Driver Drowsiness Detection System

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ABSTRACT

Every now and then people lose their precious lives to road accidents around the world and many times the reason for those accidents could be drowsiness and these accidents due to drowsiness of a driver could be fatal and lead to driver's and other people's demise. drowsiness if the result of fatigue of the driver. fatigue can be initially detected before anything serious takes place. thus, the detection of driver's fatigue and drowsiness is the ongoing topic of the research.there are different methods to detect drowsiness of a driver while some are cheap and could be a distraction to drivers while some are quite expensive. as a result, in this paper an easy-to-handle real time driver drowsiness detection system is developed. the system detects when the driver gets drowsy and alerts the driver.the system detects facial landmarks and checks eye aspect ratio to detect driver's drowsiness.
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KEYWORDS: yawn detection,eye detection ,Driver drowsiness, blink pattern,fatigue

INTRODUCTION

Drivers taking less sleep is one of the major reasons for road accident. Not taking the adequate amount of sleep results in clouding the judgment of a person and reducing the attentiveness and efficiency of the driver. There are many studies that show that inadequate sleep can affect driving as much as like the intake of alcohol.

Driving while being deprived of sleep is very dangerous as the body is psychologically weak. Driving without having the adequate amount of sleep is one of the prime causes of vehicular accidents. Since the person has not had the required amount of sleep his body does not function properly and when the ability to function is affected the memory, reaction time and judgment of the person is also affected.

Studies show that around 20% of the people have said that they have felt asleep while driving and around 40% have confessed that they have gotten drowsy or slept at the wheel at least once in their driving careers. Research has shown that in India 40% of the highway accidents take place because the person driving the vehicle was drowsy while more than 50% of deadly highway accidents are because the drivers were driving under the influence of alcohol and there are many single car accidents that take place when the driver was under the influence of alcohol.

When you look at the amount of accidents that take place due to the driver being drowsy it is imperative for us to develop a driver drowsiness detection system. If we want to develop such system we need to be able to make an estimation of the condition of the driver. This paper presents an arithmetic method to solve the problem for driver drowsiness detection system.

FEATURES

The given system detects drowsiness of the driver in three stages. They are face detection, Eye position detection and eye tracking.

This system tracks the motion of the eyes to detect whether the driver is drowsy or not and if the driver is getting drowsy it gives an alert.

This algorithm to detect the drowsiness of the driver is testedand is workingeffectively. The system is able to differentiate between normal blink and a blink that is associated with drowsiness. The system uses a 68 facial landmark detector model to detect the eyes and face of the driver. When the driver gets drowsy and closes his eyes in a drowsy manner the system shows a red alert on the screen.

Fig 2.1.When the driver is not drowsy

Fig 2.2. When the driver gets Drowsy

FUTURE SCOPE

The objective of this project is that this prototype will help in reduction of road accidents due to human intervention.

- The main objective is this project to be first design a system to detect driver's drowsiness by continuously monitoring retina of the eye.

- Traffic management can be maintained by reducing the accidents by this system.
- The system works in spite of driver wearing spectacles in various lighting conditions.
- Driver drowsiness detection is a car safety technology which helps to save the life of the Driver by preventing accidents when the driver is to be getting drowsy.
- alert the driver on the detection of drowsiness by using buzzer or alarm.
- Speed of the vehicle can bereduced after indication.

TECHNOLOGY USED

The libraries and modules used for the development of the detection system are.

1.**Scipy.spatial**-It contains the distance metrics.

2.**imutils**-Imutils is used to make basic image processing functions such as rotation translation etc.

3.**dlib-**Dlib contains pre trained models for facial mapping(landmarks).Dlib estimates the location of 68 coordinates that maps the facial points on a person's face.

4.**Opencv**-It is an open-source computer vision and machine learning software library.

5.**Pyglet**-It is a cross-platform windowing and multimedia library for python.

The code for the driver drowsiness detection system has been written in **Jupyter Notebook**

CONCLUSION

Driver drowsiness detection system helps drivers to stay awake if they are feeling sleepy and therefore helps in the prevention of any accident. This system can also be used by people other than drivers for example a student is feeling drowsy while studying this system can help him stay awake.

Apart from these two there are can be innumerable cases where this drowsiness detection system can be put to use and will prove to be highly efficient.

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