



SUBJECT-PROJECT BASED LEARNING

Department:-Second Year Engineering



A

Project Based Learning presentation on

“Accident Prevention System

Using Eye Blink Sensor ”

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➤ Abstract :-

The aim of this project is to design an Accident Prevention System which helps in preventing/avoiding accidents. Accident due to cause of drowsy is prevented and controlled when the vehicle is out of control. The accidents due to the drowsy state of the driver is prevented using automatic breaking system by using eye blink sensor. The term used here for the realization that the drivers drowsy is by using eye blink sensor of the driver. In recent times drowsiness is one of the major problems of highway accidents. These types of accidents occurred caused by drowsy and driver can't able to control the vehicle, when the driver wakes. The drowsiness is indented by the eye blink closure and blinking frequency through infrared sensor worn by driver by means of spectacles frame or IRS. If the driver is drowsy, then the system will give buzzer and the speed of the vehicle is reduced in 3 to 5 sec

➤ Introduction :-

Driving to reduced time, and money in spite of the conditions around you and the actions of others. This is the slogan for justifiable Driving. Vehicle accidents are most common if the driving is inadequate. These happen on most factors if the driver is sleeping or if he is alcoholic. This Paper was focused mainly on road accidents occurring due to the worst condition of signboards, drowsy state, and drunken state of drivers in four-wheelers As the fatality rates are due to the growth of accidents day by day, the below methods are implemented to decrease the fatality rate. Driver drowsiness is recognized as a crucial aspect in the vehicle accidents. It was demonstrated that driving performance deteriorates with increased sleepiness resulting in crashes constituting more than 20 percent of all vehicle accidents. But the life lost once cannot be re-winded. Advanced technology over's some hope to avoid these up to some extent. This project involves measure and controlling the eye blinking using an IR sensor. The IR transmitter is used to transmit the infrared rays in our eye. The IR receiver is used to receive the reacted infrared rays of eye. If the eye is closed means the output of IR receiver is high other side the IR receiver output is low. This to know the eye is closing or opening Position. This output is given to circuit to indicate the alarm. This project involves controlling accident due to unconscious through Eye blink. Here one eye blink sensor is in vehicle where if anybody looses conscious and indicate through alarm. Then eye blinking sensor transfer signals to the dc motor and it starts dc gun which apply on the break and vehicle will be stops gradually in 3-5 sec.

➤ Objective:-

The Accident Prevention System Using Eye Blink Sensor (ABSEBS) is a system that uses an eye blink sensor to detect drowsiness in drivers and take corrective action to prevent accidents.

- 1) To detect drowsiness in drivers early, before it becomes a problem.
- 2) To alert drivers to potential hazards, such as falling asleep at the wheel.
- 3) To take corrective action to prevent accidents, such as turning on the hazard lights or sounding an alarm.

The ABSEBS is designed to be used in conjunction with other safety features, such as seat belts and airbags. It is not a replacement for these features, but it can help to improve road safety by providing an additional layer of protection. The ABSEBS is still under development, but it has the potential to be a valuable tool for improving road safety. It is a promising new technology that has the potential to save lives.

➤ Scope :-


The scope of the Accident Prevention System Using the Eye Blink Sensor is to reduce the number of accidents caused by drowsy driving. The system uses an eye blink sensor to detect when a driver is drowsy or unconscious. If the driver's eye blink rate falls below a certain threshold, the system will sound an alarm and/or take other actions to prevent an accident.

The system has the potential to be used in a variety of vehicles, including cars, trucks, buses, and trains. It could also be used in other settings where drowsy driving is a risk, such as construction sites and factories.

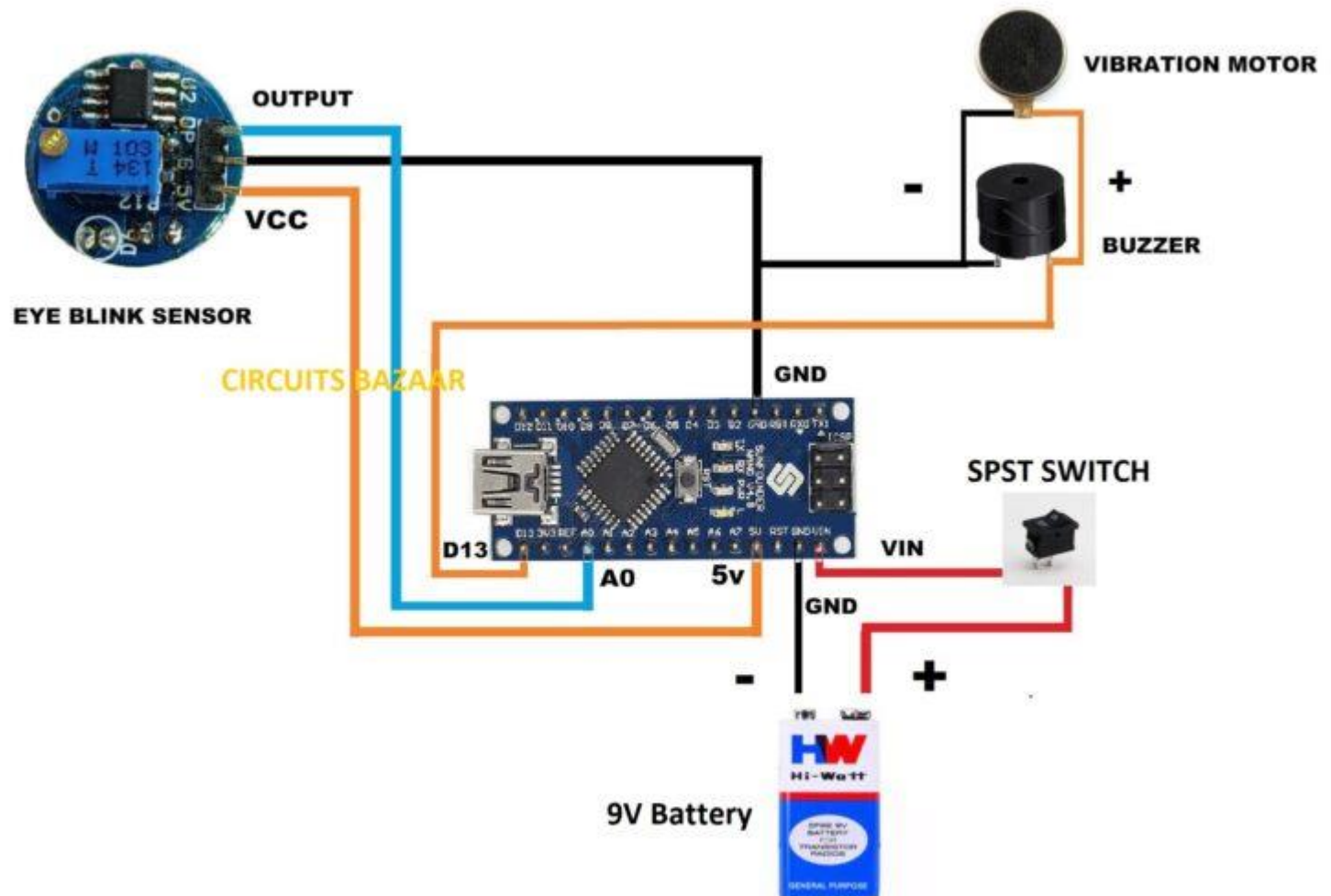
The system is still in the development stage, but it has the potential to be a valuable safety tool. If it is successful, it could help to save lives and prevent injuries.


➤ Literature Review :-

- There is a growing body of literature on the use of eye blink sensors to prevent accidents. A 2017 study by the National Highway Traffic Safety Administration (NHTSA) found that drowsy driving is a factor in 10% of all fatal crashes in the United States. The study also found that eye blink rate is a reliable indicator of drowsiness.
- A 2018 study published in the journal "Accident Analysis & Prevention" found that an eye blink sensor-based system was able to detect drowsy driving with an accuracy of 90%. The system used a combination of eye blink rate, pupil size, and head position to detect drowsiness.
- A 2019 study published in the journal "IEEE Transactions on Intelligent Transportation Systems" found that an eye blink sensor-based system could be used to predict drowsy driving with an accuracy of 85%. The system used a machine learning algorithm to analyze eye blink data.
- These studies suggest that eye blink sensors have the potential to be a valuable tool for preventing accidents caused by drowsy driving. However, more research is needed to improve the accuracy and reliability of this systems

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- 1) The numbers of accidents are increased due to several factors, one of the main factors is driver fatigue. Driver's sleepiness is also implemented using a video-based approach. This system is noninvasive and human-related elements are used. Band power and Empirical Mode Decomposition methods are used to investigate and extract the signal, SVM (Support Vector Machine) used to confirm the analysis and to categorize the state of vigilance of the driver.
 - 2) The system designs to find the driver's drowsiness using the hypothesis of Bayesian networks. The interaction between driver and vehicle features are extracted to get reliable symptoms of driver drowsiness. It presents more suitable and accurate strategies to design a drowsy driver detection system.
 - 3) Brain and visual activity is used in drowsiness detection system. Electroencephalographic (EEG) channel used to monitor the brain activity. Diagnostic techniques and fuzzy logic are used in EEG-based drowsiness detector. Using blinking detection and characterization for visual activity monitored. Electrooculographic (EOG) channel are used to extract the Blinking features.
 - 4) Head posture estimation method is used for detection of drowsy driver. In this method Viola and Jones algorithm for driver face detection

➤ Block Diagram:-





The eye blink sensor detects the movement of the driver's eyes. The microcontroller processes the data from the eye blink sensor and determines if the driver is drowsy or unconscious. If the driver is drowsy or unconscious, the alarm sounds. The driver can then take action to prevent an accident, such as pulling over to the side of the road and taking a nap. The system can be customized to meet the specific needs of the driver and the vehicle. For example, the alarm can be set to sound at a different volume or frequency depending on the severity of the drowsiness. The system can also be programmed to take other actions, such as automatically applying the brakes or turning on the hazard lights. The Accident Prevention System Using Eye Blink Sensor is a promising technology that has the potential to save lives. Drowsy driving is a major cause of accidents, and this system could help to reduce the number of accidents that occur each year.



➤ Advantages:-

- 1) Simple setup.
- 2) Remote detection - no mechanical contact with eye.
- 3) Stray visible and IR light not affected.
- 4) Our system does not require the restraint of the external eyelids.
- 5) Head movement not affected.
- 6) Excellent frequency characteristics (DC to more than 500 Hz).
- 7) Excellent working distance (15-25 mm).



➤ Disadvantages :-

- 1) Difficult to calibrate using common units of eye blink measurement.(eg. mm of eyelid displacement)
- 2) The signal is proportional to the exposed area of the eyeball. Independent measurements of the individual eyelids are not possible

➤ Future Scope :-

- If we Use GPS & GSM exact location of the Car can be traced on MAP.

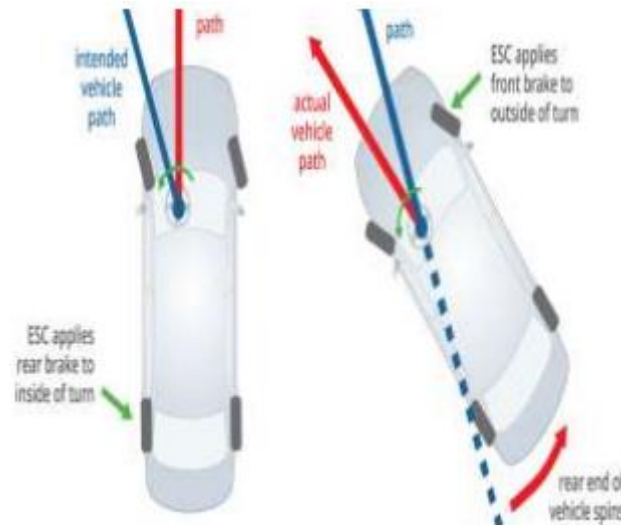


Fig 3: Automatic Steering System

- As the car gets suddenly or gradually stops then there will be chances of an accident by back sidecars.
- If we use the steering system for this which moves at left side during breaking then it will reduce the accident.

➤ Conclusion :-

In conclusion on technology is advancing every day the display board systems are moving from Normal handwriting display to digital display. Further to Wireless display units. This project develops a wireless notice board system with Bluetooth connected to it, which displays the desired message of the user through an SMS in a most populated or crowded places. Here by introducing the concept of wireless technology in the Field of the communication. We can make our communication more efficient and faster, with greater efficiency. We can display the messages and with less errors and maintenance

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Thank You