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FACIAL LANDMARKS ON THE DETECTED FOR DRIVER'S DETECTION

VARADA DEEPTHI, ASSISTANT PROFESSOR, varadadeepthi@gmail.com
BALAJI SUNIL CHANDRA, ASSISTANT PROFESSOR, hod.cse@svitatp.ac.in
ASONDI SREEPRADHA, ASSISTANT PROFESSOR, sreepradha5217@gmail.com
Dept. of CSE, Sri Venkateswara Institute of Technology,
N.H 44, Hampapuram, Rapthadu, Anantapuramu, Andhra Pradesh 515722

Abstract

There is little question that drowsy driving is a leading cause of road accidents and fatalities. So, identifying signs of driver weariness is an exciting area of research. There are a lot of long-standing methods that are based on either auto, behaviour, or physiology. A few of methods need costly sensors and data processing; others are obtrusive and divert the driver's attention. Consequently, this study successfully develops a low-rate, real-time system for detecting driver sleepiness. A camera records the footage, and the system's developers use image processing techniques to identify the driver's face in every frame. We can use these features and a machine learning approach to detect drowsiness in the driver based on developed adaptive thresholding, aspect ratio, mouth opening ratio, and head position. By pointing out facial landmarks on the detected face, we can compute the attention aspect ratio, mouth opening ratio, and nose size ratio. If we use these values, we can generate a sound notice based on any type of driver detection.

Keywords:-ML, Sound Notice,aspect ratio,Landmark marking.

1. INTRODUCTION

A lack of concentration behind the wheel is a leading cause of fatal car accidents. This problem is more likely to affect truck drivers who work long hours (especially at night), bus drivers who operate long-distance routes, or drivers of day buses. Drunk driving is a global problem that affects every nation. Countless injuries and fatalities occur year

occur as a result of car accidents caused by driver weariness. Due to its significant practical relevance, detecting driver weariness and related signs is therefore an active area of study. There are three parts to the fundamental sleepiness detection method: the acquisition technique, the processing process, and the warning process. Here, the processing facility receives the video footage of the driver's front face that was acquired in the acquisition method.
obstruct the page where it is processed online to monitor sleepiness. A signal is sent to the driver via

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the warning system in the event that sleepiness is identified. In general, there are three main schools of thought when it comes to methods for identifying sleepy drivers: vehicle centred, behavioural headquartered, and physiological founded. Several metrics are included in a vehicle-centered approach, including the following: acceleration, lateral acceleration, steering wheel movement, braking pattern, vehicle velocity, lane deviations, and so on. Under constant supervision. Any abnormality in the trading of these values is considered driver sleepiness. The sensors aren't attached to the motor, therefore it won't create any obstructions. Eye movements such as blinking, shutting, yawning, bending the head, etc., serve as the driving power in the behavioural centred approach [17]. Are analysed to become conscious of sleepiness Since a simple camera is used to uncover these features, this measurement method is also nonintrusive. Signs of physiological function, such as heart rate, pulse rate, electroencephalogram (EEG), electrooculogram (ECG), and electrocardiogram (ECG), are the focus of the physiologically centred approach [8,9]. Are tracked and from these parameters, sleepiness or exhaustion level is determined. Size like that is invasive because it

You may use the sensors attached to the driver to divert their attention. Process rate and measurement quality are both affected by the sensors employed in the technique. However, the approach's accuracy will be much enhanced with the addition of additional parameters/elements. Based on these justifications, we want to improve a reasonably cost, real-time driver's drowsy detection system. Consequently, we have suggested a webcam-based method to detect driver weariness from a facial picture alone, using image processing and computer learning methods to make the process affordable and portable.

2. RELATED WORK

Existing System

The current procedure for detecting driver sleepiness includes reducing accidents caused by unconsciousness via the use of eye blinking. This car has a built-in eye blink sensor that, in the event that the driver passes out, will sound an alarm to get their attention and prevent an accident. A Drowsiness Detection technique may be used in the future to trigger alerts aboard planes.

Proposed System

We create a low-cost, real-time driver's sleepiness detector in the proposed method.

detectio technique with enough precision. So, to make the approach cheap and portable, we've proposed a webcam-based method to detect driver fatigue from the face image using image processing and laptop learning procedures. The cam will be placed in front of the driver to capture the front face

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image. In order to get 2D snapshots, the frames are taken from the video. Using these features and the desktop learning approach, we can determine the driver's level of sleepiness based on facial landmarks, eye side ratio, mouth opening ratio, and function of the top. An alarm will likely be sent to the driving force to notify them if they seem sleepy. We will go over the key aspects of each block below.

3. IMPLEMENTATION

Data Acquisition

We use a camera to capture the footage, and then we use a desktop computer to extract and process the frames. These 2D pictures are subjected to image processing techniques after frame extraction. Currently, data on artificial drivers has been produced. The participants are asked to appear on the camera while yawning, sometimes blinking, shutting their eyes, and bending their head. A duration of thirty minutes is recorded in the video.

Face Detection

After extracting the frames, first the human faces are detected.

Facial Landmark marking

After detecting the face, the following task is to search out the places of distinct facial facets like the corners of the eyes and mouth, the tip of the nose etc. Previous to that, the face images should be normalized with a purpose to lower the effect of distance from the digital camera, non- uniform illumination and ranging photo decision.

Alarm

Alarm is given to the driver. Normally it'll occur that after the pinnacle is simply too low due to bending, the process is unable to detect the face. In such problem, earlier three frames are regarded and if head bending was detected in these three frames, drowsiness alarm will probably be shown

Project architecture

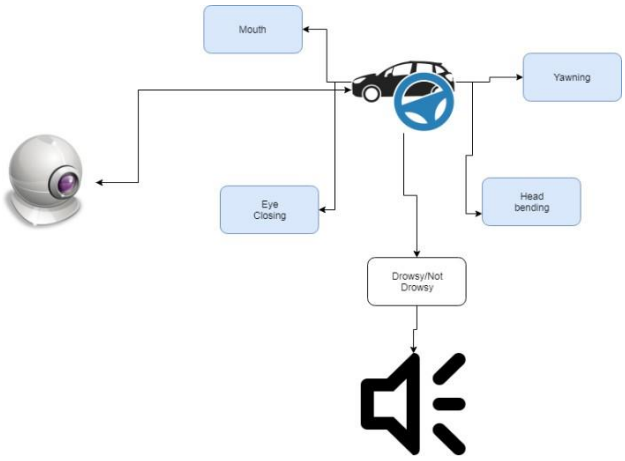

Fig:-1 Architecture

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4. EXPERIMENTAL RESULTS

	A	B	C	D
1	EAR	MOR	NLR	State
2	0.263577	0.484207	1.747472	Normal
3	0.262877	0.476557	1.676233	Normal
4	0.247628	0.472253	1.746076	Normal
5	0.217545	0.475853	1.677687	Normal
6	0.229884	0.408375	1.677687	Normal
7	0.205423	0.39432	1.747472	Normal
8	0.206809	0.395052	1.676233	Normal
9	0.203704	0.439799	1.677687	Normal
10	0.213129	0.408969	1.677687	Normal
11	0.185695	0.414749	1.747472	Normal
12	0.20311	0.41946	1.815919	Normal
13	0.300886	0.573826	0.980294	Normal
14	0.269802	0.57705	0.977802	Normal
15	0.22365	0.429055	1.885762	Normal
16	0.28205	0.570272	0.910642	Normal
17	0.223674	0.407329	1.746076	Normal
18	0.235217	0.446978	1.746076	Normal
19	0.307628	0.579259	0.918642	Normal
20	0.325043	0.561084	0.98773	Normal
21	0.211008	0.450036	1.676233	Normal
22	0.185625	0.445526	1.746076	Normal
23	0.294765	0.557179	1.056917	Normal
24	0.207672	0.410176	1.677687	Normal

Fig:-2 Sample Data

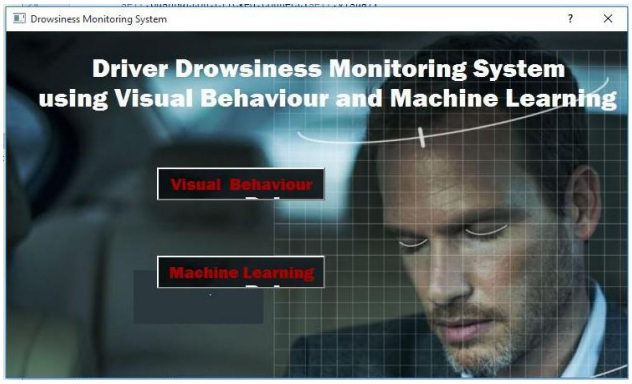

Fig:-3 Home Screen

Fig:-4Eye close

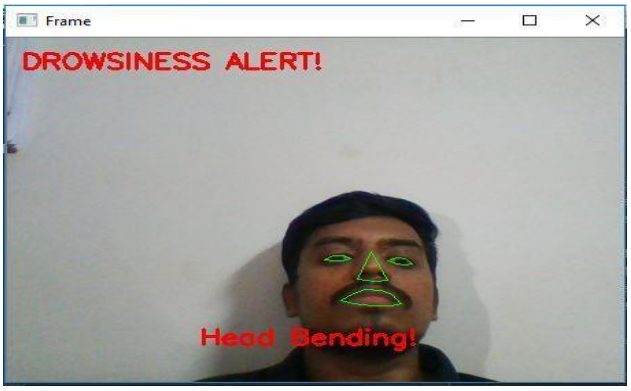

Fig:-5 Head Bending

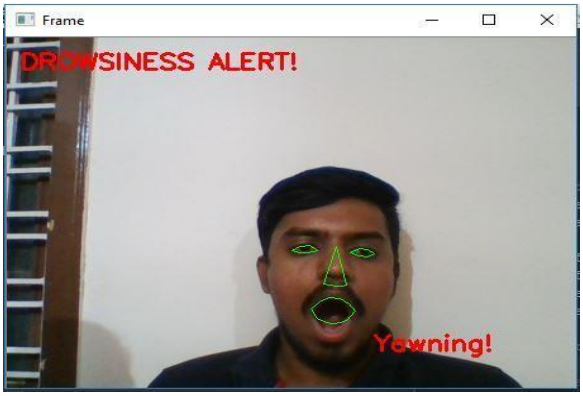

Fig:-6 Yawning

5. CONCLUSION

Based on ocular behaviour and machine learning, this research proposes a low-cost, real-time method for detecting driver sleepiness. In this case, we use the live video streamed from a camera to calculate visual behaviour characteristics like as eyeaspect ratio, mouth opening ratio, and nose length ratio. It is now possible to identify sleepiness in drivers in real time using an adaptive thresholding method. The created system functions properly when used with the synthetic data that was produced.

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REFERENCES

[1] W. L. Ou, M. H. Shih, C. W. Chang, X. H. Yu, C. P. Fan, "IntelligentVideo-Based Drowsy Driver Detection System under VariousIlluminations and Embedded Software Implementation", 2015international Conf. on Consumer Electronics - Taiwan, 2015.

[2] W. B. Horng, C. Y. Chen, Y. Chang, C. H. Fan, “Driver Fatigue Detectionbased on Eye Tracking and Dynamic Template Matching”, IEEEInternational Conference on Networking,, Sensing and Control, Taipei,Taiwan, March 21-23, 2004.

[3] S. Singh, N. P. papanikolopoulos, “Monitoring Driver Fatigue usingFacial Analysis Techniques”, IEEE Conference on IntelligentTransportation System, pp 314-318.

[4] B. Alshaqaqi, A. S. Baquhaizel, M. E. A. Ouis, M. Bouumehed, A.Ouamri, M. Keche, “Driver Drowsiness Detection System”, IEEEInternational Workshop on Systems, Signal Processing and theirApplications, 2013.

[5] M. Karchani, A. Mazloumi, G. N. Saraji, A. Nahvi, K. S. Haghighi, B. M.Abadi, A. R. Foroshani, A. Niknezhad, “The Steps of ProposedDrowsiness Detection System Design based on Image Processing inSimulatorDriving”, International Research Journal of Applied and BasicSciences, vol. 9(6), pp 878-887, 2015.