



A Machine Learning Approach to Driver Alertness Using Python

Done By

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Abstract: Nowadays, road accidents are occurring at an alarming rate. There may be many reasons behind these accidents, with drowsiness being one of the most common causes. In order to address this issue, we have developed a real-time project titled "A Machine Learning Approach to Driver Alertness Using Python" focused on driver alertness. Our main aim is to alert the driver who is falling into drowsiness. We utilize a machine learning approach, incorporating components such as OpenCV, Keras, and Pygame. As part of the project, we assign a default score, and whenever the driver's eyes remain closed for a period exceeding the default score, an alarm is triggered to alert the driver. This entire process is implemented using the Python programming language.

I. INTRODUCTION

Driver fatigue is a critical factor in endless mishaps. Late estimations measure that yearly 1200 passing's and 76,000 injuries can be credited to exhaustion related accidents. Driver sluggishness and weariness is a main consideration which brings about various vehicle mishaps. Creating and keeping up innovations which can viably recognize or forestall sluggishness in the driver's seat and alarm the driver before a disaster is a significant test in the field of mishap avoidance frameworks. Due to the threat that laziness can cause on the streets a few techniques should be produced for forestalling checking its belongings. With the coming of present day innovation and continuous filtering frameworks utilizing cameras we can forestall significant disasters out and about by cautioning vehicle drivers who are feeling lazy through a languor location framework. The mark of this endeavor is to develop a model languor recognition framework. The spotlight will be put on arranging a system that will unequivocally screen the open or shut state of the driver's eyes constantly. By observing the eyes, it's accepted that the side effects of driver weakness are frequently recognized early enough to stay away from a fender bender. Location of exhaustion includes the perception of eye developments and squint examples during a grouping of pictures of a face

II. OBJECTIVE

Nowadays the driver's safety in the car is one of the most wanted systems to avoid accidents. Our goal of the undertaking is to ensure the security framework. . The venture primarily centers around these targets

1. To recommend approaches to recognize exhaustion and sleepiness while driving.
2. To examine the actual changes of weariness and laziness
3. To build up a framework that utilizes eye conclusion and yawning as an approach to distinguish exhaustion and laziness.
4. Speed of the vehicle can be decreased.
5. Traffic the executives can be kept up by decreasing the mishap.



Fig. 1 – Components for this Project

III. HARDWARE

The hardware components required for building the Advanced machine learning to driver alertness using python

1. Buzzer
2. Electromechanical Buzzer
3. Piezoelectric
4. mechanical
5. webcam
6. .Piezoelectric buzzer

These are the hardware components to complete this and make Prototype of over Project.

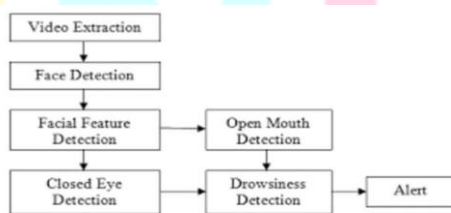
IV. SOFTWARE

The software required for building the Advanced machine learning to driver alertness using python

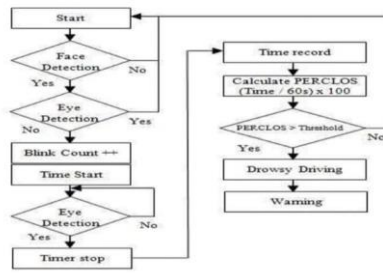
1. Open cv
2. Numpy
3. Pygame
4. Frames
5. Tensor flow

these are software needs to complete this Project

V. BLOCK DIAGRAM



VI. FLOW CHART



VII. CONNECTIONS

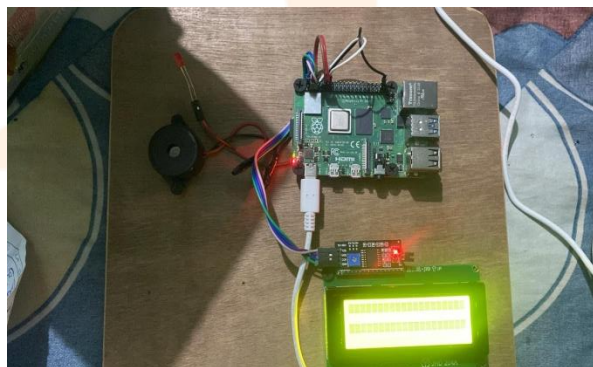
The connections to complete this project are as follows

Let's see the connections through the project

Step – 1



Step – 2



Step – 3



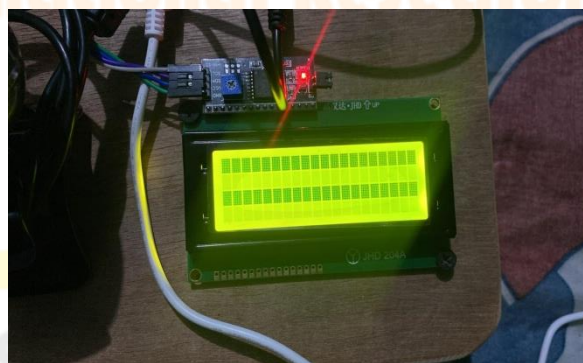
Step – 4



Step – 5



Step – 6



VIII. RESULTS



IX. CONCLUSION

In conclusion, the driver irregularity observing framework created is fit for identifying sluggishness, intoxicated and foolish conduct of drivers in a brief timeframe. The Drowsiness Detection framework created dependent on eye conclusion of the driver can separate ordinary eye squint and laziness and identify the sleepiness while driving. The proposed framework can forestall mishaps because of the drowsiness while driving. The framework functions admirably even in the event of drivers wearing scenes and surprisingly under low light conditions if the camera conveys better yield. Data about the head and eyes position is gotten through different self-created picture handling calculations. During the observing the framework can choose if the eyes are opened or shut. At the point when the eyes have been shut for a really long time, an admonition signal is given. Handling passes judgment on the driver's readiness level on the nuts and bolts of constant eye terminations. Consequently we would have effectively planned and created fractional execution of the driver tiredness recognition utilizing python and Opencv alongside a camera to distinguish the face. The framework to be created is to be tried and constraints are distinguished. The remainder of the work will be finished by what is arranged as of now.

X. REFERENCES

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4. <https://www.sciencedirect.com/science/article/abs/pii/S2542660523000288>
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PROJECT CONNECTION LINK:

https://drive.google.com/drive/folders/1H_Vyn7GV6YI4YEIL9V8pFSyzBWHN5h9?usp=drive_link

DOCUMENTATION LINK :

https://docs.google.com/document/d/1AgFFumWX9zBPanSB4oV8GMZqxdju4MAh/edit?usp=drive_link&oid=114298405844751631841&rtpof=true&sd=true

CODE LINK:

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