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DRIVER DROWSINESS DETECTION AND ALERT SYSTEM BY USING GPS & GSM

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ABSTRACT:

The majority of traffic accidents are caused by being sleepy. Because there are so many automobiles on the highways every day, it is difficult to manually locate the drowsy driver. Thus, every car must include a device that, if it detects a tired driver, must promptly stop the car. Also, the vehicle will stop if the driver nods off, and an LCD monitor shows the driver's temperature, respiration rate, and heartbeat. These three factors are crucial since they reflect the driver's physical condition. Authorities are informed of any accidents with the aid of the GSM module.

Keywords: LCD, Eye blink sensor, GSM, GPS.

I INTRODUCTION

One of the biggest causes of accidents is drowsy driving. Road accidents account for about 50% of accidents. Increasingly, traffic accidents are being caused by drowsy drivers. To keep the driver from falling asleep at the wheel, some techniques must be created. The creation of a system for the prevention of this problem has become a significant challenge. For continuous monitoring of a driver's attentiveness, early methods used visual analysis of eye state and head position (HP) [1]. The level of driver drowsiness was determined using the Raspberry Pi camera and Raspberry Pi 3 module [2]. The use of visual data and artificial intelligence was implemented in a module for the Advanced Driver Assistance System (ADAS) to decrease the number of accidents caused by driver weariness [3]. The following tests have been used by researchers to assess driver fatigue: (1) Measures based on the vehicle; (2) behavioural; and (3) physiological [4]. The development of a driver drowsiness detection system prototype is the goal of this paper. The primary objectives of this system are to track the driver's body temperature and blink rate.

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Moreover, the driver's heart rate is monitored. The necessary sensors are used to measure these variables. The microprocessor compares the sensor readings to the supplied reference readings. If these values depart from the reference value range, an alarm is given to the driver. The GSM module also notifies the concerned parties about the driver via message.

One of the biggest causes of traffic accidents is drowsy driving. According to the most recent survey, drowsy driving causes one accident out of every five, or 20% of all traffic accidents, and this number is steadily rising. The survey draws attention to the fact that an excessive number of people die in auto accidents as a result of driver intoxication. Due to the terrible road conditions, bad weather, excessive traffic, and eagerness to get there, driving on congested roads has become a nightmare. Driving while intoxicated and drowsy are additional significant causes of traffic accidents. We can't take care of ours while driving because we're less aware. The automobiles help the driver feel secure by having an automated safety system that alarms the driver. To prevent these kinds of incidents, all automobiles should be fitted with eye blink sensors and alcohol sensors in that order. The project's goal is to track and regulate eye blinking using an Infrared sensor. An IR transmitter sends infrared rays into the driver's eye. The transmitted infrared rays are reflected by the eye, and the IR receiver picks up these reflected rays. The IR receiver's output is high while the eye is closed. If the eye is open, the IR receiver output is minimal. This indicates whether the eye is open or closed. If the output is sent to the logic circuit, an alarm is signalled. By eye blinking, this technique aims to reduce accidents caused by comatose people.

II LITERATURE SURVEY

"Driver drowsiness detection using ANN image processing," a paper by T. Vesselenyi, accurately identifies 100 positive results. The prospect of developing a driver drowsiness detection system for automobiles based on three techniques—EEG and EOG signal processing, as well as driver image analysis—is examined in this research. Based on photos captured while driving and by dissecting the condition of the driver's eyes, the authors have investigated the likelihood to recognise a driver

who is either alert or sleepy. The secret layers' sparse use of neurons to efficiently arrange the images enables the use of these organisations on low-resizing registering devices with sparse memory usage. Eddie ought to be in charge of the network's training.

Utilizing a system of human computer interaction implemented on a smartphone, E. Gallarza's study, "Real Time Driver Drowsiness Detection Based on Driver's Facial Image Behavior," identifies drowsiness with an accuracy of 93.37. The surveillance method to identify sleepiness is presented in this study. The Human Computer Interaction System is implemented using a cellphone-like tiny PC with a portable application running on the Android operating system. The behaviour of the eyes, the sidelong and frontal consent of the head, and the yawn are the most useful visual cues for recognising tiredness since they reflect the condition of the driver. The framework functions adequately in low light and whether the driver is wearing accessories like glasses, hearing aids, or a cap. The improvement in cell phone features makes it possible to create an artificial intelligence application. [2] Younes The Real-Time System for Driver Fatigue Detection Based on a Recurrent Neuronal Network described in the Ed-Doughmi paper has a detection accuracy of 92. This study describes a method for using a recurrent neural network to analyse and predict driver drowsiness. He applied repeating neural network design multilayer model-based 3D Convolutional Networks to distinguish driver drowsiness, using a dataset to inform and validate our model. The main objective is to offer a neural network architecture for practical and portable driver sleepiness recognition. A more specific set of data that is more appropriate for the topic of tiredness in a setting similar to what the driver could encounter in a real-world scenario has to be generated in order to further improve these results. [3]

A large and open actual dataset of 60 people, with video segments labelled as focused, unwary, and drowsy, is presented in Reza Ghoddosian's study "A Realistic Dataset and Baseline Temporal Model for Early Drowsiness Identification." About 30 hours of video make up the real-life dataset (RLDD). Hierarchical Multiscale Long Short- Term Memory (HM-LSTM) network is the technique described in this paper. The computational and capacity demands of the suggested methodology are modest.

Our findings demonstrated that, in two organised estimations on the RLDD dataset, our technique outperformed human judgement. [5]

"Driver sleepiness detection system under infrared illumination for an intelligent vehicle" was described by M.J. Flores et al. in 2011 [17]. They suggested that in order to decrease the number of these fatalities, a module for an advanced driver assistance system be presented that provides for automatic driver inattentiveness detection as well as driver distraction. The driver's face and eyes are located, tracked, and examined using artificial intelligence algorithms, which are then utilised to interpret the visual data to calculate the drowsiness and distraction indices. A near-infrared lighting system allows this real-time system to function at night. Lastly, samples of various driver photos captured at night in a real vehicle are displayed to validate the suggested methods.

III EXISTING SYSTEM

The current method uses Bluetooth to present a Wireless Sensor Network (WSN) for continually monitoring patients' physiological state. Here, sensors are used to monitor the patient's physiological circumstances. The output of these sensors must be delivered to the remote wireless monitor for monitoring the observed patient's physiological signal via Bluetooth. The Bluetooth and PC are used to build the remote wireless monitor (PC). The Computer must receive the measured signal so it can monitor it. Bluetooth transmits data at a faster rate while using less energy. The system's first step involves employing biosensors to assess the human body's temperature, blood pressure, and heart rate via wireless sensors. The system's subsequent step involves employing a microcontroller to process the signals. The processed signals are finally transmitted through Bluetooth while being monitored on a Computer.

IV PROPOSED SYSTEM

One of the main factors in road accidents is drowsy driving. It poses a major threat to road safety. Some of these collisions could be avoided if motorists were be forewarned before they become too sleepy to drive safely. It depends on the prompt transmission of drowsiness warnings in order to accurately detect drowsiness. The

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inability of sleepiness detection techniques to date to take into account individual variances has hindered their usefulness. Drowsiness detection can be easily divided into the two categories of intrusive and non-intrusive technologies depending on the type of data employed. The best approach for detecting tiredness during the survey is a camera-based detection system, which is effective for driving conditions in real life. Non-intrusive methods also occasionally measure eye features.

V WORKING METHODOLOGY

This project uses Arduino as the controller, which is utilised to manage every module in the circuit. Apart than the controller, the two main components are the GSM module and the GPS module, the latter of which serves as a receiver. The GPS module in the vehicle is utilised to obtain the coordinates, and GSM will SMS the user the obtained coordinates. An extra LCD is included and is used to show coordinates or status messages. When a person is operating a vehicle that is involved in an accident, the vibration of the vehicle is detected by the vibration sensor, which serves as an accident detection module and sends information to the micro controller. The GPS module also receives the location of the vehicle, and the GSM module receives the vehicle's coordinates. The information is transmitted to the Arduino Uno. Information about the received coordinates is gathered and sent by SMS to the appropriate individual.

The suggested system focuses on the alerting and identification of accidents. The brain of the system, Arduino, assists in sending messages to various system components. When an accident occurs, the vibration sensor will be engaged, and the GSM module will transmit the information to the registered number. The location can be provided through the tracking system using GPS to cover the area's geographic coordinates. A vibration sensor, which serves as the system's main module, can detect an accident.

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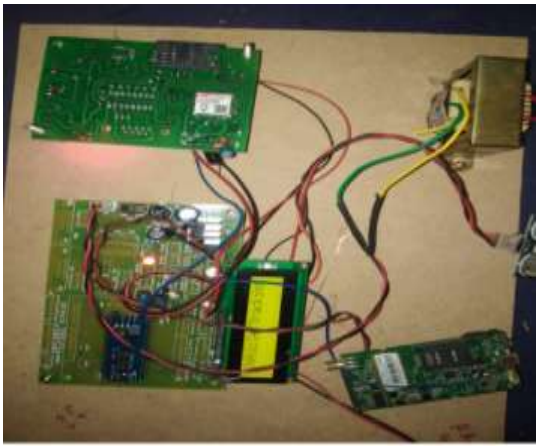

Fig.1. Hardware kit image.

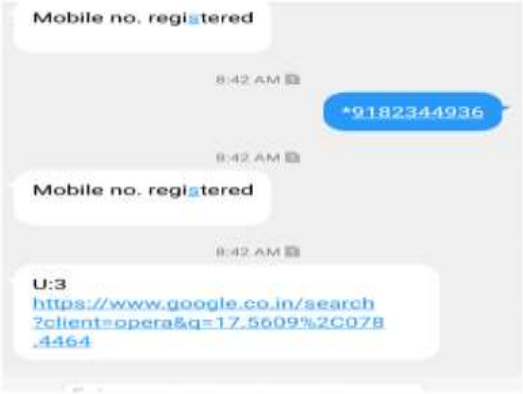

Fig.2. OUTPUT results in Mobile with GPS location.

CONCLUSION

Our concept automates emergency aid services and uses them to detect accidents. As a result, the system is sending SMS from the scene of the accident to the closest emergency aid service provider. The growing demand for cars has also led to more traffic congestion and motor accidents. The lives of the people are in grave danger. This is due to the dearth of top emergency facilities in our nation. a vehicle accident alert system that automatically sounds. This design is a system that can identify accidents in a lot less time and transmit the essential data. The rescue crew receives this warning message quickly, which will aid in saving precious lives. In the unusual instance if there are no casualties, a switch is also given to stop the message from being sent. This can help the medical rescue team save valuable time. When an

accident happens, an alert message is automatically transmitted via the GSM module to the police station and the rescue squad.

FUTURE SCOPE

Based on the distance to the closest hospitals, we are determining the shortest path, although there is a potential that heavier traffic will be on that route. Therefore, we need to develop an algorithm that finds nearby hospitals with the least amount of travel time and traffic. We may add certain modules that will also inform the system of traffic information so that it can determine which node will be easier to reach from the accident site. Another thing we could include is a "first aid kit" for on-site emergency medical care. We can improve the functionality of the suggested system by adding modules that measure the severity of the injuries or that collect additional data, such as blood type, heart rate, or current blood sugar levels, and send it to the hospitals before the patients arrive.

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