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Driver Drowsiness Detector

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Abstract:This document is a review of the research done and the revolution made in the field of engineering work to create a driver's system to identify drowsiness to prevent the driver from driving. Report developed results and solutions for the limited use of various techniques presented in the program. Where project implementation provides a real-world perspective on how the system works and what changes can be made to improve the use of the entire system.

Keywords—Driver drowsiness; eye detention; yawn detention; blink pattern, fatigue.

INTRODUCTION:

In recent years, the growing demand for modern change has necessitated rapid growth. At the moment, the car is an important means of transporting goods. In 2017, a total of 97 million vehicles were sold worldwide, up 0.3% more than in 2016. In 2018, the global total number of used vehicles was over 1 billion. Although the car has changed the way of business life and made it easier to perform daily tasks, it also has many negative consequences. The rerot by the National Highway Traffic Safety Administration has shown that it is complete

A total of 7,277,000 traffickers were found in the United States in 2016, resulting in 37,461 deaths and 3,144,000 injuries. In these cases, fatigue driving used about 20% - 30% of traffic patients. Therefore, tired driving is a serious and hidden danger in trafficking situations. In recent years, the system for diagnosing fatigue has become a hot topic. Diagnostic methods are classified as sub-detection and purpose. In the process of submissive identification, the driver should participate in the analysis, which is consistent with the driver's submissive conditions by using controls such as artificial insemination.

questions, assess and complete a list of questions.

Then, this data is used to measure vehicles driven by tired drivers, helping drivers to organize their schedules more efficiently. However, driver feedback is not required on the way to achieve the objective as it monitors the driver's condition and the driver's behavioral symptoms in real time. The data collected is used to assess the level of driver fatigue. In addition, target identification is divided into two categories: contractual and non-compliant. Combined with the communication method, disagreements are acceptable and very convenient because the system does not require advanced Visual Information or detailed job information that we will identify this application. Countless numbers of people are driving on the road day and night. Chariots, transport drivers, transporters and long-distance travelers experience the negative effects of restlessness. As a result it turns out that it is very dangerous to drive if you feel drowsy. Many mistakes occur due to driver fatigue. Therefore, to avoid this misconduct we will create a framework that uses Python, Open-CV, Sci-Py, Playsound, Imultis and diLib that will alert the driver if he feels drowsy.

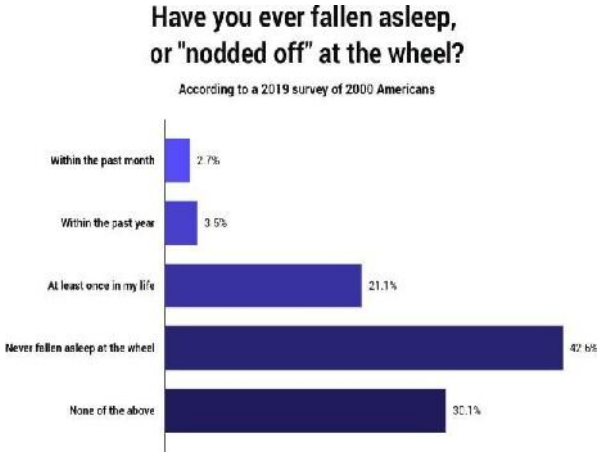

Figure 1

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Purpose:

People have been inventing machines and devising strategies to simplify and protect their lives, to perform routine tasks such as going to work, or for interesting purposes such as air travel. With the advancement of technology. It has affected our lives in many ways. We can go to a place at a speed that our ancestors never thought possible. In modern times, almost everyone in the world uses some form of transportation every day.

However, there is a set of rules to follow while driving, such as staying alert and busy while driving. We cannot neglect our duties regarding safe travel. It may seem like a small thing to most people but following the rules and regulations on the road is very important. It can be devastating and sometimes, that negligence can even damage people's lives on the road. Another form of negligence is disagreement when we

they are too tired to drive. To monitor and prevent the harmful effects of such negligence, many researchers have written research papers on the effects of drowsiness. But sometimes, some points and observations made by the system are not true enough. Therefore, to provide data and other perspective on the existing problem, in order to improve its use and improvement solution, this project is done.

FACTS AND STATICS:

Our current estimates are that in 2017 in India alone, 148,707 people died as a result of motor vehicle related accidents. Of these, any 21 percent are caused by fatigue that causes drivers to make mistakes. This can be a very modest number, as among the various causes that can lead to disaster, the inclusion of fatigue as a cause is considered very rare. Fatigue associated with a bad framework in agricultural countries like India is a catastrophe waiting to happen. Fatigue, in general, is very difficult to quantify or notice unlike alcohol and drugs, with clear important indicators and tests that are accessible without a problem. Probably, the best answer to this question is to pay attention to the dangers associated with fatigue and to encourage drivers to acknowledge fatigue when needed. The former is hard and very expensive to achieve, and the latter is unthinkable without the former as long driving is very beneficial. When there is an increased demand for work, related wages increase the number of people earning it. Such is the situation with driving in the evenings. Cash encourages drivers to make unwise decisions such as driving all night or getting tired.

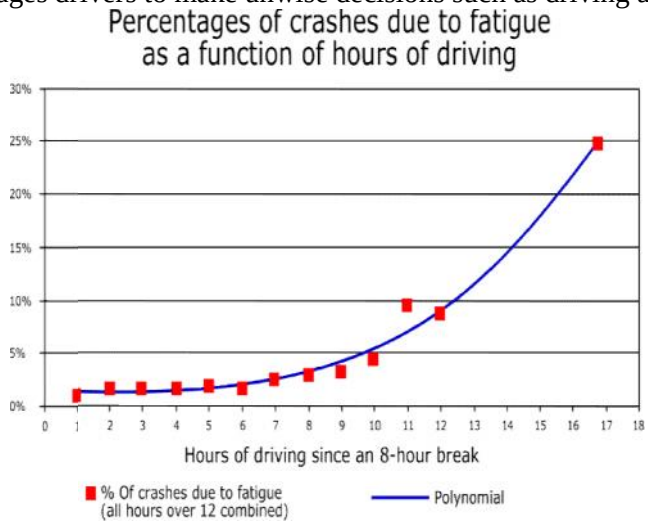

Figure 2

This is because drivers do not realize the serious dangers associated with driving when you are tired.A few nations have forced limitations on the quantity of hours a driver can drive at a stretch, yet it is as yet not enough to tackle this issue as its usage is troublesome and expensive.

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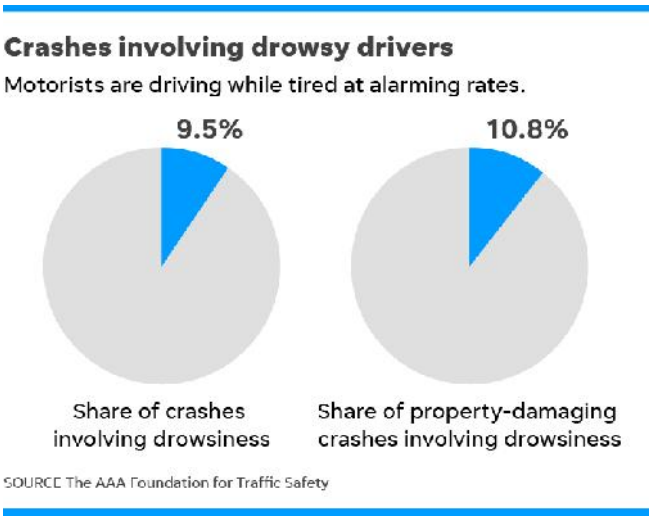

Figure 3

REQUIREMENT ANALYSIS:

Python: Python is the basis of the program we have written. Uses multiple python libraries.

Numpy: Dlib's previous requirement

Scipy: Used to calculate the Euclidean distance between the eyelids.

Playsound: Used to sound an alarm

Dlib: This program is used to find the front face of a person and measure the position using the local face symbols of 68.

Imutils: Simple works written for Opencv.

Opencv: Used for video streaming on webcams, etc. OS: The system being tested on Windows 10 builds 1903 and Pop OS 19.04

Laptop: Used to use our code. Webcam: Used for finding video feeds.

PROGRAM TRAINING:

Our system will be trained in such a way that after obtaining the following results (Table 1), you reach a consistent decision.

Figure 4 CREATION PROGRAM:

First, the model will be used in the web application. Using HTML and CSS. User will show his face with a webcam connected to a Laptop. The webcam will scan a person's face and determine whether the driver will be drowsy or not depending on the Euclidean's eyelids.

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Table 1

Test ID	Test Case Title	Test Condition	System Behavior	Expected Result
T01	NSGY	Straight Face, Good Light, With Glasses	Non Drowsy	Non Drowsy
T02	YTGN	Tilted Face, Good Light, No Glasses	Drowsy	Drowsy
T03	YTGY	Tilted Face, Good Light, With Glasses	Drowsy	Drowsy

PERFORMANCE:

In our program we used Dlib, a pre-trained system trained in the HELEN database to detect human faces using 68 predefined landmarks.

The video will be transmitted in a dlib frame, so we can see the features of the left and right eye.

Now, we have drawn points and marked the shape and size of the eye using OpenCV.

- Using the work of SciPy's Euclidean, we calculate the sum of the two-dimensional visual representations of a total of 2 distinct distances between the eyelids separated by their horizontal distances.

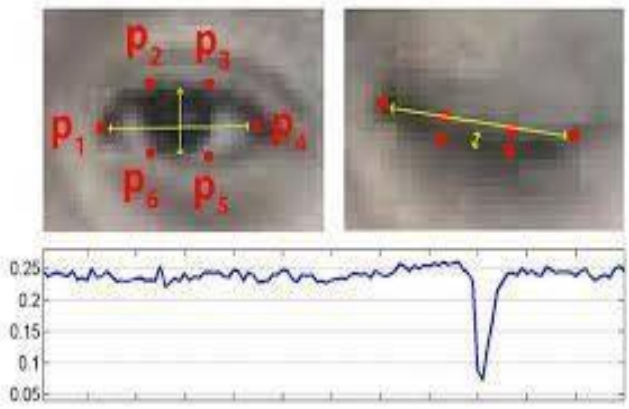

Figure 5

We are now checking that the visual value of the value is below the limit value of 0.25.

If the Eudidean range is less than 0.25 (0.25 is selected as the base case after certain tests) in more than 20 consecutive frames the alarm is sounded and the user is alerted.

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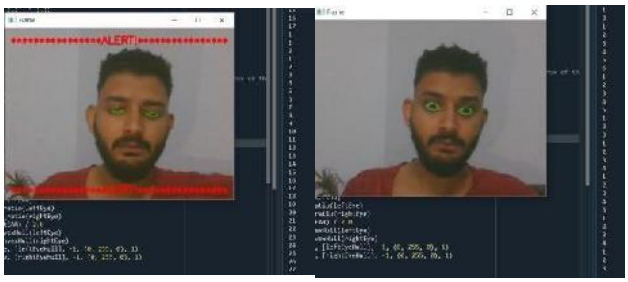

Figure 6

It shows how our effect depends on the number of frames and creates a difference in blinking and drowsiness.

ALGORITHM:

There will be 6 reference points on the eyelid: (p1, p2, p3, p4, p5, p6)

EXAMPLE

from scipy.spatial import grade

|| p2-p6 || = distance.euclidean (p2, p6)

|| p3-p5 || = distance.euclidean (p3, p5)

|| p1-p4 || = distance.euclidean (p1, p4)

RESULT:

With the help of a pre-trained Dlib model we successfully rearranged a person's face and eyes, and with SciPy we measured the distance between points marked on the eyes accurately, to determine if the driver would be drowsy or not, by comparing our result a limit of 0.25 (0.25 selected as base case after testing something). in the end our model clearly shows whether a person is drowsy or not, although there is room for improvement and constant, so that we can adjust it by adding additional parameters in the future.

FUTURE PLAN:

To make our Model more accurate we can add a few parameters such as blinking and yawning as additional

steps, if these things are done correctly the risks will be reduced. This model can be used for a variety of other uses as streaming services such as Amazon Prime and Netflix can detect when a user is asleep and position the video appropriately. This will also apply to programs that require user attention.

ACCEPTANCE:

Many thanks to Prof. S. Srinivasan with his expert guidance and ongoing encouragement to all to see that this project is entitled to its goal since its inception.

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CONCLUSION:

Figure 7

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Fully meets the goals and requirements of system. The framework has achieved a stable state in which all distractions have been discarded. A framework for observant clients who are familiar with the framework and understand the focus points and the fact that it takes caring for stress issues for people with fatigue related problems to let them know about the level of sleepiness while driving.

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