



Alcohol Consumption and Drowsiness Detection

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ABSTRACT

According to the survey in recent years, road accidents are due to drowsiness or sleepiness of driver. In order to avoid such accidents, many researches have been done to detect drowsiness. Their methodologies usually estimate either physiological or behavioral characteristics of the driver or the measures related to the vehicle being used. Sleepiness of the driver can be detected using eye blink sensors which trigger the alarm to conscious the driver and generate vibrations on steering, for the confirmation. It will also happen when driver's head fall due to sleepiness through head fall monitoring. In this process, the alert will be sent to the driver if the driver is Drowsy and this system is also designed with android app.

Keywords : Eye Blink Sensors, Alcohol Sensor, Head Fall Sensor, Bluetooth, Driver Board.

I. INTRODUCTION

Frequently, the loss of driver's control over the vehicle results in the road accidents. Most of the times, even if the vehicles are flawless; the human errors may result in the fatal consequences. Usually sleepiness of driver or consumption of liquor leads to the loss of control over the vehicles. Loosing control for even a fraction of second leads to the major damage of both property and life. So, It is indispensable to avoid unexpected harmful effects of drowsiness on roads. Iris scan is most preferable to detect drowsiness of driver. Researches have been done in which a lot of prototypes and modules were developed for iris scanning. Innovations have been done in different technologies for gadgets designing it can detect drowsiness and consumption of alcohol by the driver. The drowsiness can also be detected by the use of eye blink sensor.

Frequency of opening and closing of eye rate is the main objective developed in this system. Drowsiness is the medial stage for sleep, it is the state of progressive awareness associate with the sleep. In case of driving, drowsiness increases the probability of accidents. Many traffic surveys shows that 22% of accidents are due to drowsiness and 33% of accidents are because of alcoholism. Many research have been trying to develop new drowsiness detectors. The drunk and drive detectors have also been developed to avoid accidents. But there are very few research works done for the combination of both sensors. It will be unique to create such a system can detect the drowsiness as well as alcohol consumed car driver and it intimate person on real time basis. Haar transform are used to detect the blinking rate of eye and a breathalyser is used to measure alcohol content in blood from breath air content (BrAC). Along with the high speed Raspberian system, raspberry-pi board act as the heart of the system(CPU). The application of

raspberry pi CPU based sensing system to the detection of driver's lethargy and alcoholism in order to avoid the road accidents[1].

II. OBJECTIVE

Driver drowsiness detection is a car safety technology which helps prevent accidents caused by the driver getting drowsy. Various studies have suggested that around 20% of all road accidents are fatigue-related, up to 50% on certain roads.

III. METHODOLOGY

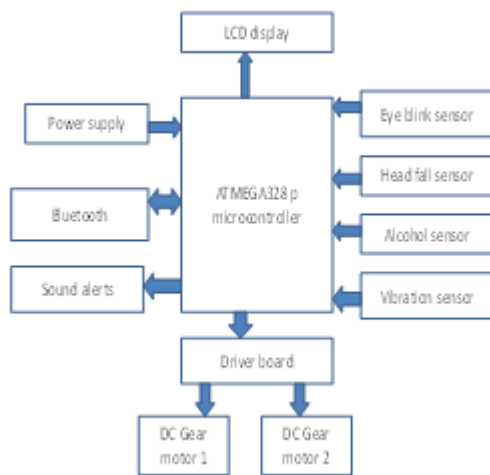


Figure 1. Drunk and drowsy system

ATMEGA32 is the 28 pin Microcontroller, it is based on low power AVR risk. As it contain 8KB programmable flash memory. The microcontroller is used to process the data from the availability sensors, all the sensors and components are connected with digital pins except alcohol sensor. The alcohol sensor (MQ3) works based up on the smell and concentration of the alcohol. Alcohol consumed data will be send to the microcontroller and it analyze the data and the data is again send to the DC gear motors so the car could not starts. At the same time, buzzer vibrator and indicators tends to be "ON", the alcohol consumed get displayed on the LCD display. The

drowsiness has detected by two sensors, Eye blink and head fall sensor. Eye blink sensor works depends upon IR radiation. If the human eye opens, it get observed so that frequency level of the eye decreased. The frequency level increases when the sensor detects the data. Head fall sensor contains a tilt, which is filled with mercury. The head fall movement of the driver has been detected depends up on the angular change of the tilt. Whenever the two sensors detects the data, it send the data to microcontroller, then the data is subjected to the DC gear motors, speed will be decreases step by step and then the car has been stopped. This information will be send through Bluetooth by a android application via SMS. At the same time the vibrator buzzer indicators tends to be "ON". The power supply is 5v for all circuits, and the DC gear motors has 12v power supply.

IV. CIRCUIT DIAGRAM

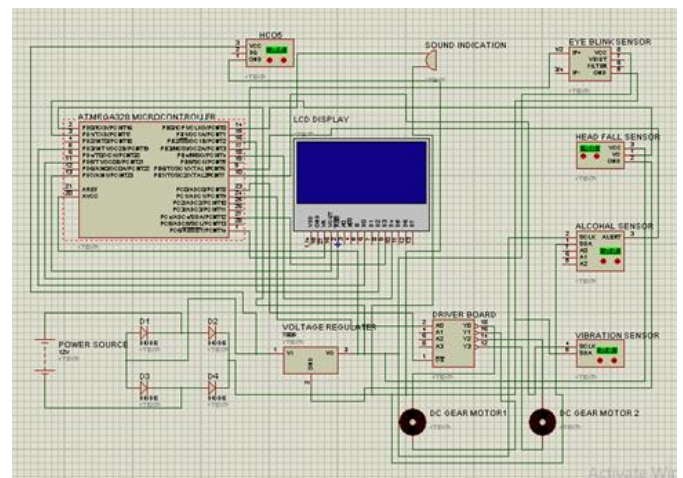


Figure 2. Circuit Diagram of Alcohol & Drowsiness Detection System

Microcontroller consist of 28 pins, 0-13 are called digital pins, except those are analog pins which is used to detect drowsiness while drunk & drive. Eye blink, head fall, vibrator sensor are connected to digital pins. Eye blink sensor consists of three pins digital Vcc, ground and output pin. Bluetooth consist

of four pins digital Vcc, ground, transmitter and receiver. LCD (16x2) consist of 16 pins, last two pins are used for LED connector. Driver board is used to change the positive and negative modes in order to move the car in front and back direction. All the circuit components works on five volts power supply. The motor, which works on twelve volts power supply.

V. RESULTAND DISCUSSION

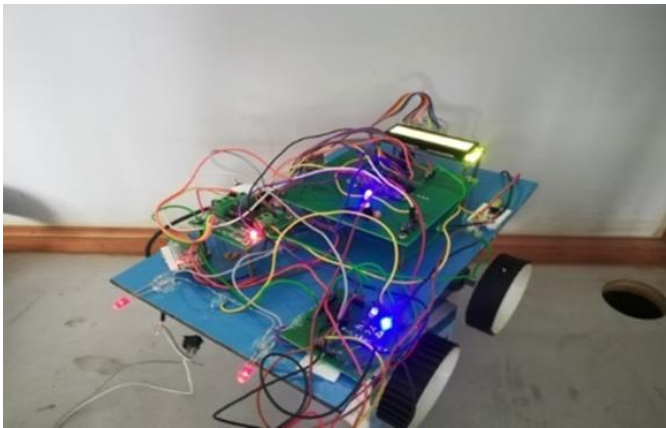


Figure 3 Output of the system

The power supply is given to the system. The Bluetooth receives input data from all the sensors and makes the car to stop its motion step by step.

VI. CONCLUSION

Recent survey showed that 20% of accidents is due to mind distraction of driver and 30% is due to fatigue (drunk and drive). We have followed different methodologies in a single prototype to monitor driver 's physical activities and to alert them in case of distraction. Thus the major cause for accident are drowsiness, fatigue, alcohol consumption, head fall. By using this system we can detect those parameters and it will be more helpful in minimising the percentage of road accidents of traffic survey.

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Cite this article as :

Dr. T. S. Udhaya Suriya, M. Arunkumar, S. Manikandan, M. Praveenkumar, "Alcohol Consumption and Drowsiness Detection", International Journal of Scientific Research in Science and Technology (IJSRST), Online ISSN : 2395-602X, Print ISSN : 2395-6011, Volume 5 Issue 5, pp. 100-102, March-April 2020.
Journal URL : <http://ijsrst.com/EBHBM007>