



Detection of Driver Drowsiness and Accident Avoidance

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ABSTRACT:

In the worldwide statistics reported by the World Health Organization, the number of fatalities by traffic crashes each year is estimated at approximately 1.2 million, and the number of injuries is estimated up to 50 million. The percentage of total fatal crashes related to drowsy driving are estimated at 2.2%–2.6%. Drowsiness is one of the major factors leading to car accidents, and preventing drowsy driving plays an important role in the safety driving. DROWSINESS is an intermediate state between wakefulness and sleep that has been defined as a state of progressive impaired awareness associated with a desire or inclination to sleep. Due to the low level of consciousness during the state of drowsiness, a person's instantaneous reflex is weakened, which negatively affects their ability to process quick decisions. Drowsiness is seen as a major cause of vehicular accidents worldwide. There are various statistics from around the world that indicate most vehicular accidents to be directly caused by driver fatigue.

I. INTRODUCTION

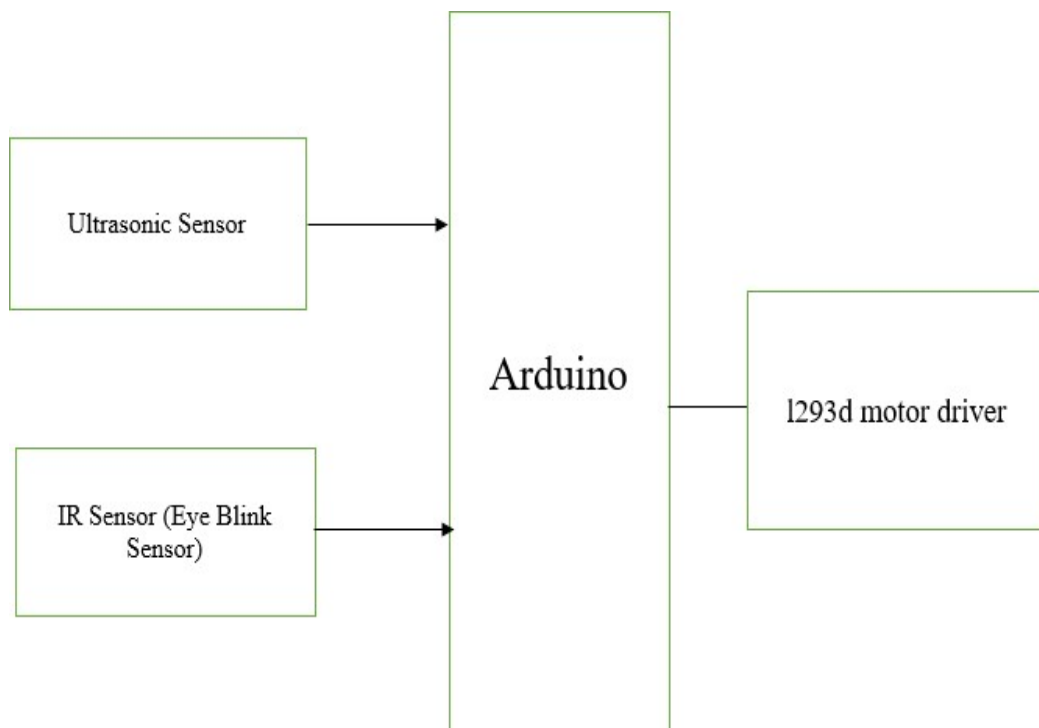
Today, many automobile companies and institutions have been studying ways to monitor drowsiness as a means to avoid car accidents. Physiological measurements [such as electroencephalogram (EEG), electrocardiogram (ECG), capturing eye closure, facial features, or driving performance (such as steering characteristics, lane departure, etc.)] are used for drowsiness detection. When drowsiness is detected while driving, audible sound vibrations or warning messages on a display are generally used to warn the driver to concentrate on driving or to take a rest. These methods help the drowsy driver to prevent drowsiness-related accidents in a moment, but it is hard to get rid of drowsiness by just being aware of it. For greater safety, an awakening method that physiologically reduces drowsiness and acts upon the drowsy driver's physiological condition before stronger drowsiness appears is needed. Driver drowsiness is usually used interchangeably with the term driver fatigue; however, each of these terms has its own meaning. Fatigue is considered as one of the factors that can lead to drowsiness and is a consequence of physical labor or a prolonged experience, and is defined as a disinclination to continue the task at hand. Driver fatigue is believed to account for 35%–45% of all vehicle accidents. Some authors distinguish fatigue from drowsiness as the former does not fluctuate rapidly, over periods of a few seconds, as drowsiness. Usually, rest and inactivity relieves fatigue, however, it makes drowsiness worse.

For any vehicle accident driver’s fault is the most accountable aspect to cause dangerous problem to the society. Many drivers cannot control the vehicle due to different reasons it may cause severe accidents and sometime death. For vehicle accident, there are various factors involved such as drunk driving, over speeding, many distractions like texting while driving, talking with others, playing with children etc. Sleeping on the wheel is one of the important factor. People know the danger of alcohol consumption and drive the vehicle but they not understand the seriousness of fatigue driving. In India, Ministry of Road Transport and Highway released a report in 2015, which states that every day around 1,374 accidents happen and almost 400 deaths occur. Every hour approximately 57 road accidents occur and 17 people die. Among which 54.1 percent of people are in the age group of 15 to 34 years who are killed in vehicle accident. The Government of India, Ministry of Road Transport and Highway Government of India prepare a strategy to diminish the amount of motorway accidents and losses by 50 % by 2020.

Globally vehicle accidents have seemed to be one of the major community health problems. In India, almost 5 lakh road accidents happened in the year 2015. A fatigue Driver those who falls asleep at the move fails to control the vehicle, and it's not possible to take immediate action which results in a crash so it is necessary to monitor the drowsiness of the driver to prevent accidents.

II. PROPOSED WORK

2.1 BLOCK DIAGRAM





2.2 HARDWARE IMPLEMENTATION

Web mining is considered as an application of data mining, it focuses on rules derived from analyzing the web. discovers a user access behavior or pattern from a web server log by data mining techniques to foresee user navigation trend. Understanding user access patterns can help a webmaster in customizing the website content to maximize user's browsing experience. Web navigation pattern may be characterized by analyzing web server logs that contain detailed information of user browsing activities. An instance in a web log is composed of IP address of the requesting client, date and time of the request, requesting method used, status code, the requested file, etc. It is possible to categorize the sequence of click activities into sessions, and then use them for further analysis to get the foreseen user behavior. Analyzing users' Web watching behaviors is one of the important and challenging research topics of Web usage mining. If users' interests can be automatically detected from users' web log data, they can be used for information recommendation which are useful for both users and Web site developers. In the field of Web usage mining research for analyzing Web log data has been done by many researchers discovering frequent patterns of log data. The main purpose of the study of the user's visit record is to analyze the user's most concerned about the results from the mining results. By analyzing the user access to resources of the time, frequency and so on, modify the structure and design of the site to expect more customers to stay and better serve customers. User behavior analysis has become a new research hotspot. The work of this research mainly studies the web log Mining technology in user behavior analysis, and builds the user interest model based on the user interest information, and finally draws the user's interest.

2.3 SPECIFICATIONS:

MICROCONTROLLER (ARDUINO)

Microcontroller is used to perform large number of logics in a simplify manner. The simple and cost efficient microcontroller that can be used for poultry feeding process is Arduino UNO. The timer is set in the controller to regulate the flow. The servomotor control is provided via Arduino programming which enables the flow of food to the feeding plates for feeding water, the solenoid valves are controlled through Arduino programming. It has 14 digital input/output pins, 6 analog inputs, power jack, USB connection and a reset button. The microcontroller used is Arduino shown in Fig. 5.5."Uno" means one in Italian and was chosen to mark the Arduino Software (IDE) 1.0 release. The Uno board and version 1.0 of Arduino Software (IDE) were the reference versions of Arduino, now evolved to newer releases. In a series of USB Arduino boards the Uno board is the first and the reference model for the Arduino platform. The ATmega328 on the Arduino Uno comes preprogrammed with a boot loader that allows uploading new code to it without the use of an external hardware programmer. It communicates using the original STK500 protocol. The Uno also differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it is using the Atmega16U2 (Atmega8U2 up to version R2) programmed as a USB-to-serial converter.

III. RESULT:

3.1 RESULT 1:

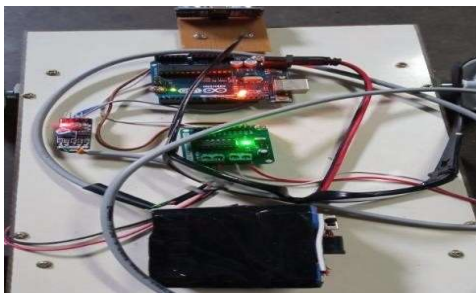


Fig 4.1

The fig 4.1 is set up of Detection of Driver Drowsiness and Accident Avoidance

3.2 RESULT 2:



Fig 4.2

The fig 4.2 shows when any obstacles come in front of vehicle the distance measured from ultrasonic sensor speed vary. It was done by PWM (9) pin in Arduino.

3.3 RESULT 3:

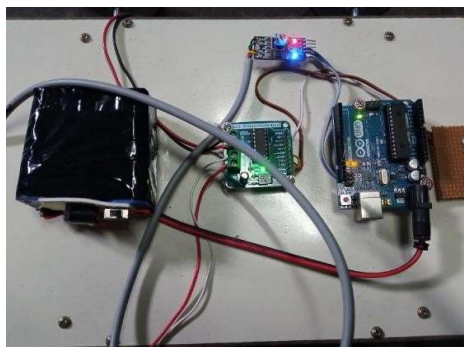


Fig 4.3

The fig 4.3 shows if eye close for more than 2 seconds, then vehicle stop and alarm the driver.

According to the distance measured from ultrasonic sensor speed vary. It was done by PWM (9) pin in Arduino. The eye blink sensor keeps on checking the closure of eye. If eye close for more than 2 seconds, then vehicle stop and alarm the driver.



IV. CONCLUSION:

Nowadays, people have become more prone to accident. So, we as an engineer need to take some action against this and provide the desired solution. For the safety of the human being some automation is made. The purpose of such a model is to advance a system to detect fatigue symptoms in drivers and control the speed of vehicle to avoid accidents. Advanced technology offers some hope avoid these up to some extent.

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