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ABSTRACT

Drowsiness in driving causes the major road accidents. Now a day's drowsiness due to drunken driving is increasing. If driver is found to be drowsiness in eyes more than 5 secs, then the eye blink sensor senses the blink rate. If the eyes are found to be closed, then the speed of the car slows down. In our proposed system, along with drowsiness, alcohol detection is also detected by using alcohol MQ3 sensor. If alcohol is detected in driver's breathe, then the car slows down. These sensors are interfaced with Arduino UNO.LED glows in case of alcohol detection and buzzer rings in case of drowsiness detection and speed of the car varies on detection of both cases.

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ABSTRACT

Drowsiness in driving causes the major road accidents. Now a day's drowsiness due to drunken driving is increasing. If driver is found to be drowsiness in eyes more than 5 secs, then the eye blink sensor senses the blink rate. If the eyes are found to be closed, then the speed of the car slows down. In our proposed system, along with drowsiness, alcohol detection is also detected by using alcohol MQ3 sensor. If alcohol is detected in driver's breathe, then the car slows down. These sensors are interfaced with Arduino UNO. LED glows in case of alcohol detection and buzzer rings in case of drowsiness detection and speed of the car varies on detection of both cases.

Keywords: arduino UNO, eyeblink sensor, MQ3 sensor, L29.

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I. INTRODUCTION

Drowsy driving is a major problem. No one knows the exact moment when sleep comes over their body. This makes the driver less able to pay attention to throad. It affects the driver's ability to make good decision. Each near nearly 1,00,000 traffic crashes can be attributed to drowsy driving, including more than 1,500 death and over 70,000 injuries, according to the

- Unsensational Highway Traffic Safety Administration. Another major factor of accidents are due to consumption of alcohol.
- The number of road accidents caused by drunken drivers was 1,643 in 2018. Hence in order the reduce the accidents due to drowsiness and alcohol consumption can be

reduced by using the eye blink sensor and alcohol sensor respectively.

- Hence when they are detected the speed of the car slows down and stop which avoids the rash driving .
- Accidents due to driver drowsiness can be prevented using eye blink sensors. The driver is supposed to wear the eye blink sensor frame

The eye-blink sensor works by illuminating the eye and eyelid area with infrared light, then monitoring the changes in the reflected light using a phototransistor and differentiator circuit. The exact functionality depends greatly on the positioning and aiming of the emitter and detector with respect to the eye. The sensor is connected with Arduino UNO.

Any amount of alcohol in your bloodstream can impact your driving ability. The effects of alcohol abuse vary greatly, putting you at risk for causing an accident or highway injury. Safe driving requires the ability to concentrate, make good judgements and quickly react to situations.

However, alcohol affects these skills, putting yourself and others in danger. The consumption of alcohol can be detected by using MQ3 sensor. MQ3 sensor detects the consumption of alcohol from the breath of the person. This helps in avoiding accidents caused by consumption of alcohol.

II. LITERATURE SURVEY

In recent years, the drowsiness of the driver is detected by using image processing techniques. If the drivers eyes closed for certain period of time, the driver is said to be drowsy. As a result we get information related to driver's condition and the speed of the car is reduced. Rate of death due to road accidents is increasing day by day. Driver drowsiness is one of the common reasons for most of vehicle accidents.

A drowsy driving detection and avoidance system. They utilized an image processing technique to detect the eye blink of the driver. If the drivers eyes remain closed a certain period of time, the driver is said to be drowsy. As a result we get immediate information related to the driver's condition and speed of the vehicle is reduced which reduces the chances of road accidents. In the training phase, the system uses the input image of driver from real time camera and input image undergoes several image processing steps and required feature is extracted from an image.

Features are trained and stored in knowledge base. In the testing phase same above said procedures are followed. The result of testing and is compared with coefficients stored in knowledge base using image classifier (SVM) and checked whether driver eye is opened or not.

IoT based hardware, which is advanced product related to driver safety on the roads using combination of mobile computing and digital image processing and controller. They will detect driver drowsiness and gives warning in form of alarm. And traffic collision information system will continuously monitor the distance from vehicle which is done by the ultrasonic sensor. If the ultrasonic sensor detects the obstacle then it will accordingly warns the driver. If somehow collision occurs it will detect collision using impact sensor and provide emergency help service for driver. The alcohol sends a value of alcohol contained in the drivers breathe in case of consumption and indicates the values in LCD display and sends message to the registered phone number. In case of high level consumption of alcohol, it stops the ignition of the motor of the car. The scanning of driver's eyes continuously using the Eye Scanner, so that whenever the car driver closes his eyes for a longer period (2 seconds or more), the scanner generates or activates the alarm and the alarm starts ringing loudly. This will wake up the driver and make him conscious for driving ahead. The alarm system will be included as an application in the car music system and the driver will be given the choice of switching on/off the functionality. If the driver switches off the safety feature the IRIS/Eye

Scanner will stop working. But if the safety feature is switched on by the Driver the IRIS Scanner will continuously scan the driver eyes while the driver is driving the car and check whether the driver is attentive or not. In addition to analyzing the situation of threat due to Drowsy driving, this alert system post alarming the driver will fetch the nearest refreshment halt direct him to destination with exact distance and expected time to reach and will also announce to driver through the medium of navigation system/music system speakers of the car.

This way we can create complete solution for safety device to alert drowsy drivers, hence saving many precious human lives. Fatal Road accidents can be easily avoided by understanding the psychological condition of drivers. Majority of road accidents occur during night driving due to the state of drowsiness. This project provides an eye blink monitoring system that alerts the driver during the state of drowsiness. A normal eye blink rate has no effect on the output of the system. Here we use one gate way Raspberry pi, in that gateway webcam is connected, with the help of webcam when the driver is going to close his eyes more than 5secs it will click the picture of driver and send to web application.

In web application one admin will be there he is monitoring and send the message that will be converted into speech is initiated to wake the driver. To detect driver drowsiness and gives warning in form of alarm and traffic collision information system will continuously monitor the distance from vehicle which is done by the ultrasonic sensor and provides warning to the driver and also in case of any collision occurs, it provides emergency help service for driver. For Health Monitoring of driver, making wearable device which will give the heart beat and body temperature of the driver, so before boarding to vehicle administrator should know the status of subject. Genuine following of driver will likewise track with versatile GPS.

III. DESIGN REQUIREMENTS

3.1 Arduino Uno



Fig. 1: Arduino UNO

Arduino is an open source computer hardware and software company, project, and user community that designs and manufactures single-board microcontrollers. The microcontroller kits are used for building digital devices and interactive objects that can sense and control objects in the physical world. The project's products are distributed as open-source hardware and software, which are licensed under the GNU Lesser General Public License (LGPL). General Public License (GPL), permitting the manufacture of Arduino boards and software distribution by all. changes in the reflected light using a phototransistor and differentiator circuit. The exact functionality depends greatly on the positioning and aiming of the emitter and detector with respect to the eye.

Arduino came with a common flat form Integrated Development Environment. The Arduino UNO is a microcontroller board based on the ATmega328. It has 14 digital Input/output pins, 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. The Arduino UNO is a microcontroller board based on the ATmega328.

It has 14 digital input/output pins of which 6 can be used as PWM outputs, 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It is connected to a computer with a USB cable or power it with a AC-to- DC adapter or battery to get started.

3.2 Mq3 Sensor

MQ-3 alcohol sensor can detect the presence of alcohol at concentrations from 0.05mg/l to 10

mg/l.Used for detecting alcohol concentration on your breathe.



Fig. 2: MQ-3 Sensor

3.3 Eyeblink Sensor

The eye-blink sensor works by illuminating the eye and eyelid area with infrared light, then monitoring the



Fig. 3: Eyeblink Sensor

3.4 DC Motor

A DC motor is any of a class of rotary electrical machines that converts direct current electrical energy into mechanical energy. The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic, to periodically change the direction of current flow in part of the motor. DC motors were the first form of motor widely used, as they could be powered from existing direct- current lighting power distribution systems.

A DC motor's speed can be controlled over a wide range, using either a variable supply voltage or by changing the strength of current in its field windings. Small DC motors are used in tools, toys, and appliances. The universal motor can operate on direct current but is a lightweight brushed

motor used for portable power tools and appliances. Larger DC motors are currently used in propulsion of electric vehicles, elevator and hoists, and in drives for steel rolling mills. The advent of power electronics has made replacement of DC motors with AC motors possible in many applications.



Fig. 4: Dc motor

3.5 L298H Bridge

An H bridge is an electronic circuit that switches the polarity of a voltage applied to a load. These circuits are often used in robotics and other applications to allow DC motors to run forwards or backwards.

Most DC-to-AC converters (power inverters), most AC/AC converters, the DC-to-DC push-pull converter, most motor controllers, and many other kinds of power electronics use H bridges. In particular, a bipolar stepper motor is almost invariably driven by a motor controller containing two H bridges.

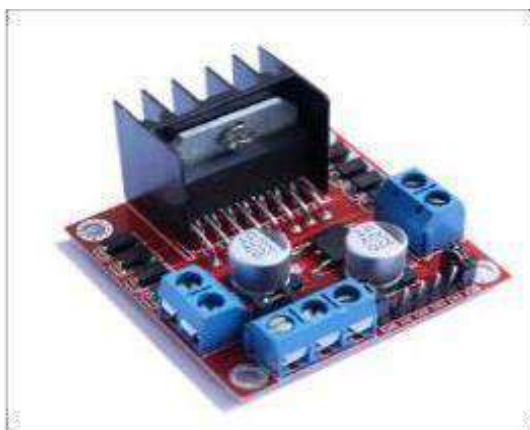


Fig. 5: L298H Bridge

VI. System Design

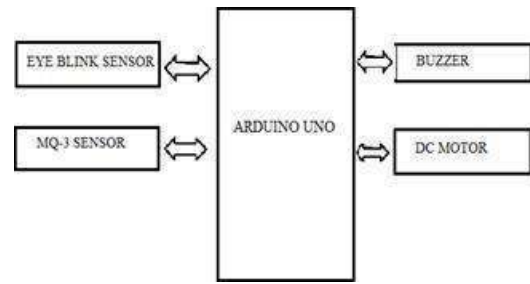


Fig. 6: Block Diagram of Proposed System

V. PROPOSED SYSTEM

In our proposed system, drowsiness of the driver is detected by using eye blink sensor. The eye blink rate is continuously being monitored by using Arduino. If the eye is closed for more than 5 seconds then the driver is found to be drowsy.

Hence the buzzer starts buzzing and also the speed of the car slows down (here indicated by a dc motor). Also, alcohol is detected by using MQ3 sensor. The sensor is interfaced with Arduino. LED glows when alcohol is detected and the speed of DC motor varies according to the content of the alcohol present in the driver's breathe.

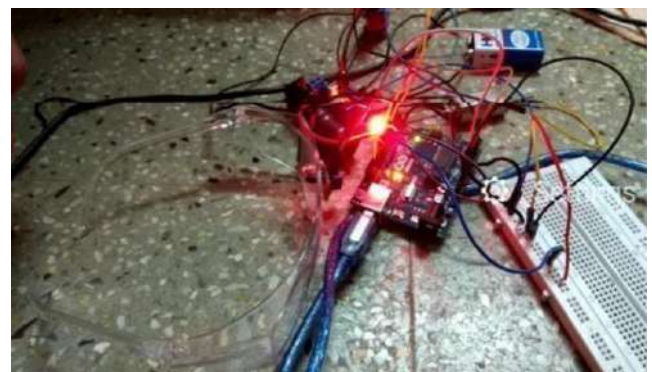


Fig. 7: Working of Proposed System

IV. CONCLUSION AND FUTURE SCOPE

The driver drowsiness and alcohol detection system is used to detect the drowsiness of the driver and also detects the alcohol consumption of driver. If there is drowsiness or consumption then the motor of the car gets slowed down and the buzzer sounds until the eyes get opened. The values of alcohol and the blink rate will be displayed in the serial monitor of the Arduino IDE. This proposed system helps in finding drowsiness and alcohol detection using Arduino.

This helps in avoiding many accidents. Further we extend this project by using webcam to detect the drowsiness of the driver.

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