A Survey Paper On Driver Drowsiness Detection

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Abstract- Our safety is a priority while traveling or driving. One mistake of the driver can lead to several injuries and significant losses. Nowadays, the driver's navigation system is improved by using the latest satellite technologies and sensors that are used for tracking. According to the National Survey of road safety and management, there is a huge raise in accidents every year. The main reason for these accidents is driver drowsiness while driving. So, to reduce accidents, the driver should be alerted before such incidents take place. There are various methods and efficient techniques that are developed to detect the driver's drowsiness and alert the driver when the driver feels sleepy. Therefore, we conduct various researches and analysis to abstract the best and most efficient method to alert the driver. Many techniques and designs are analysed on drowsiness detection to reduce accidents. We compare few method andtechniques on driver drowsiness detection

I. INTRODUCTION

Image Processing is also a research within the fields of engineering and data science. The processing of images essentially requires the following three steps. Firstly, import the image by means of an scanner or camera. Byanalyzing and optimising the manipulated images, including compression of data and enhanced images and spotting the image patterns from the human eye. Output is the last stage in which an image or study based on image processing may be altered as a result. Driver Drowsiness which is the leading causes for accidents and injuries and a system can be used to identify the drowsiness to reduce the accidents. Secure driving is a big concern in communities all over the world. The implementation of a real-time safety system for the prevention of road accidents due to drowsiness is important.

There are several techniques for detecting the drowsiness of the driver. In a significant number of car collisions, driver fatigue is a substantial cause. This involves measures of physiological characteristics such as heart beat rate, eye movement, mouth analysation, etc.,. The driver's eyelids can become heavy due to fatigue which is caused by long hour driving or due to mis concentration. The driver's attention tends to lose focus and causes accidents. Such incidents may be handled through the implementation of

technology to identify or avoid sleepiness. Sequences of photographs of a face are used in the Drowsiness identification fatigue. In both daytime and night time conditions, the system should work.

II. LITERATURE SURVEY

In [1] Due to lack of sleep and exhaustion, drowsiness may occur when driving. The best way to prevent accidents caused by the drowsiness of drivers is to sense the driver's drowsiness and warn him before falling asleep. Recognition of facial features has been used to characterise sleepiness in many methods, such as eye retina detection. In this paper, using eye retina detection and driver pulse rate detection, a way of detecting driver drowsinesshas been proposed. In this research, a more reliable method of detecting drowsiness has suggest, which is a hybrid approach of detecting eye retina and pulse patterns. Considering the evidence, it is concluded that the hybrid approach suggested for the detection of drowsiness is more effective than the detection strategies that only take into account type of measurements. The fuzzy-based model suggested in this study also ensures high precision in the detection of somnolence and provides excellent results compared to the other models that only take crisp levels to predict somnolence.

In [2] This paper is a summary report on the research conducted and the computer engineering project to build a driver somnolence detection system to prevent accidents from occurring due to driver exhaustion and sleepiness. In the paper, the findings and solutions for the restricted implementation of the different techniques implemented in the project were suggested. Whereas the project's execution gives the real world an understanding of how the system operates and what improvements can be made to enhance the overall system's utility. It fully meets the system 's goals and specifications. The system recognizes clients who are familiar with the system and appreciate its focal points and the fact that it takes care of the issue to warn people with fatigue-related problems about the extent of drowsiness when driving.

In [3] The main cause of accidents in the world as well as in Sri Lanka is driver drowsiness. Due to lack of sleep and exhaustion, when driving, drowsiness may occur. The best

way to prevent accidents caused by the drowsiness of drivers is to detect the driver's drowsiness and warn him before falling asleep. Facial feature recognition has been used to identify somnolence in many methods such as eye retina detection.This paper proposes a way of detecting driver drowsiness using eye retina detection and driver pulse rate detection. The hybrid approach that is suggested for the detection of drowsiness is more effective than the detection strategies that only take into account one type of measurements, such as physiological, behavioral or vehicle-based approaches. The fuzzy-based model suggested in this study also ensures high precision in the detection of somnolence and provides excellent results compared to the other models that only take crisp levels to predict somnolence. This proposed scheme can also be applied in real time by providing a real-time input mechanism for heart recovery ventilation (HRV) analysis results.

In[4] Driver fatigue has been one of the world's biggest causes of car accidents in recent years. Measuring the condition of the driver, i.e. drowsiness, is a direct way of measuring driver fatigue. So, to save life and property, it is very important to identify the driver's drowsiness. This project is aimed at creating a test device for detecting drowsiness. This scheme is a real-time device that continuously captures images and measures the state of the eye according to the algorithm defined and gives alarm. The value of the eye per closure is taken into account for the identification of drowsiness. So, if the eye closure reaches a certain number, the driver is considered to be sleepy. Several OpenCV libraries are used for the implementation of this framework, including Haar-cascade. Implementation of Raspberry-Pi drowsiness detection using Raspberry pi involves efficient video capture runtime. The recorded video was broken into frames and analyzed for each frame and efficient face recognition, accompanied by eye detection.

In [5] The paper tells about different methods of AI for detecting the system's somnolence in this article. Sleepiness of drivers is an significant factor in accident control of vehicles. With increased drowsiness, the driving performance deteriorates with the subsequent crashes that constitute further automobile accidents. There has been a rising interest in intelligent vehicles in recent years. The current smart vehicle research will revolutionise the manner in which cars and drivers can be implemented. The vehicle detection mechanism will help avoid many accidents. Most of the published research has focused on head movements and eye blinks. After long hours of driving or in the absence of mental alert state, the attention of the driver starts to lose, creating risks of accidents. These are the normal reactions of fatigue that are very dangerous. In image fatigue detection, accurate and real-time judgement is very important.

In [6]The problems caused by accidents have become more complicated because of the rise in the number of vehicles. The transportation system is not adequate anymore. Therefore, research on the safety of vehicles is currently a recent subject. The author talks about safety warning systems in this article.

This system has attracted a great deal of media interest for being an aggressive warning system to avoid traffic accidents. Secure driving is a huge problem for society today. There are thousands of incidents that occur every day. The key emphasis is on the design of a device that tracks the open or closed state of the driver's eyes accurately in real time application. It is assumed that by tracking the eyes, the signs of driver fatigue can be recognised early enough to prevent a car accident. To evaluate the fatigue amount, a NN-based algorithm is proposed. It tests by examining the opening and closing the eye and alerts the

III. CONCLUSIONS

A variety of methods for detecting drowsiness have been suggested by previous researches. After conducting a survey, we came to know that various models and distinct data types are used as input for their algorithm. After the analysis of various data types as input for their techniques, it is found that using camera to analyse the data can be easily implemented and suitable in all circumstances.In future work the LSTM and RNN can be used for longer duration.

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