



Robust Visual Analysis Of Eye State For Detection Of Bus Driver Fatigue

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Abstract--- In today's ever-changing life, human ought to respond Per necessities of scenario. Hence, it's vital to own an honest & harmonious culture in the workplace, which may be terribly useful to reduce the conflict scenario. Choosing the incorrect decisions or rejecting the correct decisions may prove to be pricey mistakes for the individual. Our system is one amongst the system that reduces the number of accidents caused by driver fatigue and therefore improves road safety. This technique treats the automated detection of driver sleepiness supported visual information and computing. We locate, track and analyze each the driving force face and eyes to live PERCLOS (percentage of eye closure) with Softmax for neural transfer perform. Driver's fatigue is one of the main causes of traffic accidents, significantly for drivers of huge vehicles (such as buses and significant trucks) because of prolonged driving periods and tedium in occupied conditions. This study discusses good assessments of the impact of stress throughout operating & the importance of different connected factors which causes road accidents.

Keywords: Bus drivers, fatigue, stress, visual information, PERCLOS, softmax.

I. INTRODUCTION

The main idea behind this project is to develop a system which can detect drowsiness of the driver and issue a timely warning. Driver Fatigue is a main reason for a large number of road accidents. The detection can be done may different ways and by using different parameters.

The parameters can be the drivers behaviour while driving, the physiological parameters and by checking the vehicle steering. Propose system uses the behaviour parameter. The behaviour parameter include the eye blinking, yawning, eye openness, jaw position etc.

The live video is captured by the camera that is fit in the bus. The video is divided into frames and then select images from frames. By taking individual image ,noise from the image is cleared. Then the image is converted into grayscale image.

The respective calculation of the image selection is displayed on the screen. After converting the image to grayscale the face detection is done on the converted image. Compare the sample image with the image present in the database of sample images. Then the detection of jaw position, eye openness and angle of iris. Then, whether the driver is drowsy or not is checked by the calculation of he before mentioned parameters. If the driver is drowsy then alarm is raised. By using this system the rate of accidents can be reduced.

II. LITERATURE SURVEY

Sr. No.	Paper Name	Author Name	Published Year	Advantages	Disadvantages
1.	Towards Detection of Bus Driver Fatigue Based on Robust Visual Analysis of Eye State[1]	Bappaditya Mandal, Liyuan Li, Gang Sam Wang, and Jie Lin	2016	accuracy and robustness for the challenging situations when a camera of an oblique viewing angle to the driver's face is used for driving state monitoring.	Detection of eyes sometimes cannot be accurate
2.	Automatic Detection of Driver Fatigue Using Driving Operation Information for Transportation Safety[2]	Zuojin Li *, Liukui Chen, Jun Peng and Ying Wu*.	2017	fatigue detection system using SWA and YA information obtained by fixed sensors	Sensors accuracy has to be increased
3.	Potential causes of driver fatigue: a study on transit bus 2 operators in Florida [3]	Thobias Sando,	2010	Survey questionnaire; Analysis of transit 182 agencies' incident reports and operator schedules.	If Communication survey is not done properly system will not provide accuracy
4.	Detecting Driver Drowsiness Based on Sensors: A Review[4]	Arun Sahayadhas *, Kenneth Sundaraj and Murugappan Murugappan	2012	Experimental control, efficiency, low cost, safety, and ease of data collection.	If sensors stops working system will be failed

5.	Driver fatigue: The importance of identifying causal factors of fatigue when considering detection and countermeasure technologies[5]	Jennifer F. May *, Carryl L. Baldwin	2009	Detecting and warning	If fatigue factors accurately not measured then false warnings can be raised.
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III. EXISTING SYSTEM

A driver falls asleep, then the driver loses control over the vehicle, an action which often results in a crash with either another vehicle or any object. In order to prevent these devastating accidents, there was the previous approach developed, in this system the state of drowsiness of the driver was monitored. The following measures were used widely for monitoring drowsiness:

- (1) Vehicle-based detection: A number of actions/metrics, including deviations from lane position, movement of the steering wheel, pressure on the acceleration pedal, etc., are constantly monitored and any change in these that crosses a specified threshold indicates a significantly increased probability that the driver is drowsy .
- (2) Behavioral measures: The behavior of the driver, including yawning, eye closure, eye blinking, head pose, etc., was monitored through a camera and the driver was alerted if any of these drowsiness symptoms are detected.
- (3) Physiological measures: The correlation between physiological signals (electrocardiogram (ECG), electromyogram (EMG), electrooculogram (EOG) and electroencephalogram (EEG)) and driver drowsiness was studied.

Disadvantages of Existing System

1. The subjective self-assessment of drowsiness can be obtained only from subjects in particular environments. In real conditions, it is unfeasible to obtain this information without distracting the driver from their primary task.
2. EEG signals require a number of electrodes to be placed on the scalp and the electrodes used for measuring EOG signals which are expensive.

IV. PROPOSED SYSTEM

In recent days, driver drowsiness has been one of the major causes of road accidents and can lead to severe physical injuries, deaths. Statistics indicate the need of a reliable driver drowsiness detection system which could alert the driver before a incidents takes place. The proposed system is a driver eyes monitoring system that can specially works on drivers eyes and face region. Firstly the eyes and face regions are monitored by camera. Secondly, Iris structuring, jaw angle finding and calculation is done using regression analysis, Haar (cascade classifier algorithms) which will examine the eyes are open or closed, then system will detect whether driver is sleeping or not sleeping. If driver is sleeping the alarm rings.

Advantages of Proposed System

1. System is able to distinguish the simulated drowsy and sleepy states from the normal state of driving on the low resolution images of faces and eyes observed from an oblique viewing angle.
2. Effectively monitors the bus driver' s attention level without extra requirement for cameras.
3. The System approach could extend the capability and applicability of existing vision-based techniques for driver fatigue detection.

V. SYSTEM ARCHITECTURE

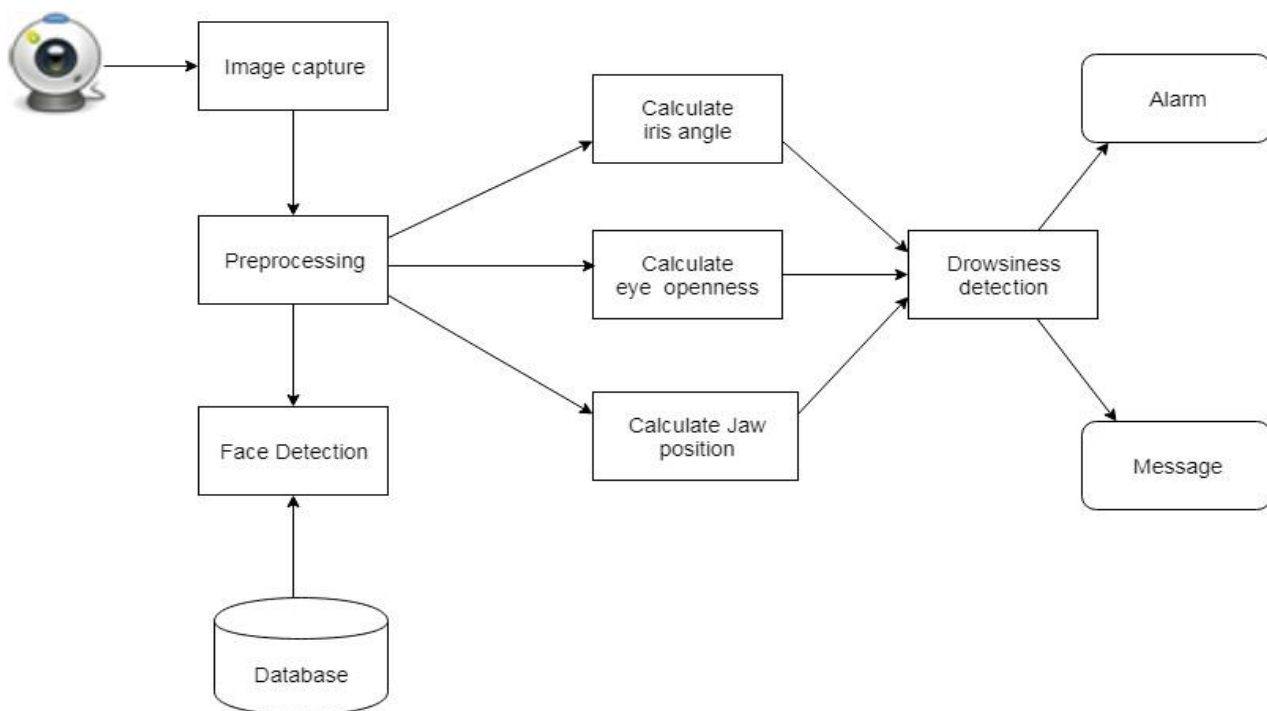


Figure 1. Proposed System Architecture

VI. CONCLUSION

A vision-based method and system towards bus driver fatigue detection using existing dome cameras in buses.

Approach starts with the detection of head-shoulders of the figure in the image, followed by face and eye detections and eye openness estimation.

Hence, system might be able to effectively monitor bus driver's attention level without extra requirement other than cameras.

REFERENCES

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