Drowsy Driver Sleeping Device and Driver Alert System

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Abstract: *Drowsiness is the main cause for major accidents which leads to the injuries, deaths and damages. To overcome this problem, we propose a system which uses various sensors. These sensors are used to detect the driver drowsy and monitor the health of the driver. The buzzer is used to alert the driver whenever the driver feels drowsy. Whenever the sensor values are not in the range of threshold value, the motor stops. In case of emergency, the GPS module determines the location and this information is sent through GSM to the particular person or in charge ward. All these sensor operations are controlled by Microcontroller. With the help of this system, the major road accidents canbe reduced by alerting the driver*

Keywords: For V2V Communication, Crash Avoidance System, Intelligent, Transportation System (ITS), Vehicle Safety, Collision Warning, Cooperative Adaptive Cruise Control (CACC), Wireless Communication, Dedicated Short- Range, Communication (DSRC), Vehicle-to-Everything (V2X), Sensor Fusion, Connected Vehicles, Traffic Safety

I. INTRODUCTION

Driver drowsiness is one of the main reasons for the accidents. About 50% of the accidents are road-accidents. The drowsiness of the driver has become a major cause for the road accidents. Some methods need to be developed to prevent the driver from his drowsiness during driving. This has become a major challenge to develop a system for the prevention of this issue. In earlier systems, visual analysis of eye state and head pose (HP) for continuous monitoring of alertness of a vehicle driver was used. The Raspberry pi camera and Raspberry pi 3 module were used to calculate the level of drowsiness in driver. A module for Advanced Driver Assistance System (ADAS) was presented to reduce the number of accidents due to driver fatigue thus the visual information and artificial intelligence were used. Researchers have attempted to determine driver drowsiness using the following measures: (1) vehicle-based measures; (2) behavioral measures and (3) physiological measures. The aim of this paper is to develop a prototype of driver drowsiness detection system. This system mainly focuses on monitoring of the driver's body temperature and eye blink rate. It also monitors the heart beat rate of the driver. These factors are measured using the appropriate sensors. The microcontroller compares the sensor values with the reference values provided. It alerts the driver if these values are out of the reference value range. Additionally, the GSM module sends the message to the concerned people to notify about the driver

The drowsiness detection and alert system is step forward to avoid road and highway accidents in future.
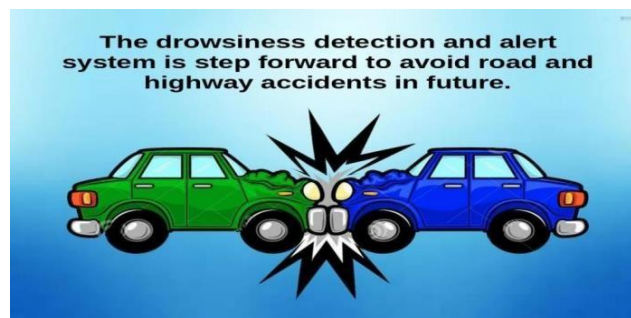
II. LITERATURE SURVEY

M. Hemamalini and P. Muhilan, volume1. Issue L11, 2017. Accident prevention using an eye blink sensor Ueno H., Kanda, M. and Tsukino, M. IEEE Vehicle Navigation and Information Systems Conference Proceedings,(1994), ppA1-3,15-20. Development of Drowsiness Detection System Sean Enright, Electronics Engineering Student, 506-650- 3611, May 26-2011 Alcohol Gas Detector "Breathalyzer Weirwille, W.W. (1994). "Overview of Research 14th International Technical Conference on Enhanced Safety of Vehicles, pp23-26. Driver Drowsiness Definition and Driver Drowsiness Detection

2.1 Aim & Objectives of Project
- The purpose of the driver sleep sensing and alerting system is to help reduce accidents involving passenger and commercial vehicles.
- The technology detects early indicators of fatigue before the driver loses their ability to drive safely

2.2 System Diagram
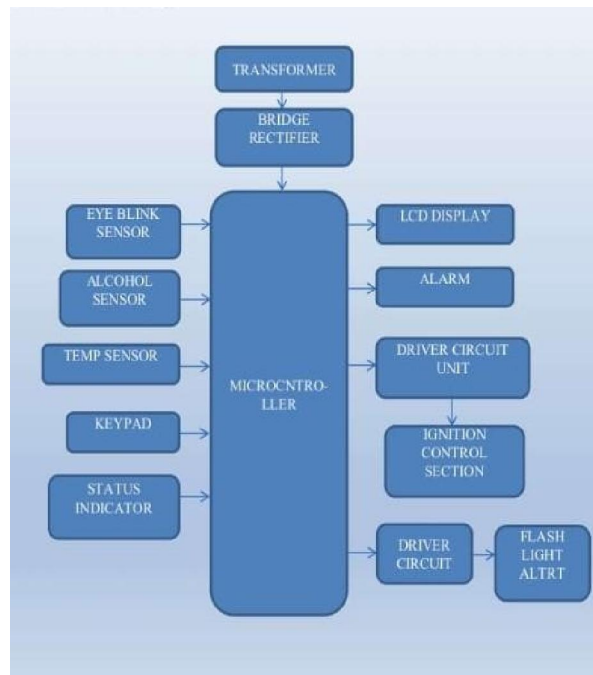
2.3 Application
- For a personal car.
- This device warns the user if they start nodding off while driving, preventing accidents and preserving lives.
- This approach is quite useful, especially for those who travel great distances and persons who are out driving late at night.
- It can be utilised by truck and bus drivers who spend a lot of time on the road.
- It can be utilised by public transportation drivers to assure the security of the passengers. The operator of large load lifting equipment, such as cranes, can use this technique to prevent accidents at the workplace.

2.4 Need of Project
Every year, approximately 1.35 million people die as a result of road accidents. Because of these accidents, more than 20 to 50 million people suffer from non-fatal injuries. And many become disabled from these injuries. Road crashes cost USD $518 billion globally, costing individual countries from 1-2% of their annual GDP . The challenge is to reduce the number

of accidents. For which, it's better text heads-the template will do that for to take action before an accident occurs. But sometimes it's not in our hands. And so, many injured lose their lives for not getting informed beforehand. An automated intelligent system would be the best solution considering the circumstances

III. WORKING

Implementing an automated system to vehicles that provides high security to driver and the passengers, by designing an eye blink sensor which continuously monitor number of times the eye blinks, once when the eye blinks count decreases (that means the driver is sleepy), buzzer indication will be given and that wakes driver from sleep. This paper involves measuring the eye blinks using IR sensor. There are two sections in IR sensor .The IR transmitter is used to transmit the infrared rays to our eye. The IR receiver is used to receive the reflected infrared rays of eye. If the eye is closed then the output of IR receiver is high otherwise the IR receiver output is low. This is to know whether the eye is at close or open position at that condition. In the transmitter section, eye blink sensor is placed near the eye to sense the blink count and this information is transmitted in the form of pulses and is given to the Microcontroller. The controller processor use this information to compare with the normal eye blink programmed in and if any abnormal situation arises, the buzzer indication is given to the driver to alert him, this operation is enabled by means of the circuit connected to the buzzer. And in case of any fire inside the vehicle the temperature sensor sense the condition and stops the engine

IV. ADVANTAGES

- Security of vehicle.
- Helpful for strangers.
- Detect if the driver is feeling sleepy.
- Better service to passengers.
- Low cost and flexible in design.
- This module can reduce the passenger tension in journey to unknown place.
- Decreasing road accidents.
- It provides high efficiency

V. CONCLUSION

This paper analysis and design the driver drowsiness detection and alert system. The proposed system is used to avoid the major accidents that are occurring due to fatigue and drowsy driving of driver. The model consists of Eye Blink sensor which determines the eye status (open or closed) and Heart Beat sensor is used to check the heart rate for every minute. When the parameter value is more than the threshold value the buzzer is raised to alert the driver. Thus, the accidents caused by the drowsiness can be overcome as much as possible by using such a system

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