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# Driver Drowsiness Detection System

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***Abstract :*** One of the most frequent causes of driving accidents around the world is driver drowsiness or fatigue. As a result, many people suffer fatal injuries and severe enough injuries that they can never even stand unassisted again. Their entire lives dependent on others. The primary focus of the project is image processing, and by simulating it on the Raspberry Pi Microprocessor, we will build a Driver Drowsiness Detection System. Every type of vehicle in the world can be equipped with the system, which will alert the driver or passengers if it notices signs of sleepiness in the driver's eyes. By calculating the amount of time, the system can determine whether the eyes are sleepy.

***Index Terms - Drowsiness, Fatigue, unassisted, simulating***

## INTRODUCTION

One of the main factors contributing to motor vehicle accidents is driver fatigue. It is widely acknowledged that driver drowsiness contributes significantly to the rising number of accidents on today's roads. This Real Time Detection System project will be a very helpful change in enhancing the safety of the driver of the vehicle and will lower the percentage of accidents brought on by driver fatigue and sleepiness. More and more professions today require long-term focus. People who work in the transportation industry must pay close attention to the road so they can respond quickly to unexpected events. Long hours behind the wheel make the driver tired, which slows down their reaction time. The development of a drowsiness detection system simulation is the goal of this project.

The emphasis will be on creating a system that can precisely track whether the driver's eyes and mouth are open or closed. It is thought that the eyes can be monitored that it is possible to identify the signs of a sleepy driver early enough to prevent a car accident. A significant challenge in the development of accident avoidance systems is the detection or prevention of driver drowsiness. In addition to the ability to detect drowsiness or fatigue in the driver's eyes, this system will also include other safety features like lane detection technology and brake synchronization. Due to lack of sleep, long periods of non-stop driving, or any other medical condition, such as brain disorders, etc., the attention level of the driver deteriorates. According to several studies on traffic accidents, driver fatigue is a factor in about 30% of collisions.

When a driver drives for a longer period of time than is typical for a human, this causes excessive fatigue and also results in tiredness, which causes the driver to become sleepy or lose consciousness. Drowsiness is a complicated phenomenon that causes the driver to become less alert and conscious. Detecting drowsiness cannot be done directly, but there are a number of indirect methods that can be employed. In order to decrease the number of traffic accidents caused by drivers.

## LITRETURE SURVEY

Drowsiness interferes with people's daily activities and can result in dangerous driving accidents or ineffective work. It could get worse, especially if it involves public transportation. I work for the Department of Lands. Transport (DLT), the author is aware that fatigue may play a role in car crashes. Consequently, in response to this concern, a reliable sleepiness detection system is implemented. The objective of this paper is to develop an algorithm that can evaluate facial structure from video data and detect fatigue. The system is also employed to evaluate the algorithm's efficacy. The result shows that using facial landmarks can help create equations to accurately evaluate the eyes and mouth component by enabling efficient generation of those components. One of the main causes of accidents is drowsy or exhausted drivers. Driving safely and fewer accidents are promoted by putting an end to sleepiness. You can examine a driver's level of fatigue in a number of ways, such as by watching for yawning, eye closure, and head movement. The route that is recommend "percentage eye closure" method used in this study emphasizes eye closure (PERCLOS). PERCLOS establishes a parameter level to measure sleepiness. The detection is carried out using the Viola Jones detector, which distinguishes between the driver's face and the image of the eye captured by the detector.

Globally, it is believed that a significant number of fatalities are caused by driver fatigue. It is crucial to develop a system that can help in lowering such incidents. The driver's facial features clearly change when asleep compared to when they are awake. They are exhausted. The research's suggested approach focuses on detecting and alerting the driver after tracking the driver's physiological status. We employed a non-intrusive monitoring technique in which the operator's mouth shape (yawn) and eye blinking are detected in real-time, and if the operator's eyelids are closed for longer than the threshold value, or if the operator is yawning, or if both of them are discovered at the same time, the driver's status is assumed for safety. Algorithm Viola-Jones.

## PROPOSED METHDOLOGY

Every now and then, road accidents are brought on by drowsy drivers. Face movement and eye blink rates are recorded to analyze the driver's various behavioral or visually based attitudes. Most of this eye blinking is focused on identifying driver drowsiness Without any sign of exhaustion, an EAR's threshold value is above 0.25. When a driver shuts down automatically, the EAR threshold value drops below the predetermined range. The quantity of video frames with the driver's eyes closed is represented by the threshold value of a drowsy eye blink sample. The driver's drowsiness is identified if the number of consecutive counting frames rises above the threshold value. When the Raspberry Pi camera module is successfully integrated, it continuously records every facial movement made by the driver. The proposed work specifically focuses on the driver's behavior measurements with severity measurements of collisions. The Raspberry Pi Model B and Pi camera modules are used to take a persistent recording of the facial landmarks that are localized through facial landmark points, allowing the EAR to be calculated with accuracy. Therefore, this system is a very reliable way to both send the owner an alert message and to take pictures of the driver's drowsiness.

## SYSTEM ARCHITECTURE

The first step in the process is the detection of the face, then the eyes. It is then transformed into an image that can be used to determine whether or not the eyes are closed. In order to determine whether the eyes are present, eye features are extracted when the eyes are detected. eyes can be open or shut. After determining whether or not the driver is sleepy, the alarm signal is turned on. If the vertical distance between the eyes is minimum, the driver is drowsy; if the vertical distance between the eyes is maximum, the driver is not drowsy and there won't be an alarm. This is how the project's driver drowsiness detection system works in its entirety.

Following fig 4.1 shows the flowchart for entire process of drowsiness detection system from starting to termination of program.

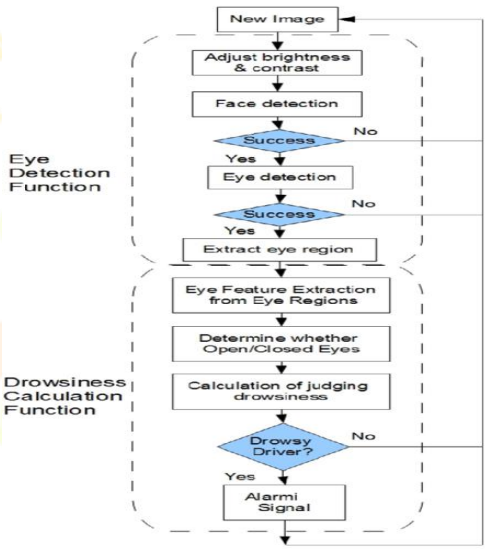


Figure 4.1: Flowchart for entire process of drowsiness detection system

## CONCLUSION

This project, called "Real time Drowsiness Detection System," is solely focused on enhancing the safety of the driver operating any type of vehicle. Regardless of whether a vehicle will run, fly, or float on water, this system can be installed in any type of vehicle. The apparatus will identify. The driver's face will show signs of fatigue, and this will warn them. Since it can be installed in any vehicle, this project has enormous commercial potential. The primary function of drowsiness detection will be the same in all types of vehicles, but the additional security features will vary based on the vehicle type. There is a great market opportunity for this project index.

## REFERENCE

[1] Parra Alonso, R. Izquierdo Gonzalo, J. Alonso, A. Garcia Morcillo, D. FernandezLlorca, and M. A. Sotelo, “The experience of drivertive-driverless cooperative vehicle team in the 2016 gcdc,” IEEE Transactions on Intelligent Transportation Systems, vol. 19, no. 4, pp. 1322–1334, 2017.

[2] N. Ammour, H. Alhichri, Y. Bazi, B. Benjdira, N. Alajlan, and M. Zuair, “Deep learning approach for car detection in UAV imagery,” Remote Sensing, vol. 9, no. 4, p. 312, 2017.

[3] R. P. Balandong, R. F. Ahmad, M. N. Mohamad Saad, and A. S. Malik, “A review on EEG-based automatic sleepiness detection systems for driver,” Ieee Access, vol. 6, pp. 22908–22919, 2018. [4] F. Rohit, V. Kulathumani, R. Kavi, I. Elwarfalli, V. Kecojevic, and A. Nimbarte, “Realtime drowsiness detection using wearable, lightweight brain sensing headbands,” IET Intelligent Transport Systems, vol. 11, no. 5, pp. 255–263, 2017.

[5] A. Kulathumani, R. Soua, F. Karray, and M. S. Kamel, “Recent trends in driver safety monitoring systems: state of the art and challenges,” IEEE Transactions on Vehicular Technology, vol. 66, no. 6, pp. 4550–4563, 2017.

[6] J.-J. Yan, H.-H. Kuo, Y.-F. Lin, and T.-L. Liao, “Real-time driver drowsiness detection system based on PERCLOS and grayscale image processing,” in Proceedings of the 2016 International Symposium on Computer, Consumer and Control (IS3C), pp. 243– 246, Xi’an, China, July 2016