IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 10, Issue 1, January 2022

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 7.542

International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.542

|| Volume 10, Issue 1, January 2022 ||

| DOI: 10.15680/IJIRCCE.2022.1001008 |

Smart Alert System for Handling Driver's Distraction

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ABSTRACT: This paper describes a method for detecting driver drowsiness caused by sleep, addiction, or the use of a cell phone while driving a vehicle in real time. According to a government survey, mobile phones are responsible for 22% of accidents. Developing in-vehicle technology that can driver cell phone use is currently a major challenge. This method of image processing may be more efficient in completing this task. The camera is assisted by a computer that runs on the Raspbian operating system. The raspberry pi-based signal that shuts off the vehicle's ignition power source will track the driver's real-time condition and switch on the alarm when the cell phone. alert when drowsiness detected, detect mobile use while driving and avoid it, stop vehicle when drowsiness level increased.

KEYWORDS: Cell phone detection, Driver safety, Image processing, Raspberry pi.

I. INTRODUCTION

Because of lack of sleep, use of cell phones, and long continuous driving, the driver's level of concentration when driving the car deteriorates. According to many studies on road accidents, about 30 percent of accidents are caused by driver fatigue. Excessive exhaustion and tiredness are induced when a driver drives for longer than is usual for a person. This causes the driver to become exhausted or lose consciousness. The majority of road accidents are caused by drowsiness, cell phone use, and as well as working conditions, sleep deprivation, and time constraints. drowsiness driving limits a driver's decision-making capacity and vision level due to drowsiness and exhaustion. These two circumstances have an impact on the vehicle's ability to be regulated. To detect mobile phone use and drowsiness in drivers, some methods are used, such as detecting driver operation or physiological features of the driver or vehicle movement. According to a traffic report, driver fatigue and cell phone use may be a contributing factor in up to 20% of all road accidents. The main goal of this mobile phone and drowsiness tracking system is to create a programme that can reduce the amount of accidents caused in vehicles by drowsiness. The first section of this project assesses drowsiness by observing the movements of the eyelids over a period of time. Eye tracking is a crucial part of this project, which uses an Open CV the Input 8-megapixel camera capable of capturing images and video in real time. The Raspberry Pi is in charge of the caught picture. CNN Algorithm is implemented in Python.

OBJECTIVES

- Our main aim in this project is to avoid accident.
- Detect driver drowsiness.
- Also detect mobile used while driving and avoid it.

II. LITERATURE REVIEW

[1] Paper Name: A Survey Paper On Drowsiness Detection & Alarm System for Drivers
Author: Prakash Chaudhary, Rahul Sharma, Gautam Singh, Smarjeet Das, Professor Sumedh, G. Dhengre
Publication Year: Volume: 03 Issue: 12 2016
Description: Our protection is the primary precedence even as journeying or driving. One mistake of the driving force can cause excessive bodily injuries, deaths and widespread financial losses. Nowadays there are numerous structures to be had in marketplace like navigation structures, diverse sensors etc. to make driving force's paintings easy. There are diverse motives in particular human mistakes which offers rises to the street injuries. Reports say that there may be a large increment in the street injuries in our u. s. since last few years. The most important cause taking place from the toll road injuries is the drowsiness and sleepiness of driving force even as driving. It is a essential step to include an

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green method to stumble on drowsiness as quickly as driving force feels sleepy. This should keep massive wide variety of injuries to occur. We behavior the survey on diverse designs on drowsiness detection techniques to lessen the injuries.

[2] Paper Name: A Pattern Recognition System for Detecting Use of Mobile Phones While Driving.
Author: Rafael A. Berri, Alexandre G. Silva, Rafael S. Parpinelli, Elaine Girardi and Rangel Arthur
Publication Year: 2014
Description: It is anticipated that 80% of crashes and 65% of close to collisions concerned drivers inattentive to visitors for 3 seconds earlier than the event. This paper develops a set of rules for extracting traits permitting the mobileular telephones identity used all through using a vehicle. Experiments had been accomplished on units of snap shots with a hundred wonderful snap shots (with phone) and the alternative a hundred bad snap shots (no phone), containing frontal snap shots of the driver. Support Vector Machine (SVM) with Polynomial kernel is the maximum high-quality type gadget to the capabilities furnished via way of means of the set of rules, acquiring a fulfilment price of 91.57% for the imaginative and prescient gadget. Tests accomplished on films display that it's miles viable to apply the photo datasets for education classifiers in actual situations. Periods of three seconds had been effectively categorized at 87.43% of cases.

[3] Paper Name: "IoT-Enabled Alcohol Detection System for Road Transportation Safety in Smart City", ComputationalScience and Its Applications – ICCSA 2018, pp.695-704
Author: Uzairue, Stanley &Ighalo, Joshua & Matthews, Victor &Nwukor, Frances &Popoola, Segun.
Publication Year: 2018
Description: In this paper an alcohol level detection system has been developed using Internet of Things (IoT) technologies for road safety in smart cities. Not only does the device verify alcohol-impaired driving by automatically locking the car driven by the intoxicated guy, it also helps traffic specialists to easily locate the shutdown vehicles using the vehicle's coordinates by uploading them to a web server. The innovations embedded in this system are sufficient to ensure that the vehicle's driver is shut down and, in addition, pick-up from the location provided by letter or mail.

III.PROPOSED SYSTEM

Figure 1 shows system architecture of design system.
To train the classifier, the classifier must be equipped using the algorithm with a lot of positive images (face images) and negative images (faceless images). It then extracts features from it. -- Function was a single value obtained by subtracting number of pixels from the number of pixels under the black rectangle under the white rectangle. The number of pixels under white and black rectangles was determined by image integral for each measurement of the function. It simplifies computation of sum of pixels, however large may be the number of pixels, to an operation involving only four pixels. Each and every feature on all the training images has been applied. The best criterion was added for each attribute which could rate the faces positively and negatively. Yet clearly mistakes or misclassifications were possible. Therefore, the features with least error rate were chosen, meaning they were the features that best distinguish the representations of the face and non-face. A weighted sum of those weak classifiers is the final classifier. It's considered weak because the image cannot be labelled by itself, but together with others, it forms a strong classifier. If eye blinking frequency of driver increase system generate an alert and ignition system become locked and owner get information about that. For such a system we use python language to build system. Basic building block architecture shown in fig.1

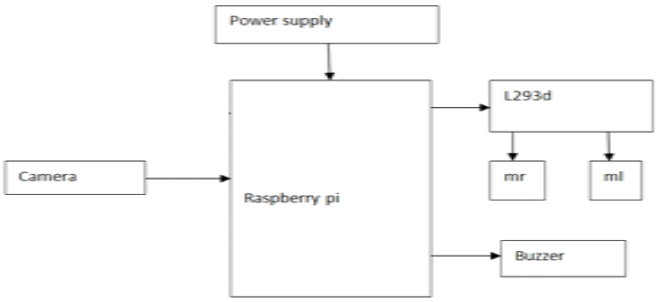

Fig.1. System architecture

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HARDWARE USE

- L293d
- Raspberry pi
- Camera
- Buzzer
- Power Supply.

IV. SYSTEM FLOW AND ALGORITHM

- SYSTEM FLOW

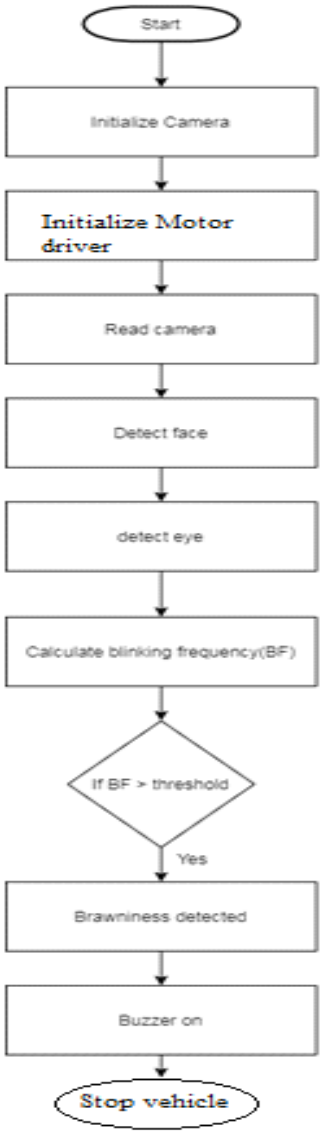

Fig. SYSTEM FLOW

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ALGORITHM

- Start
- Initialize motor Diver
- Read camera
- Detect Face
- Detect Eye
- Calculating blinking frequency
- IF blinking frequency greater than threshold
- Yes, brawniness detected
- Turn on buzzer
- Stop vehicle

ADVANTAGES

- System for Road Transportation Safety in Smart City
- Accident Avoiding

V. FUTURE SCOPE

The future works may focus on the utilization of outer factors such as vehicle states, sleeping hours, weather conditions, mechanical data, etc., for fatigue measurement. Driver drowsiness pose a major threat to highway safety, and the problem is particularly severe for commercial motor vehicle operators. Twenty-four hour operations, high annual mileage, exposure to challenging environmental conditions, and demanding work schedules all contribute to this serious safety issue. Monitoring the driver's state of drowsiness and vigilance and providing feedback on their condition so that they can take appropriate action is one crucial step in a series of preventive measures necessary to address this problem. Currently there is not adjustment in zoom or direction of the camera during operation. Future work may be to automatically zoom in on the eyes once they are localized.

VI. CONCLUSION

In this research, we introduced computer vision technology with image processing and use of the new embedded systems aimed at reducing road accidents related to driver drowsiness, mobile phone use and intoxicated addiction that locates and monitors the eyes. Due to road accidents, tracking and detecting the conductor's behaviour to ensure road safety as well as protecting human life is extremely important. It is therefore important to capture driver behaviour that will control the accidents due to rash driving.

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INNO SPACE
SJIF Scientific Journal Impact Factor
Impact Factor: 7.542

doi cross ref

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

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