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Driver Drowsiness Detection System using HAAR Method

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ABSTRACT: Driver's sleepy detection is the main one face in reducing traffic accidents to improve security and security technology, so it plays an important role in preventing the road accident. Researchers have carried out many studies and various the techniques entered to take care of security and security measures. In this paper, real time face detection implementation is done by monitoring the driver's eyes and mouth using a high-resolution camera that monitors go straight to the driver's face. Recorded videos from the driver's face is converted into many image frames, detect Features such as eyes (flashing) and mouth (yawning). If the eyes blink closed and evaporated the mouth detected based on performance Metrics, the driver's detection system immediately warns red Beep alarm signal as output. We use LBPH techniques and HAAR detection method for accurate results.

KEYWORDS: Local binary patterns histogram (LBPH), HAAR detection method, Root Square Error (RMSE), Eye Aspect Ratio (EAR).

I. INTRODUCTION

Most road accidents occur because of the driver drowsiness. In the current survey, it shows that of 5 an accident one accident is due to driver drivers which are approximately 20% of road accidents and that Increase gradually every year. Every year, almost 100,000 traffic crashes occur because of sleepiness Driver, including more than 1,500 deaths and more than 70,000 Injury, according to national highway traffic safety Administration. The driver can reduce danger by realizing Risk factors and take precautions. Sleepy driver, Drunk and drive is the main cause of the road Accident. Traffic safety studies found that under normal circumstances Sunday, 42.4% driving driver without at least one or more days sleep, less than six hours of sleep. That the reason for druggish drivers might be caused by less concentration, lack of sleep, total traffic more death. To take driver precautions, and to remind the driver of drowsiness while driving, we Use LBPH techniques for face recognition and mouth. Then, we use the HAAR (Blink) detection method and mouth recognition (yawning) is measured and controlled with a beep alarm directly in this paper.

II. LITERATURE SURVEY:

Monitoring real-time driving behaviour played a big role in the smart transportation system. This some kind of monitoring will reduce and also decrease in the level of traffic accidents. This is a vision based including video cameras for this dangerous situation often one of the full main help to search know how the drive position. Because of efficiency and Smartphone performance in online mode, driving dangerous countries determined in real time on mobile devices with the help of computer vision OpenCV and DLIB libraries while driving. Offline mode is based on the results of statistical analysis Provided by Cloud Services, take advantage not only statistical accumulation in real time, and also previously stored and produced by machine learning Tool Vehicle accidents have become a general scene at Our travel route. Every year many people attacked, many of them lose their lives and big the amount of property destruction occurs Because of vehicle misadventure. Base an analysis report on road accidents in recent years, famous that the main cause of road accidents resulting in death, severe and monetary injury Losses, caused by Drowsy or drivers who are sleepy. The state may be caused by lack of sleep, medicine, medicine or driving continuously for a

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long period of time. Destination from our work is to find a system that will monitor Driver's sleepiness and rivet levels tracking. Comparison has been made between the method of the proposed student method and averaging shift method. Has been shown that the proposed method gives accuracy is better than other systems Technology improvement of the last 50 years accommodating a good number of accidents occurs on driver by providing great level of comfort and security at vehicle. Accidents can occur because a lot the reason and one reason we will do Portrait and finish in this paper is the driver's fatigue. By develop machine learning, pattern recognition Computer vision-based algorithm that will use all relevant features for fast and accurate classification Drowsiness in the driver. They also develop algorithms which will determine the driver's sleepy rate called sleepiness level. They use eye aspects ratios for Identification Weather Frame the person is sleepy, mouth Aspect ratio is used for the area of the mouth. In this project they are has used the vertical distance of the eye (EVD) and also mouth Vertical distance (MVD). They count the ratio Vertical distance for EVD and MVD.

III. EXISTING SYSTEM

By using a non-intrusive machine vision-based concepts, drowsiness of the driver detected system is developed. Many existing systems require a camera which is installed in front of driver. It points straight towards the face of the driver and monitors the driver's eyes in order to identify the drowsiness. For large vehicle such as heavy trucks and buses this arrangement is not pertinent. Bus has a large front glass window to have a broad view for safe driving. If the camera is placed on the frame which is just about the window, then the camera is unable to detain the anterior view of the face of the driver correctly.

COMPONENT NAME	COMPONENT
LPC2148 Micro Controller	
Eyeblink sensor	
Lcd and Buzzer	
GSM and GPS	

In this existed system the driver always has to wear an eye blink sensor the may leads to head ache and eye pain. Moreover, present drowsiness detection system is integrating with the cars so the system comes with an inbuilt function. So that, on road cars or used cars cannot access this new system. Hence existing system is not applicable for large vehicles. In order to conquer the problem of existing system, new detection system is developed in this project work.

IV. PROPOSED SYSTEM:

In this paper, the recorded video driver is recorded and converted into many image frames. That Picture frames are taken as input, and do pre-processing for facial detection from input images to extract features like eyes and mouth. System included detection features like eyes and mouth using LBPH technique. Driver's drivers block diagram system is shown in Figure-1:

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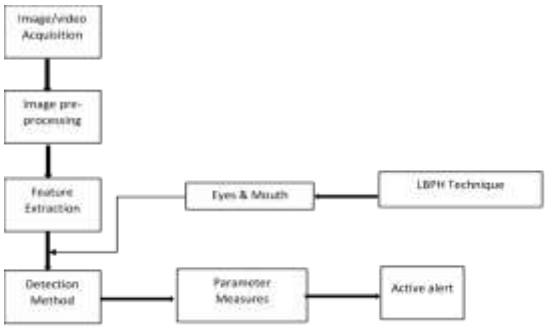
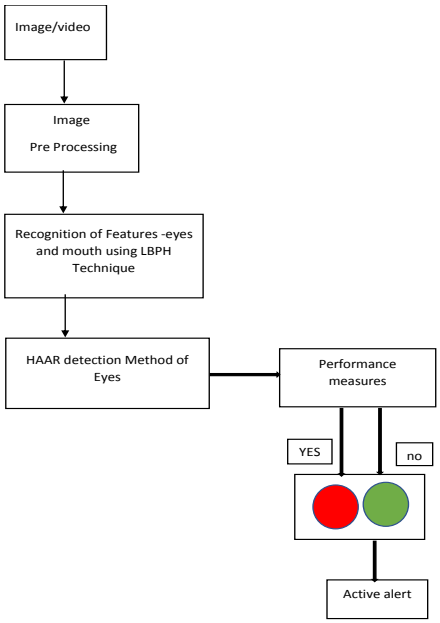


Detection from Figure-1 above, we entered the recorded video the driver's face converted into streaming images Frame, save the picture frame in the dataset to appear Pre-processing image: Pre-image processing is for improve the quality of image data if there is a distortion or increase some image features using geometric Transformation like rotation, translation, scaling., For Increase the face detection feature. Features of. Eyes and mouths are extracted using LBPH techniques [5, 6]. We detect eye features (flashing) and mouth (yawning) by using the HAAR detection method [7, 8] and found the steps:



V. METHODOLOGY:

The methodology is our proposed system "Driver drowsiness detection alert system"is as follows

Step 1: image/video acquisition

Image acquisition is used to change the input image into Numeric data arrays are used to be processed on Computer. In the first step, get the video recorded from A Face driver as input and converted into picture frames Stored in the dataset. Each of these frames is extracted and processed separately.

Step 2: Pre-processing image

Pre-image processing steps mainly increase input Images that suppress unwanted distortion in an image or improve the image features that are especially important for processing. In this step, based on the image frame size pixel environment, we apply geometric transformation like rotation to improve features using Point-based detection as shown in Fig ure-3:

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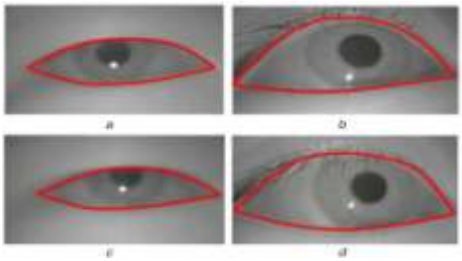

Fig(3): Pre-processing of the image

Step 3: Extraction features using LBPH techniques Facial recognition has become an interesting field at research to increase the accuracy of a lot of real time application. Extraction features enhanced for improve human facial recognition using LBPH techniques presented in this paper. We extract features based on Pixel-based Landmark Point and Environment & mouth to increase performance steps like speed to increase the level of recognition.

Step 4: Eye detection (flashing) and mouth (yawning) Using the HAAR detection method HAAR detection method is an effective object detector Methods for detecting features in an image. After we found Eye and mouth features, we use HAAR detection Methods for detecting features such as flashing and mouth eyes evaporates to a certain time limit. By using this method, we achieve accurate and faster

Step 5: Calculate performance steps like RMSE, Ear. The proposed method can be evaluated using several Steps like RMSE and ears. RMSE is calculated as:

Show landmark points to calculate the flashing rate on EAR. If the value of 'ear' is greater than 0 it is detected as the eye Open and if the 'ear' value is equal to zero detect as the eye

Step 6: Show beep Alarm Signals to Detect Drivers Drowsiness Based on the parameters we found taking input images Dataset; we can detect the weather state of driver sleep or active situation. When the driver eye (flashing) I.e., open eyes and eyes are found based the parameters we identify, our system gives us immediately warn the alarm sounds a beep. And also, when the mouth (yawning) is e.g., Open mouth shut and mouth found based the parameters we identify; our system immediately warns a beep alarm

VI. RESULTS:

The results in our proposed system are implemented Use the OpenCV tool. Under Fig-4 shows the drive
Sleepy Detection System - Menu Login page

Fig (4): login page

In Figure-4, on the menu page we entered the driver Details like ID, name, cell phone number then system start recording. This credential is used to recognize Driver's face. When the 'Add Driver' button clicked, recorded videos require a video of half a minute from the user input the face that stores as a frame dataset as shown below Figure-5

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The image is stored in the form of a frame

Converted into a gray scale. When clicking Pre-processing Button, we do geometric transformation (rotation) for input images to improve image quality and after the feature is detected using point-based, we Pre-processing display is complete

After we finish pre-processing, we extract image feature. Features such as eyes and mouth extracted using the LBPH technique after the features are extracted, we detect the eye Flashing (lid & open) and yawning the mouth (lid & open) as

While clicking the Webcam Predict button, its open a fast window frame that caught the temporary driver's face drive. If the driver falls asleep or feels sleepy, he counts RMSE, ears to predict the level of blinking and mouth Warning evaporates. If the criteria exceed, it plays alarm for the sake of driver's awareness

VII.EXECUTION:

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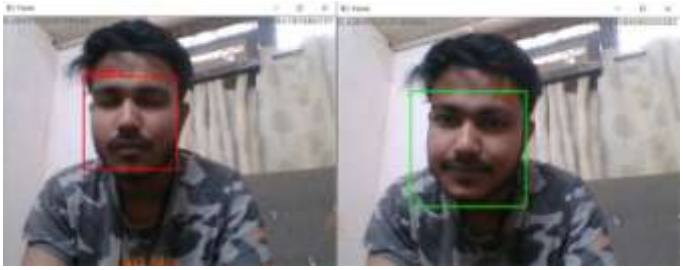
VIII. OUTPUT:



IX. CONCLUSION:

In conclusion, a mechanism to alert the driver drowsiness implementation of image processing is carried out to alert with the immediate buzzer in less than a second once the eyes blink and mouth yawn based on the parameters are detected to reduce road accidents. After image acquisition, we apply geometric transformation –rotation for performing image pre-processing to improve the quality of image. And we extract features like eyes Entropy, MI, and achieve better accuracy results to implementing the detection system adhering to this driver uses More real-time data sets

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REFERENCES:

[1]. Igor Lashkov, Alexey Kashevnik, Nikolay Shilov,Vladimir Parfenov, Anton Shabaev“Driver Dangerous State Detection Based on Open?V & Dlib Libraries Using Mobile Video Processing “,IEEE Trans ,vol 1,,2019.

[2]. Ahonen, Timo, Abdenour Hadid, and Matti Pietikainen. “Face description with local binary patterns: Application to face recognition.” IEEE transactions on pattern analysis and machine intelligence 28.12 (2006): 2037–2041

[3]. Nora Kamarudin , Nur Anida Jumadi, Ng Li Mun , Ng Chun Keat , Audrey Huong Kah Ching1 , Wan Mahani Hafizah Wan Mahmud, Marlia Morsin1 , Farhanahani Mahmud1,” Implementation of Haar Cascade Classifier and Eye Aspect Ratio for Driver Drowsiness Detection Using Raspberry Pi”, UJEEE, 2019.

[4]. G. Borghini, L. Astolfi, G. Vecchiato, D. Mattia, and F. Babiloni, ‘‘Measuring and mouth of the input image using LBPH technique. Once the features like eyes and mouth are extracted, we use HAAR detection method to detect the eye (blink) and mouth (yawn). Based on the parameter measure like RMSE and EAR results, we immediately get a warning alert that driver drowsiness is detected. We can further extend this work by identifying few more parameters like PSNR,

neurophysiological signals in aircraft pilots and car drivers for the assessment of mental workload, fatigue and drowsiness,’’ Neurosci. Biobehav. Rev., vol. 44, pp. 58–75, Jul. 2014.

[5]. P. F. Felzenszwalb, R. B. Girshick, D. McAllester, and D. Ramanan, ‘‘Object detection with discriminatively trained part-based models,’’ IEEE Trans. Pattern Anal. Mach. Intell., vol. 32, no. 9, pp. 1627–1645, Sep. 2010

[6]. W. Walter, ‘‘Overview of research on driver drowsiness definition and driver drowsiness detection,’’ in Proc. Int. Tech. Conf. Enhanced Saf. Vehicles, 1995, pp. 462–468.

[7]. X. Fan, B. Yin, and Y. Sun, ‘‘Yawning detection for monitoring driver fatigue,’’ in Proc. Int. Conf. Mach. Learn. Cybern., vol. 2, Aug. 2007, pp. 664–668.

[8]. D. S. Bolme, J. R. Beveridge, B. A. Draper, and Y. M. Lui, ‘‘Visual object tracking using adaptive correlation filters,’’ in Proc. IEEE Comput. Soc. Conf. Comput. Vis. Pattern Recognit., Jun. 2010, pp. 2544–2550.

[9]. J. Valmadre, L. Bertinetto, J. Henriques, A. Vedaldi, and P. H. S. Torr, ‘‘End-to-end representation learning for correlation filter-based tracking,’’ in Proc. IEEE Conf. Comput. Vis. Pattern Recognit. (CVPR), Jul. 2017,pp. 5000–5008

[10]. B. Warwick, N. Symons, X. Chen, and K. Xiong, ‘‘Detecting driver drowsiness using wireless wearables,’’ in Proc. 12th Int. Conf. Mobile Ad Hoc Sensor Syst. (MASS), Oct. 2015, pp. 585–588.

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