

## **ABSTRACT**

In recent years, driver drowsiness has been one of the major causes of road accidents and can lead to severe physical injuries, deaths and significant economic losses. The system architecture for driver drowsiness detection and alcoholic alerting system using microcontroller. The driver drowsiness is detected by using drivers wearing eye blinking sensor. In one of the major disappointments of the system does not wearing all time eye blinking sensor by drivers because the sensor is irritating the driver's eye. It is overcome by using camera. Determine if the eyes are open or closed. The system deals with using information obtained for the binary version of the image to find the edges of the face, which narrows the area of where the eyes may exist. Once the face area is found, the eyes are found by computing the horizontal averages in the area. Once the eyes are located, measuring the distances between the intensity changes in the eye area determine whether the eyes are open or closed. A large distance corresponds to eye closure. Alcohol drinking it is about 31% of all road accidents. By using alcoholic gas sensor to detect the alcohol when the driver is drunken or not.

Keywords: driver drowsiness, alcoholic gas sensor transportation safety and alerting system.

## **ACKNOWLEDGEMENTS**

The satisfaction that accomplishes the success of any work would be incomplete without people who made it possible, whose constant guidance and encouragement made this work perfect.

We cordial thank to **Prof. Aadesh. S. Angadi** for his valuable guidance and precious suggestions. This helped me in all the way to complete this project successfully.

We wish to express our deep sense of gratitude to the Principal **Dr. M. M. Awati** of **Tontadarya College of Engineering, Gadag** and **HOD. Dr. Madhusudan Kulakarni** of Electronics and Communication Engineering Department, Tontadarya College of Engineering, Gadag for all staff member of Electronics and Communication department who encouraged us during our academic period. Finally, we would like to convey our heartiest thanks to convey our friends and my parents for their constant encouragement.

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# **CHAPTER-1**

## **INTRODUCTION**

Driver fatigue is a significant factor in a large number of vehicle accidents. Recent statistics estimate that annually 1200 deaths and 76000 injuries can be attributed to fatigue crashes.

The aim of the project is to develop a prototype drowsiness detection, drunk driving detection, and heat controlling system. The system contains an eye blink sensor, an alcohol detecting sensor, an eye blink sensor to monitor the driver's eyes in real time to avoid accidents. Alcohol consumption of the driver or the person who is driving the vehicle. The temperature sensor detects the temperature of the engine and is detected by moving of fan. This project should be installed in the vehicle.

## **CHAPTER-2**

### **PROJECT OBJECTIVE**

Road accidents due to drunk and driving are the most important challenges in safety system of automobile industry. The objective of this project is to detect the drowsiness of the driver using visual feature approach by analysing the eye and face movements. Alcohol sensor is used to detect the drunkenness of the driver. IF the driver found in in alertness or inactive state, alarm would be generated. via buzzer and using a vibrator to alert the driver. If the alert would go off for more than three times with in the specified time period then engine would go off immediately.

## CHAPTER-3

# LITERATURE REVIEW

Drowsiness is synonymous with sleepy that means an inclination to fall asleep. The stages of sleep is often classified as awake, non-rapid eye movement sleep and rapid eye movement sleep. The second stage NREM, is often into subsequent 3 stages

stage 1: Transition from awake to asleep(drowsy)

stage 2: lightweight sleep

stage 3: deep sleep

Drowsiness cannot be manifested during real time environment and needs to be developed and tested in a laboratory setting. In a laboratory setting, the foremost reliable and informative information that pertains to driver drowsiness depends only on the approach in which the driver falls into the drowsy state. Drowsiness depends on the quality of last night sleep and the biological time. Peters-et-al studies an equivalent subject and regarded results of no sleep deprivation, partial sleep deprivation and total sleep deprivation on their drowsiness level. Even in partial sleep deprivation, person tends to drowse after a while otami.et al found that sleep deprivation is not only the reasons for the drowsiness but also prolonged driving can cause the drowsiness. It has been inferred that subjects tend to become drowsy at intervals of twenty to twenty-five min of driving. Drowsiness can be detected using different techniques. Template match making is one of method. In which two pictures are compared to get the deviation. To recognize the matching territory picture can be contrasted against the format picture by sliding. sliding is moving the patch one pixel at once. Brightest area indicates the highest matches. Principal component analysis and linear discriminate analysis are used for blink detection considering drivers tiredness and diversion HARR cascade classifier method is used for facial eye detection

methods utilizing the real time image processing Physiological measures are also used to detect the drowsiness. Heart rate varies considerably between different stages of drowsiness and fatigue. Therefore, heart rate determined by ECG signal can even be used to observe drowsiness. But still drowsiness detection through behavioural attributes and established better results than using physiological measures. This paper acquaints the vision-based strategy with distinguished drowsiness. significant difficulties are face recognition and iris location under different conditions and creating real time systems.

## **CHAPTER-4**

# **METHODOLOGY**

Drowsiness can become very dangerous, especially for such professions like drivers. Nowadays, more and more professions require long-term concentration. People, who work for transportation business (car and truck drivers, steersmen, airplane pilots), must keep a close eye on the road, so they can react to sudden events (e.g. Road accidents, animals on the road, etc.). And also, alcohol consumption, mobile usage while driving causes accident. So, to avoid accidents caused due to these reasons we implement a system. The aim of this project is to develop a prototype drowsiness detection system. The focus will be placed on designing a system that will accurately monitor the eye blink rate, alcohol consumption level and also mobile usage of the driver. In this project we use sensors to measure all these factors. This is a small system, so we can easily embed it on any vehicle. The Eye blink sensor is fixed to the driver. The eye blink sensor senses the movement of the eyeball. The sensor output is connected to a microcontroller. The car engine starting system is directly controlled by the microcontroller. If the sensor detects the alcohol consumption from the sensor, it sends the signal to the microcontroller. The engine will be prevented from starting.



## CHAPTER-5

# **PROJECT WORK DETAILS**

### **LIST OF COMPONENTS**

- 1.Eye Sensor
- 2.Alcohol Sensor
- 3.Relay
- 4.microcontroller
- 5.Buzzer
- 6.Arduino Board
- 7.Switch Board

### **Specifications of Components:**

#### **1.Eye Blink Sensor:**



The Eye blink sensor works by illuminating the eye or eyelid area with infrared light, then monitoring the changes in the reflected light using a photo transistor and differentiator circuit. The exact functionality depends greatly on the positioning and aiming of the emitter and detector with respect to the eye.

Fig 5.1

## 2. Alcohol Sensor:

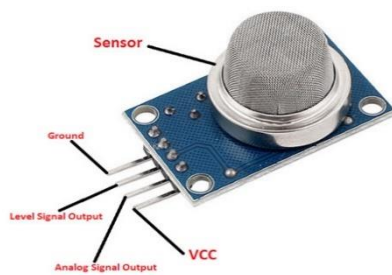


Fig 5.2

Alcohol sensor is the sensor that measures the amount of alcohol that is present in surrounding environment as shown in Figure. There are contact and non-contact type of sensors. As the output signal of sensor is smaller in amplitude the signal power is also low therefore amplifiers are used. The weak signals are amplified.

## 3. Relay:



Fig 5.3

The error between the reference and present value is given to the temperature controller which responds correspondingly to the error and gives the feedback to the sensors. The temperature controlling depends on whether the temperature needs to be increased or decreased. The temperature controlling can be done through fans.

## 4. Buzzer:



Fig 5.4

A buzzer or beeper is an audio signalling device which may be mechanical, electromechanical, or piezoelectric (Piezo for short). Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.

## 5. Microcontroller:

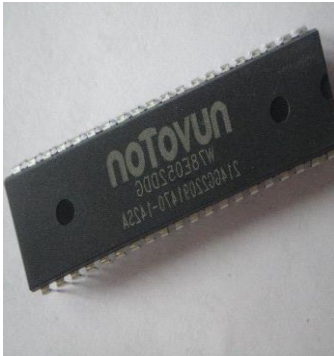


Fig 5.5

It is the major part of the system. It maintains the temperature, humidity and light intensity to the desired value. The 8051 has one serial port that receives and transmits data. Transmission and reception can take place simultaneously. The four communication modes possible with 8051 present the system designer and programmer with opportunities to conduct very sophisticated data communication network. It is the heart of the system which controls all the inputs and the controlling action to be taken at the output.

## 6. Aurdino Uno:

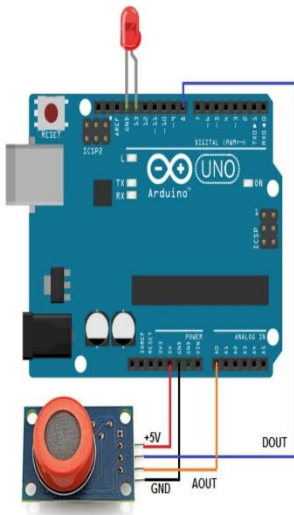


Fig 5.6

AURDINO UNO is a microcontroller board and is most used and documented board in aurdino family and relatively cheap and easy to set up. it consists of ATmega 328p which is known as the brain of the aurdino and provides high performance which is capable of executing powerful instruction in single clock cycle and ATmega 16U2 which takes care of the USB connection and ICSP bootloader which provides the readable output. The software used for Arduino devices is called IDE (Integrated Development Environment) which is free to use and required some basic skills to learn it. It can be programmed using C and C++ language.

## **CHAPTER-6**

# **CONCLUSION**

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. Some of the current systems learn driver patterns and can detect when a driver is becoming drowsy. And the accidents are also caused due to alcohol consumption and when the driver is speaking in the phone while driving. The development of technologies for detecting or preventing drowsiness, alcohol consumption detection and mobile phone.

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