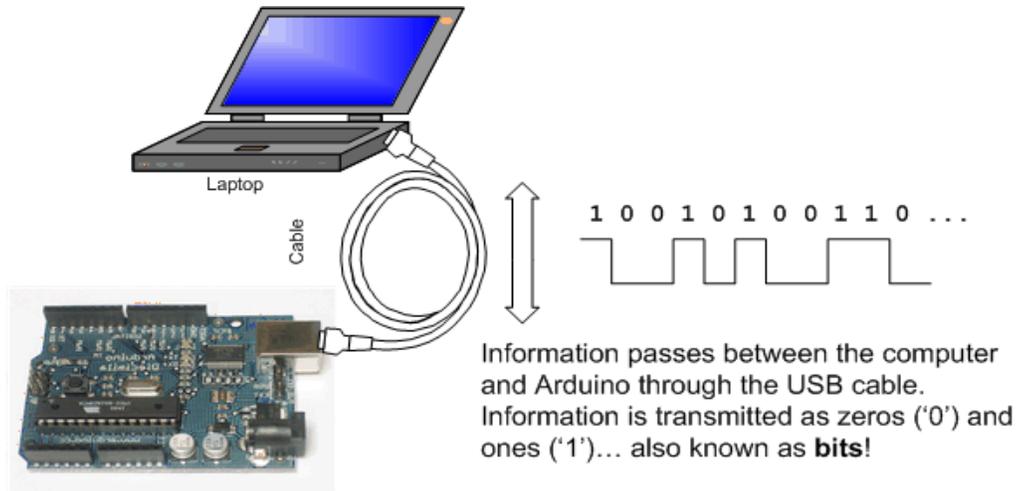


FIG :1 ARDUINO

- ❖ Its available for Windows/Linux/Mac.
- ❖ It is easy to use both Hardware and software.
- ❖ It is easily programmed, erased and reprogrammed at any instant at time

EYEBALL TRACKING WHEEL CHAIR

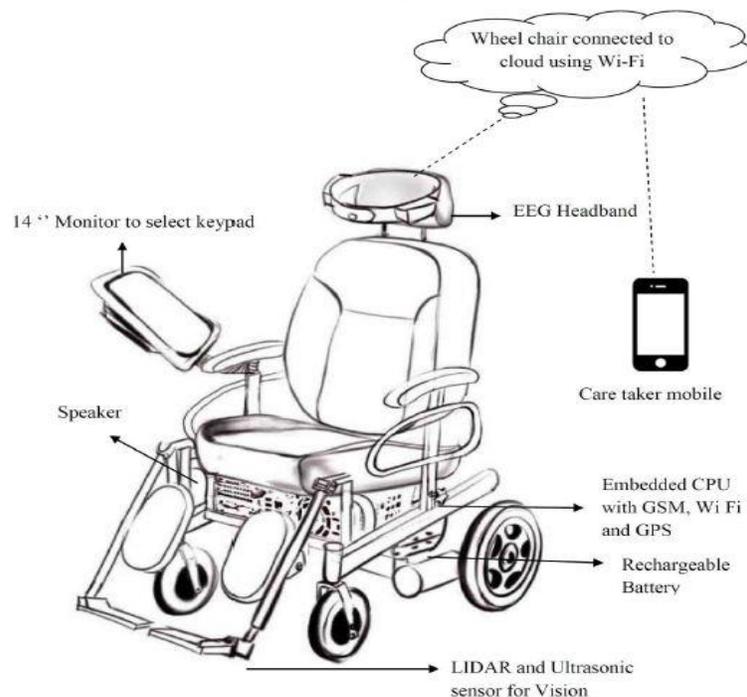


FIG:2 EYEBALL TRACKING WHEELCHAIR

- **Eye tracking** is the process of measuring either the point of gaze (where one is looking) or the motion of an eye relative to the head.
- An **eye tracker** is a device for measuring eye positions and eye movement.
- Eye trackers are used in research on the visual system, in psychology, in psycholinguistics, marketing, as an input device for human-computer interaction, and in product design.
- There are a number of methods for measuring eye movement.
- The most popular variant uses video images from which the eye position is extracted.

BLOCK DIAGRAM:

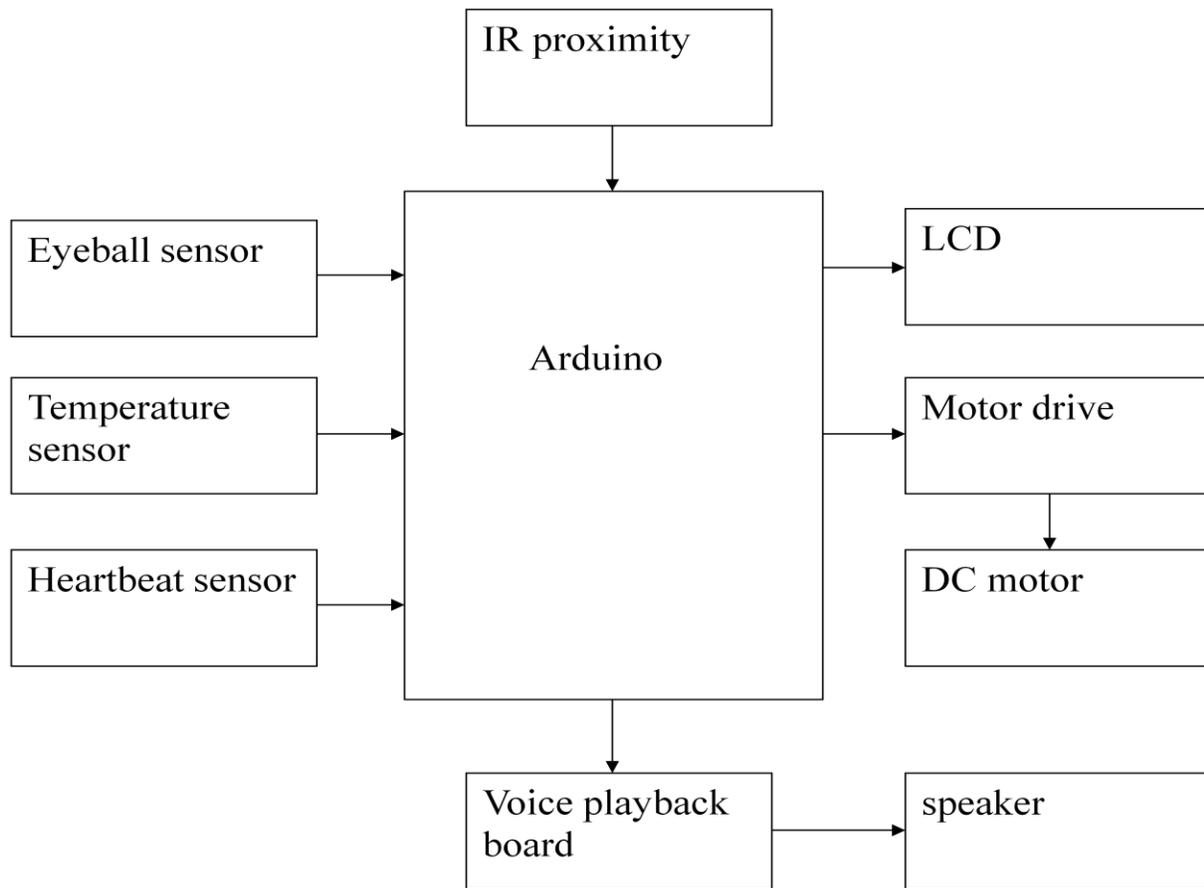


FIG 3:BLOCK DIAGRAM

Eye-tracking involving the ‘tracking of eye movements’. It is a method where the scn path of person’s gaze, While looking over a picture or in a particular direction, is traced and recorded[1]. In other words, the sequence of When and how long the test subject gazes on a particular area of the image is being measured. Eye tracking has been perceived to be a very accurate plat form for the building of rehabilitation technologies[2]. It offers a powerful Research tool for developmental scientists. Eye records precisely what people percept and what not. Eye tracking Has helped provide detailed.\, quantitative data to the usability testing process. Most eye-trackers are designed to detect saccades and fixations. Other types of eye movements that are a frequent occurrence are the smoth-pursuit The vestibule-ocular reflex and the vergence[3]. Not all eye tracking devices can correctly measure and identify the



CONCLUSION

The IR sensor based eye-motion tracking system can be used as basic infrastructure in future technologies Such as home automation. The system can be used for wireless automation by using radio frequency Modification in the circuitry. This interface can be used to include an explicit input from then be Used to generate control functions for individual home appliances. With various modifications the Proposed method can also be successfully implemented in vehicle automation the steering can be Controlled by the motion a person's eyeball. Thus , we have made a platform for demonstrating and Testing eye based interfaces at a very low cost and high efficiency which can be used on large scale in Various fields.

REFERNCE

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3. HEART RATE MEASUREMENT FROM THE FINGER USING(2013)Dogan Ibrahim Kadri Buruncuk1e-mail:dogan@neu.edu.tr2email: buruncuk@neu.edu.tr Near East University, Faculty Of Engineering, TRNC Department of Computer Engineering.
4. Patient monitoring smart wheelchair1manpreet singh minhas, 2jeevanchavan, 3ujwal singh1,2,3Department of Electronics and Telecommunications Engineering, Fr. Conceicao Rodrigues Institute of Technology, Vashi.

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REFERNCE

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