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Drowsiness Detection and Alcohol Detection System

Adarsh Kumar Jha1, Anoop Kumar Mishra[2],Jaydeep Agarwal[3],Karan Sharma[4]

[1234]*IMS Engineering College Ghaziabad*

Abstract: *Truck drivers, company car drivers and shift workers are the most at risk offalling asleep while driving.* Majority of the accidents occur due to the drunkenness of the driver. The burden of which lies on the company owner as they are made liable. It can lead to economic loss. In this presentation we present an adaptive driver and company owner alert system and an application that provides driving behavior to the company owner.

1. INTRODUCTION

Vehicle Accidents are most common if the driving is insufficient. The factors causing accidents are: -

Speeding: Majorly in highways truck drivers ignore the speed limit. Speed kills and travelling above the speed limit is an easy way to cause accident.

Drunk Driving: When the driver is drunk, he loses the ability to focus and function properly, hence it is dangerous when operating a vehicle. This is one of the most contributing factors ofaccident.

Reckless Driving: Improper driving as in speeding up the vehicle or changing lanes too quickly or tailgating and many more can cause r · h deliberate disregard.

Night Driving: Driving in daylight can be hazardous, but driving at night nearly doubles the risk of accident. When you can't see what's ahead you don't know what to anticipate as you drive towards it.

Driving Under the Influence Of Drug: Drugs, both legal and illegal can impair your ability to fully function as a driver. Mind clearance and control over the body is need else it may cause accident.

Drowsy Driving: Driver fatigue isn't talked about a lot, but how well we can expect anyone to drive when they are having trouble staying awake. Most of the car accidents caused by drowsy driving occur at night.

Here we are concern about the factors which make the truck drivers fall asleep as in Drunk Driving, Night Driving, Driving under the influence of drug and Drowsy Driving.

As the result is same for all the above mentioned factors that is,Eyes become "heavy" and blinking time is higher. Driver tends to keep his eyes closed "at least for a few seconds.

Hence here we propose our project of yawn and drowsy detection based on changes in mouth geometric feature and subsequently alerting them. So as to warn the owner and the driver.

1. Objective Of The Project

The main objective of our project is to reduce the accident ratio of driver. Major accident occurs because of the driver's fault, the owner compensates, hence to reduce the burden of the owner we are making this project.

LITERATUR SURVEY

A. Driver Drowsiness Detection System and Techniques

According to the experts it has been observed that when the drivers do not take break they tend to run a high risk of becoming drowsy. Study shows that accidents occur due to sleepy drivers in need of a rest, which means that road accidents occurs more due to drowsiness rather than drink-driving. Attention assist can warn of inattentiveness and drowsiness in an extended speed range and notify drivers of their current state of fatigue and the driving time since the last break, offers adjustable sensitivity and, if a warning is emitted, indicates nearby service areas in the

A. Implementation of the Driver Drowsiness Detection System

This paper is about making cars more intelligent and interactive which may notify or resist user under unacceptable conditions, they may provide critical information of real time situations to rescue or police or owner himself. Driver fatigue resulting from sleep disorders is an important factor in the increasing number of accidents on today's roads. Inthis paper, we describe a real-time safety prototype that controls the vehicle speed under driver fatigue. To advance a system to detect fatigue symptoms in drivers and control the speed of vehicle to avoid accidents is the purpose of such a mode. Inthis paper, we propose a driver drowsiness detection system in which sensor like eye blink sensor are used for detecting drowsiness of driver
.If the driver is found to have sleep, buzzer will start buzzing and then turns the vehicle ignition off.

B. Detecting Driver Drowsiness Based on Sensors

Researchers have attempted to determine driver drowsiness using the following measures: (1) vehicle-based measures ; (2) behavioral measures and (3) physiological measures. A detailed review on these measures will provide insight on the present systems, issues associated with them and the enhancements that need to be done to make a robust system. This paper reviews the three measures as to the sensors used and discuss the advantages and limitations of each. The various ways through which drowsiness has been experimentally manipulated is also discussed. It is concluded that by designing a hybrid drowsiness detection system that combines non-intrusive physiological measures with other measures one would accurately determine the drowsiness level of driver. A number of road accidents might then be avoided if an alert is sent to a driver that is deemed drowsy.

C. Eye Tracking Based Driver Drowsiness Monitoring And Warning System

This project represents a way of developing an interface to detect driver drowsiness based on continuously monitoring eyes and DIP algorithms. Micro sleeps are the short period of sleeps lasting 2 to 3 seconds, are good indicator of fatigue state. Thus by monitoring continuouslythe eyes of the driver by using camera one can detect the sleepy state of driver and timely warnings issued. Aim of the proje is to develop the hardware which is very advanced product related to driver safety on the roads using controller and image processing. This product detects driver drowsiness and gives warning in form of alarm and it also decreases the speed of vehicle. Along with the drowsiness detection process there is continuous monitoring of the distance done by the Ultrasonic sensor. The ultrasonic sensor detects the obstacle and accordingly warns the driver as well as decreases speed of vehicle.

D. Alcohol Detection System:

The purpose of Alcohol detection system is to develop vehicle accident prevention by method of alcohol detector in an effort to reduce traffic acciden t cases based on driving under the influence alcohol.
This is developed by inte grated the alcohol sensor with the microcontroller.
The alcohol sensor used in this project is MQ-3 which to detect the present of alcohol content in human breath.
An ignition system which will produce spark plugs is build up as a prototype to act like the ignition starter over the vehicle 's engine. The ignition system will operate based on the level of blood alcohol content(BAC) from human breaths detected by alcohol sensor.

METHODOLOGY

Each year there are thousands of vehicle accidents, leading to injuries and fatalities, expensive insurance claims and lengthy traffic jams as wreckage is cleared. When a commercial truck is involved in a serious accident, the driver is usually the spotlight. Usually size and weights of trucks requires the driver to be both highly skilled & focused on controlling these multi-ton behemoths. Due to severity of injuries and property damage commercial truck accidents often produce large claim amounts.

One of the most common fault of the truck driver is their failure in checking blind spots, known in the trucking industries as "no zones", before turning or changing lanes.

They are on the all four sides of the semi, and many accidents happen when the trucker man oeuvres into the spots without carefully checking for clearance first. They are operating a dangerous vehicle, driving the rig defensively is part of truckers ' "expanded duty" to protect us.

Other truck driver errors are similar to those that anyone can make , such as not paying attention to surrounding , speeding, not knowing routes, exhaustion and driving under the influence of alcohol or drug

This project involves controlling accident and saving driver's life as well as owner's problem of compensating every time even if it's the fault of the driver.

In this project we design goggle/spectacles in which IR sensors and buzzer are fitted. This entire set up is worn by the driver. The setup consist of many more things such as Arduino UNO, GSM SIM 800 module, 2batteries, two ON/OFF buttons each connect with one battery. Now what happens here is first battery is connected with microcontroller and the other one is connected with GSM module. This entire setup works in this way, as soon as the driver wears the goggle IR sensors checks weather the eyes are closed or not, if the eyes are not closed then it again checks for it, this loop continues until the eyes are found closed. AS soon as the eyes are found closed, it again goes for a second check and again if the eyes are found closed then the buzzer is blown and red LED is on and it continues blowing for lminute and then buzzer and LED will be off. after lminute. We over here set a condition if the frequency is more than 50 then the driver is not drowsy as soon as it reads frequency less than 50 then the driver is drowsy. On the other hand as soon as the driver is found drowsy the message is sent to the owner via GSM module which reads as "Driver is found drowsy". The same process keeps repeating.

In short we can say whenever the driver feels drowsy his eyes starts to blink for more than one second, this status is detected by the IR sensor and the buzzer is blown to make the driver conscious and the text message is sent to the owner immediately.

REQUIREMENTS

Software Requirements

Pycharm
Arduino ide
Os Windows (32bits min)

Hardware Requirements

1. Arduino UNO: It is open source microcontroller. The board is equipped with sets of digital and analog input/output (1/0) pins. That may be interfaced to various expansion boards (shields) and other circuits. The board features 14 Digital pins and 6 Analog pins.
2. Raspberry pi: It is a series of small single board computers.
3. Alcohol sensor(MQ): The mq3 gas sensor is the alcohol sensor which is used to detect the concentration of alcohol in your breath. This sensor provides an analog sensitive output.
4. Connecters
5. Buzzer: Buzzer will be blown at driver side when eye lid is closed for more than 1 second.

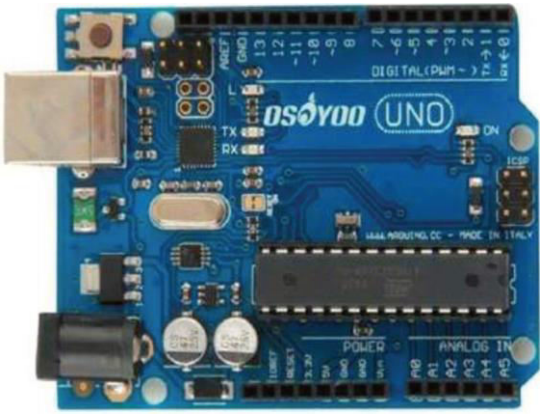


Fig: 1 Arduino UNO

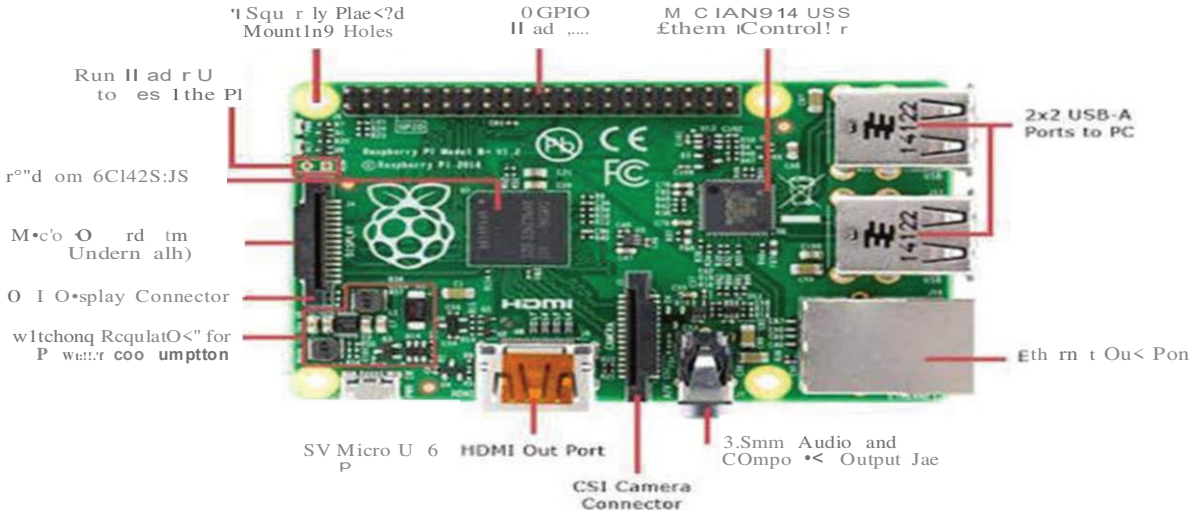
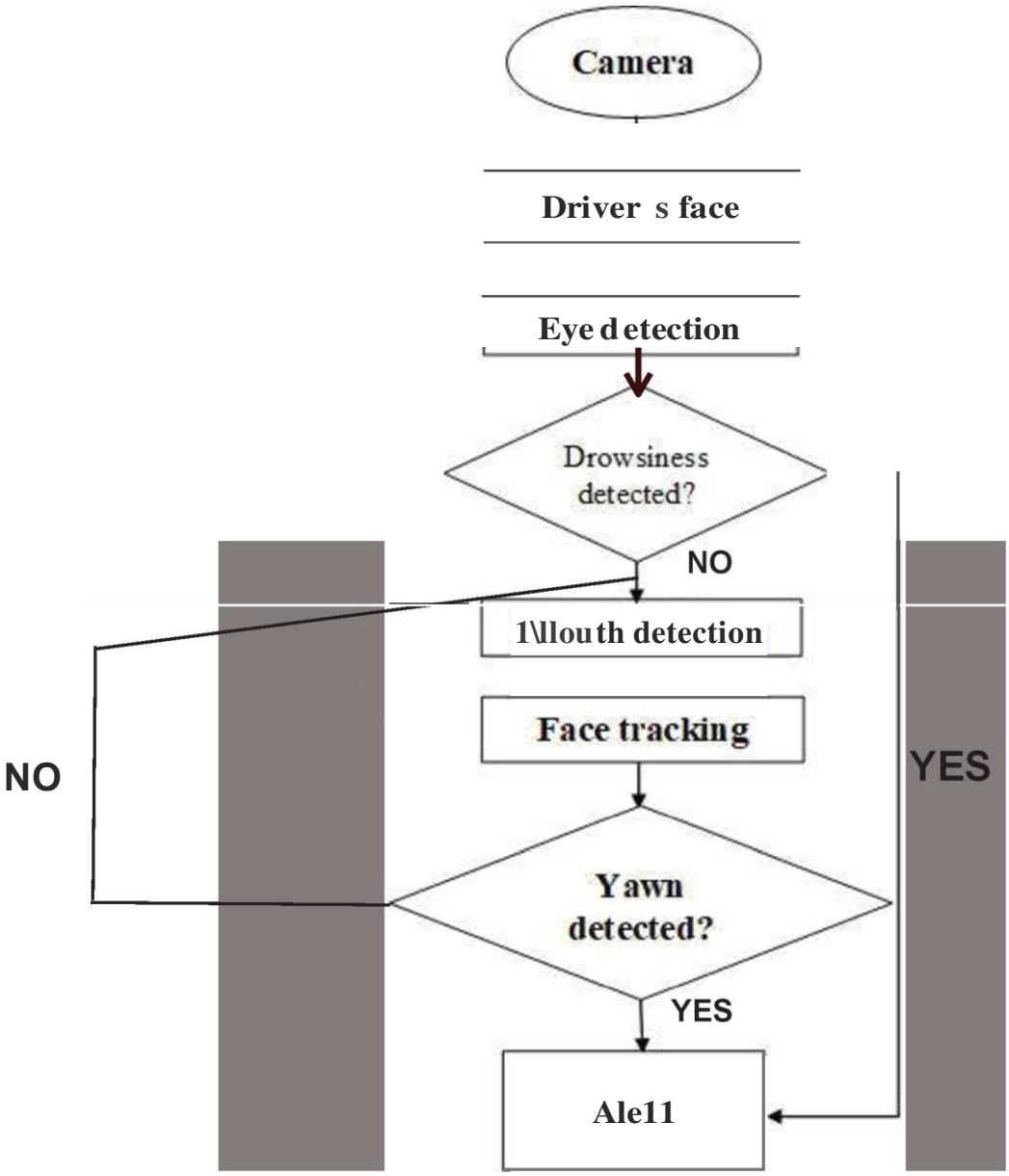


Fig: 2 Raspberry pi

Fig:3 Buzzer

Fig:4 MQ3 Sensor

C. Data Flow Diagram



CONCLUSION

Purpose of our project is to help solving real life problem in very cost effect way. It alerts the vehicle driver as well as their relatives. Whenever the driver feels drowsy and closes his eyes for more than a second, the buzzer is blown. Then it alerts the driver. As a result the accident ratio decreases. Hence, our project, if commercially developed will help in saving the precious life of driver's & will decrease the accident ratio

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