International Journal of Scientific Research in Computer Science, Engineering and Information Technology

ISSN : 2456-3307 OPEN ACCESS

Available Online at : www.ijsrcseit.com

doi : https://doi.org/10.32628/IJSRCSEIT

A Survey On a Driver Enervation and Hypnosis Alert System

Prof. G. G. Sayyad[1], Omkar Somnath Ghogare[2], Sarthak Popat Jadhav[2], Sahil Samir Pathan[2]

[1]Assistant Professor, [2]Student

Department of Computer Engineering, Maharashtra, India

ARTICLEINFO

Article History:

Accepted: 10 Oct 2023

Published: 30 Oct 2023

Publication Issue

Volume 9, Issue 10

September-October -2023

Page Number

134-138

ABSTRACT

Driver Enervation, driver fatigue and Driver Hypnosis has main issue which causes the main for increasing the accidents. The main reason behind the driver Enervation is the not taking the proper sleep before the long driving as well as other reasons for untreated sleep module, medical, drinking alcohol , smoking which affects as well as affects the health of person which indirectly affects the sleep of the person. Another reason of the road accident is Driver Hypnosis which affects the health of person which directly affect to the Driver Eyes. According to the various articles as well as the National Highway Traffic safety administration around 40% accidents are due to the driver Enervation detection and Driver Hypnosis. The accidents caused to the Enervation are increasing day by day due to the bad habits as well as less sleep which causes the fatigue.

Keywords - Machine Learning, Internet of thing, Driver Enervation, Driver Hypnosis, Alert System Sending Emil

I. INTRODUCTION

In India due to driver enervation and hypnosis is contributing more than 30 percent of road accidents. There are mainly three ways by which Driver enervation can be detected by monitoring biomedical signals, visual assessment of driver's from face images or monitoring drivers performance. The Algorithm in this paper is based on live capturing of EAR(Eye aspect Ratio) by application of Image processing. Open source Image processing libraries (OPEN CV) is used as primary Image processing tool while python is used as main coding language. The Highway hypnosis is problem occur during the driving. The road side white line is the main reason of hypnosis. Drowsiness is defined as a decreased level of awarenessportrayed by sleepiness and trouble in staying alert but theperson awakes with simple excitement by stimuli. It mightbe caused by an absence of rest, medicine, substance misuse,or a cerebral issue. It is mostly the result of fatigue whichcan be both mental and physical. Physical fatigue, or musclewearіness, is the temporary physical failure of a muscle toperform ideally. Mental fatigue is a temporary failure tokeep up ideal psychological execution. The onset of mentalexhaustion amid any intellectual action is progressive, andrelies on an individual's psychological capacity, furthermoreupon different elements, for example,

lack of sleep andgeneral well-being. Mental exhaustion hasadditionallyappeared to diminish physical performance. [1]

Firstly, HAAR Cascade algorithm is used to only extract face images from the live recording by camera then facial landmarks (about 68) are given to face image with the help of Diib library. As we have to calculate EAR ratio so our main focus is on eye and with the help of SVM (Support Vector Machine) Algorithm 6 landmark points are given to eye, with the help of this 6 landmarks SVM calculates EAR ratio (Euclidean distance between measured eye coordinates).

This EAR ratio is compare with the threshold EAR value which have been calculated by training of dataset. By comparison with this threshold value with of Live EAR values pylote function drawing a live graph of blinks and micro sleep. Blinks and enervation level are displayed on monitor screen with micro sleep detection audio warning. The alert email is send by using the SMTP library which is available in the python and the GPS module to detect the location of the driver.

II. LITERATURE SURVEY

1. Drowsy Driver Alert System With Accident Detection Keval Mahajan, Chirag Panchal, 2022, Approximately 1.3 million people die each year as a result of road accidents. Sleep-deprived and fatigued drivers are responsible for 40% of these road accidents. India ranks first across 199 countries in the number of road accidents. Drowsiness implies feeling lethargic, lack of concentration, tired eyes of the drivers while driving vehicles. A road accident not only causes the loss of the driver's life, but it may also take the lives of innocent pedestrians, fellow passengers, passengers in other vehicles commuting from the same route along with economic losses. [1] Aims to reduce road accidents and save lives, targeting drowsy drivers. Employs various alerts (alarms, calls, SOS) based on the severity of drowsiness.
2. IoT-Based Smart Alert System For Drowsy Driver Detection, Anil Kumar Biswal, Debabrata Singh, Binod Kumar Pattanayak, 2021, Driver fatigue has been the main issue for countless mishaps due to tiredness, tedious road condition, and unfavorable climate situations. Every year, the National Highway Traffic Safety Administration (NHTSA) and World Health Organisation (WHO) have reported that approximately 1.35 million people die due to vehicle crashes across the world. Generally, road accidents mostly occur due to inadequate way of driving. These situations arise if the driver is addicted to alcohol or in drowsiness. [2] Effectively addresses driver tiredness, a major cause of accidents. Utilizes facial analysis and behavioral cues for accurate fatigue assessment.
3. Real Time Alert System ForSlumberous And Fatigue Driver, Gowtham B, Nagajothi V, Karthi G, 2023, Various technologies are being created to reduce accidents, which are rising rapidly in the modern day. Driver weariness or drowsiness is a significant factor in the occurrence of accidents. Drowsiness is detected using a variety of deep learning and image processing techniques. However, these techniques are pricey, and they might not work for those who wear glasses. This suggested solution employs an eye blink sensor to stop drowsiness-related accidents.[3] Utilizes an eye blink sensor to specifically address driver drowsiness, a significant factor in accidents.
4. Driver Drowsiness Detection System Using Deep Learning, Devarakonda Sruthi, Avanaganti Amulya Reddy, G. Sai Siddaharth Reddy, Mrs. Shilpa Shesham, 2023,These days, an ever-increasing number of professions require long time focus. Drivers should watch out for the street, so they can respond to abrupt occasions right away. Due to driving for a long time or intoxication, drivers might feel sleepy, which is the biggest

distraction for them while driving. This distraction might cost the death of the driver and other passengers in the vehicle, and at the same time, it also causes the death of people in the other vehicles and pedestrians too. [4] Utilizes continuous face detection and classification to instantly identify drowsiness.

5. Driver Drowsiness Detection and Alarming System, Mr Shankar, E Sanker Chavali, 2023, Lack of sleep is a significant contributing factor in auto accidents. Due to the greater speeds and slower reaction times, there is a substantial likelihood that drowsy driving may result in accidents. This project's goal is to advance a system. to identify driving sleepiness signs. The strategy is to examine the driver's live video clip frame by frame, looking for the driver's eyes and then examining whether they are open or closed. [5] Issues immediate alerts, including alarm, text message, and GPS location sharing, if the driver's eyes remain closed for an extended period. Includes a feature to slow down the vehicle if the driver doesn't respond to the alarm.
6. Drowsy Driver Detection and Alert System using Pulse Sensor, Alumona Theophilus Leonard, Nnaemeka Uchenna Ezeony, 2021, : Drowsiness ranks among the highest causes of road accidents in countries all over the world. Hence, it has become imperative for the issue of drowsy driving to be tackled in order to reduce the heavy toll on human life and property exacted by drowsiness-related road fatalities. Various scientific research, have shown that drowsiness is not instantaneous, but, rather, is a gradual process preceded by various changes in the individual's body system, such as the circulatory system.[6] Targets drowsy driving, a leading cause of road accidents globally.Explores the natural response of the human body to the need for sleep and its implications for activities like driving.
7. System AndMethod For Driver Drowsiness Using BehavioralAnd Sensor-Based Physiological Measure, Jaspreet Singh Bajaj, Naveen Kumar, Rajesh Kumar Kaushal, 2023, The amount of road accidents caused by driver drowsiness is one of the world's major challenges. These accidents lead to numerous fatal and nonfatal injuries which impose substantial financial strain on individuals and governments every year. As a result, it is critical to prevent catastrophic accidents and reduce the financial burden on society caused by driver drowsiness. The research community has primarily focused on two approaches to identify driver drowsiness during the last decade: intrusive and non-intrusive.[7] Targets driver drowsiness as a major contributor to road accidents worldwide, emphasizing the urgency of prevention. Provides alarming statistics on road accidents, showcasing the severity of the issue and its impact on individuals, families, and economies.
8. Driver Drowsiness Detection And Monitoring System Using Machine Learning, Rama Moorthy, Rohith Chinthalachervu, Immaneni Teja, M. Ajay Kumar, 2022, : In the present world, lots of road accidents take place due to the lack of attention and alertness of driver. This is termed as driver drowsiness. This leads to a lot of unfortunate situations causing adverse damage to human lives. The main goal of this research is the detection of driver drowsiness and an appropriate response to the detection. There are many methods which are based on the motion of the vehicle or based on the driver's behavior. One of the methods is the physiological method which helps in distracting the driver from drowsiness and making him alert.[8] Develops a system for real-time detection of drowsiness, providing an immediate response to prevent accidents. Emphasizes the preventability of accidents caused by drowsiness, highlighting the importance of early detection and intervention.
9. Non-Invasive Driver Drowsiness Detection System, Hafeez Sidd, Adil Ali Saleem, Robert Brown, 2021 : Drowsiness when in command of a vehicle leads to a decline in cognitive performance that affects driver behavior, potentially causing accidents. Drowsiness-related road accidents lead to severe trauma, economic consequences, impact on others, physical injury and/or even death. Real-time and accurate driver drowsiness

detection and warnings systems are necessary schemes to reduce tiredness-related driving accident rates. [9] Emphasizes the dangerous effects of drowsiness on driver performance, including heavy eyelids, daydreaming, and loss of focus. Introduces a novel approach to drowsiness detection using non-invasive, impulsive radio ultra-wideband (IR-UWB) radar to monitor respiration rate.

10. Android-Based Real-Time Driver Drowsiness Detection And Alert System, Musa Hajara, Muhammad Abubakar Sadiq, Ali Ahmad Aminu, 2022, Traffic accidents cause millions of people to lose their lives every year. Statistics assert that most fatal accidents are due to driver drowsiness. So the rate of fatality due to accidents caused by drivers falling asleep is high. There have been various researches and developments on driver drowsiness and fatigue detection systems by industries and academic researchers over the years. However, the solutions produced are usually found on luxurious vehicles and are computationally expensive to be connected to embedded devices or mobile devices with operating systems such as Android. [10] Recognizes traffic accidents as a worldwide problem causing significant loss of life, with driver drowsiness identified as a major contributing factor. Provides a clear and concise definition of drowsiness, establishing it as a state of near-sleep characterized by a strong desire to sleep. For safe, secure and smart transport now a day's IOT based smart technologies are used. [11]

LPR in modern transport systems identifies vehicles via computer vision. Our novel SR algorithm improves license plate legibility in traffic videos. [14]. Lots of IOT based technologies are used for advancement of safe, secure and smart travelling [15].

This paper proposes an integrated approach that incorporates various parameters, including the PERCLOS eye and mouth check status, the computation of a new vector called the Facial Aspect Ratio (FAR), as well as EAR and MAR, to detect drowsiness. The system detects uncontrolled eye movements, an open mouth, and other actions such as nodding and hand motions to control drowsiness [16].

III. LIMITATIONS OF EXISTING WORK

- The system may not always accurate detect signs of driver enervation or hypnosis. Factor like lighting condition, facial expression, or physical movements could lead to false alarms or missed warning.
- People exhibit signs of fatigue or drowsiness differently. The system may struggle to adapt to various individual characteristics, making it less effective for some users.
- It might incorrectly interpret normal behavior as signs of drowsiness, or fail to detect genuine signs of fatigue. These errors can lead to unnecessary alarms or missed warnings.
- External factors like bright sunlight, loud noises, or other distractions could affect the system's ability to accurately monitor the driver's condition.
- The system involves monitoring a person's physical state, which raises privacy ethical consideration.

IV. CONCLUSION

We proposed an approach to generate driver drowsiness detection system with EAR ratio calculation. This has a lot of application as accidents due to driver drowsiness are major issues causing deaths or serious injuries. The techniques used previously have been studied like drowsiness detection by visual assessment, biomedical signals and monitoring vehicle behaviour.

Out of which visual assessment to detect enervation is more accurate and convenient approach. We have studied this existing system and find some changes that can lead to increase in accuracy of system such as using dataset to train our SVM algorithm so it can give accurate result in case if driver is wearing glasses or there is low intensity light in car.[12]

The only drawback of this system is that it increases the cost as we are using infrared camera,so it can work in any weather condition. For sending the alert system the SMTP(Simple Mail Transfer Protocol) is used to send the alert Email as well as ringing the alarm when the person is detected in drowsiness state.[13]

V. REFERENCES

[1]. Manisha Samant, Keval Mahajan, Chirag Panchal, Ameya Kulkarni,Saloni Mathure, "Drowsy Driver Alert System with Accident Detection" on 2022.

[2]. Anil Kumar Biswal, Debabrata Singh, Binod Kumar Pattanayak, " IoT-Based Smart Alert System For Drowsy Driver Detection" on 2021.

[3]. Gowtham B, Nagajothi V, Karthi G, " Real Time Alert System For Slumberous And Fatigue Driver" 2023.

[4]. Devarakonda Sruthi, Avanaganti Amulya Reddy, G. Sai Siddaharth Reddy, Mrs. Shilpa Shesham “Driver Drowsiness Detection System Using Deep Learning” on 2023

[5]. Mr Shankar, E Sanker Chavali “Driver Drowsiness Detection And Alarming System”on 2023

[6]. Alumona Theophilus Leonard, Nnaemeka Uchenna Ezeony “Drowsy Driver Detection and Alert System using Pulse Sensor”on 2021.

[7]. Jaspreet Singh Bajaj, Naveen Kumar, Rajesh Kumar “System And Method For Driver Drowsiness Using Behavioral And Sensor-Based Physiological Measure” on 2023.

[8]. Rama Moorthy, Rohith Chinthalachervu, Immaneni Teja, M. Ajay Kumar “Driver Drowsiness Detection And Monitoring System Using Machine Learning” on 2022.

[9]. Hafeez Sidd, Adil Ali Saleem, Robert Brown “Non-Invasive Driver Drowsiness Detection System” on 2021

[10]. Musa Hajara, Muhammad Abubakar Sadiq, Ali Ahmad Aminu“Android-Based Real-Time Driver Drowsiness Detection And Alert System” on 2022

[11]. Jadhav, A., Shinde, A., Nanavare, N., Ranmode, G., & Gavali, A. B. (2018). RFID based secure smart school bus system. Department of CSE, IAETSD J, March.

[12]. B. Alshaqaqi, A. S. Baquhaizel, M. E. Amine Ouis, M. Boumehed, A. Ouamri and M. Keche“Driver drowsiness detection system” on 2013.

[13]. N. Prasath, J. Sreemathy and P. Vigneshwaran“Drowsiness Detection Using Machine LearningAlgorithm” on 2023

[14]. Dhakane, Vikas Nivrutti, and Jalinder Nivrutti Ekatpure. "Super Resolution of License Plates Using Generalized DAMRF Image Modeling."

[15]. Jadhav, Ajit, et al. "RFID based secure smart school bus system." Department of CSE, IAETSD J, March (2018).

[16]. S. T. Shirkande, Rutuja. B. Bhosale, Shweta. S. More, Suyash. S. Awate Predicting Driving Behaviour Using Deep Learning https://doi.org/10.46610/JoAAT.2023.v08i01.002, Vol. 8 No. 1 (2023).