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DRIVER DROWSINESS DETECTION SYSTEM USING OPENCV AND KERAS

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A B S T R A C T

A computer's vision-based thoughts concept has been used for creating this Drowsy Driver Detection System. The camera being the initial point of the system by providing the live feed of the driver to the framework that concentrates it straight towards the face of driver and checks the driver's eyes with a particular objective to catch drowsiness of the driver. On analysing the live video, an alert is issued to the driver in circumstances where drowsiness is outcome of the analysis. The framework moves the control of the program forward using information picked up from the picture to find the facial tourist spots, which helps the system to identify where the eye's location of an individual exist. If the eyes of driver are closed for a specific amount of time, the proposed framework draws a conclusion that the driver is feeling drowsy and an alarm for safety is sound. The system works after initially face is recognized and eyes are spotted, it also works well in dim lighting conditions too.

Keywords: Drowsy Driver Detection, Facial tourist spots, Alarm, lighting conditions.

1. INTRODUCTION

With the increasing pace of life and work the human beings have started compromising with the thing they need most, to efficiently function in a given situation i.e., adequate rest and sleep to be active while doing a task. Driver's drowsiness is a very cautious thing and has already led to a lot of mishaps. Some researchers even provide a data that nearly 1200 deaths and 76000 major injuries are caused due to the fatigue driver was facing which eventually led to a crash. With the help of modern-day technology and real time scanning systems using cameras this project can prevent major mishaps on the road by alerting car driver who is feeling drowsy through a drowsiness detection system. The point of this undertaking is to build up a prototype drowsiness detection system. The spotlight will be put on planning a framework that will precisely monitor the open or shut condition of the driver's eyes continuously. By concentrating on the eyes, it has resulted that the onset of driver fatigue can be detected to avoid a car accident. Detection of drowsiness depends on the eye movements and time elapsed between blinks to help generate a score on which a driver is assessed if he is drowsy or not. To prevent these accidents, this proposed project uses python, OpenCV and keras which works on the live feed of the driver through a webcam which is then processed to generate a score based on the time between eyes closing and opening and when eyes are closed for a long time the score starts increasing and when it reaches a certain mark the alarm starts beeping alerting the driver and waking him up.

1.1 Primary Goal:

Driver drowsiness detection is a car safety technology which helps to save the life of the driver by avoiding mishaps when the driver is feeling tired. A) The primary goal is to initially plan a framework to distinguish driver's sluggishness by persistently checking retina of the eye. B) The framework works disregarding driver wearing displays and in different lighting conditions. C) To caution the driver on the identification of laziness by utilizing ringer or alert. D) Speed of the vehicle can be reduced. E) Traffic management can be maintained by reducing the accidents.

1.2 The Computer's Vision :

PC's vision is the change of information from a still, or camcorder into either a depiction or another choice. Each and every such changes are performed to achieve a particular target. A Computer gains a cross section of numbers from a camera or from the circle, and it's just as simple as that. For the most part, there is no worked in example acknowledgment or programmed control of centre and gap, no cross-relationship with long periods of experience. Generally, vision frameworks are still reasonably gullible.

1.3 OpenCV :

OpenCV is an open-source computer source library available in python encoding to encrypt the visual skills of our smart pc. OpenCV was expected for computational capability and having a high focus on ongoing picture location and distinguishing proof. OpenCV is coded with streamlined C and can take work with multicore processors. If we need progressively programmed improvement utilizing Intel models [Intel]. These comprise of low-level schedules in different algorithmic regions which are streamlined. OpenCV therefore uses the IPP library, at runtime if that library is introduced.

1.4 Why Open CV?

A) Specific OpenCV was planned for picture handling. Each structure and structure of the information is visualized in the Image Processing Plan. Then, Matlab, is very conventional. You can get almost everything on the planet by methods for tool compartments. It may be money related tool stash or then again concentrated DNA tool compartments. B) Speedy Matlab is just excessively moderate. Matlab itself depended on Java. Similarly, Java depended on C. So, when we run the Matlab program, our PC gets caught trying to translate and integrate all of this integrated Matlab code. It is then converted to Java, eventually using code. C) Efficient Matlab uses an excessive amount of system assets. With OpenCV, we can extract as much as 10mb RAM for continuous application. Aside from the fact that with current PCs, the RAM feature is by no means a significant concern. In any case, our fatigue screen will be used inside the car in a non-slip and non-slip way; therefore, the need for low management is important.

1.5 Machine Learning :

The purpose of AI is to convert information received into usable data. After benefiting from the issue of social information, we need a machine that can answer any questions related to that information.

1.6 OpenCV's Machine Learning Algorithms :

ML statistics embedded in OpenCV are provided as follows. All statistics are available in the ML library separated by Mahalanobis and K-implication, found in CVCORE, as well as facial recognition calculations, found in CV.

2. METHODOLOGY

The main purpose of this paper is to produce a simple and easy-to-use system that will lead to a safe road trip.

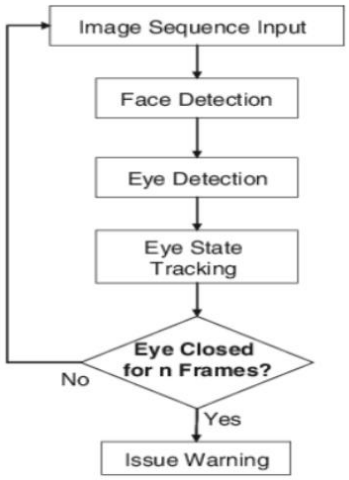

Fig 1

Fig 1 shows the method used to develop the system to an efficient way. The algorithm used to process the image to feed the code to specify the face in the image, the image is divided into sub-regions to determine whether the region is on the face or not. The use of this algorithm means a time-saving method and only face-containing domains are processed.

Fig 2 shows how the system would work and look in real world.

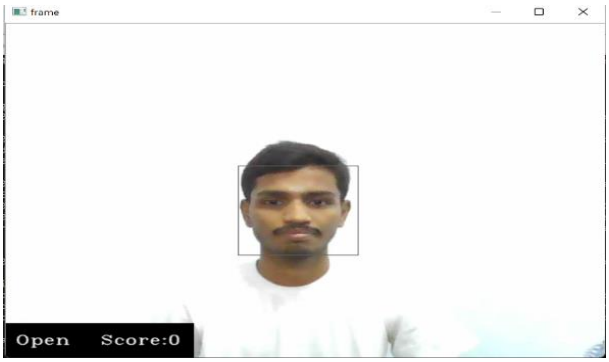

Fig 3 Open Eyes Detection

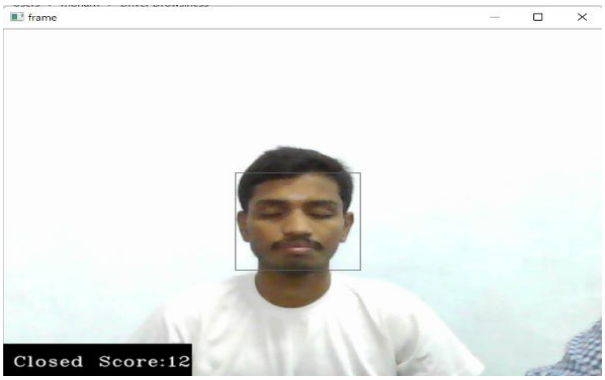

Fig 4 Closed Eyes Detection

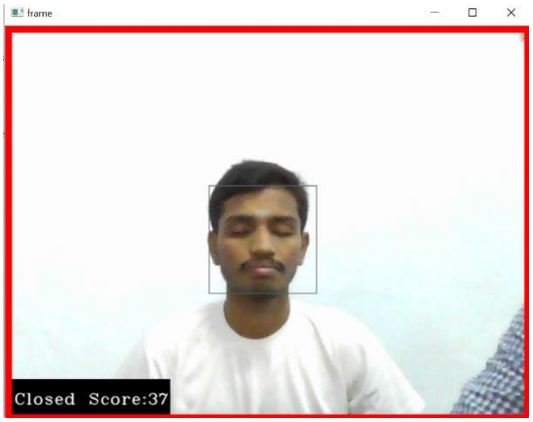

Fig 5 Sleep Alert

3. CONCLUSIONS

The proposed system was tested under different conditions and was found to be fairly successful. This innovative approach for the detection of drowsiness of a driver in a new way by judging the movements of his/her eyes. The previous proposed models detected the same with the help of line of sight, frequency of yawning and several other physical traits. The proposed model is fairly efficient as it will ring an alarm once the eyes of the driver remain closed more than the predetermined amount of time. Before arriving at the final proposed model, trial and error method was employed to determine the best possible optimizer function. Deep learning methods are well known for image processing and this was explored during the project.

REFERENCES

[1] Rukhsar Khan, Shruti Menon, Shivraj Patil, Suraj Anchan, Saritha L. R., "Human Drowsiness Detection System",International Journal of Engineering and Advanced Technology (IJEAT) ISSN: 2249 – 8958, Volume-8 Issue-4, April, 2019

[2] Ameen Aliu Bamidele, Kamilia Kamardin, Nur Syazarin Natasha Abd Aziz , Suriani Mohd Sam," Non-intrusive Driver Drowsiness Detection based on Face and Eye Tracking" (IJACSA) International Journal of Advanced Computer Science and Applications, Vol. 10, No. 7, 2019.

[3] Ch Venkata Rami Reddy, U. Srinivasulu Reddy, D Mahesh Babu, "An Automatic Driver Drowsiness Detection System using DWT and RBFNN", International Journal of Recent Technology and Engineering (IJRTE) ISSN: 2277-3878, Volume-7, Issue-5S4, February 2019.

[4] Shubham Sahu, Sachin Harne,"Survey on Drowsy Detection/ Smart Vehicle and Security Implementation at Low Cost", International Journal for Research in Applied Science & Engineering Technology (IJRASET).

[5] Mario I Chacon-MurguiaClaudia Prieto-Resendiz, "Detecting Driver Drowsiness-A survey of system designs and technology," IEEE Consumer Electronics Magazine, pp.107-108, October 2015.