DRIVER DROWSINESS DETECTION SYSTEM

VIT BHOPAL

Group No. 128

Submitted to: Dr Abha Trivedi

Group Members:

Shagun Chaudhary
20BCE10620

Vinayak Hingrajiya
20BCE10694

TSP Abhishek
20BCE10012

Akhil Chatte
20BCE11008

Rajarshi Mishra
20BCE10265

01

Introduction

Automotive population is increasing exponentially in the country. The biggest problem regarding the increased traffic is raising number of road accidents. Driver sleepiness, alcoholism and carelessness are key players in accident scenario. Taking into account of these factors the driver behavior state is major challenge for designing advanced driver assistants systems. Driver drowsiness detection is a car safety technology which prevents accidents when driver is getting drowsy. Driver in attention is might be the result of lack of alertness when driving due to drowsiness and distraction. The system alerts driver through alarm in real time.

Existing Work:

The existing system of driver drowsiness detection system has following disadvantages. Mainly, using of two cameras in the system one for monitoring the head movement and the other one for facial expressions. The other disadvantage is aging of sensors and all these sensors are attached to the driver's body which may affect the driver. So to overcome all these disadvantages we designed a system in which a live camera is used for monitoring the driver drowsiness condition and alert the

Proposed Work:

With this Python project, we will be making a drowsiness detection system. Taxi drivers, bus drivers, truck drivers and people traveling long-distance suffer from lack of sleep. Due to which it becomes very dangerous to drive when feeling sleepy.

The majority of accidents happen due to the drowsiness of the driver. So, to prevent these accidents we will build a system using Python, OpenCV, and Keras or dlib which will alert the driver when he feels sleepy.

Methodology:

Methods to detect Drowsiness :

- Template Matching based Eye Detection in Facial Image.
- Performance Evaluation of Statistical Approach for Drowsiness Detection.
- Hybrid driver drowsiness detection system.
- Driver's Drowsiness Detection System for Ivvl Vehicle.

We will be using face and eye detection techniques to decide whether the driver is drowsy or not.

Novelty of the Project:

There are various ways of implementing driver drowsiness detection but the most common ones are done by using various sensors and signals. These signals may affect humans in the same way as radioactive signals in the long run.

So, we have decided to implement this technology with simple cameras and Python code.

Real Time usage:

- Anti Drowsiness Alarm
- Make Easy drive
- Drink and Drive production
- Medical accent
- High security purposes
- Program can also be used by Aircraft

Hardware Requirements

- IR Sensors
- Buzzer
- Webcam
- Raspberry pi
- Micro sd Card
- Wi-Fi Module
- GSM
- Android Mobile
- Laptop

Software Requirements

- C/C++/python-programming Software
- Android Programming Software
- Microsoft OS

Problem Statement:

Drowsiness and fatigue are one of the main causes leading to road accidents, It is not safe and ethical to make a drowsy driver drive on road. Hence, researchers have used simulated environments to carry out their experiments.

Experimental control, efficiency, low cost, safety, and ease of data collection are the main advantages of using simulators.

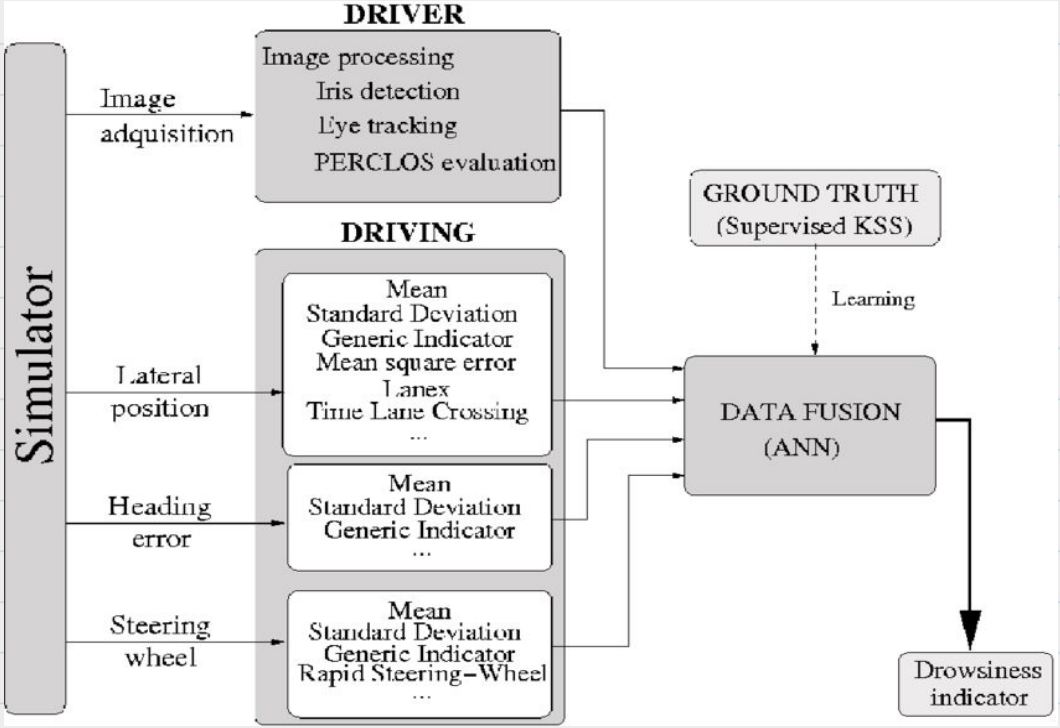
Our project will propose a way to detect the drowsiness signs among drivers by measuring the eye closing rate and yawning.

Article as of 21st September

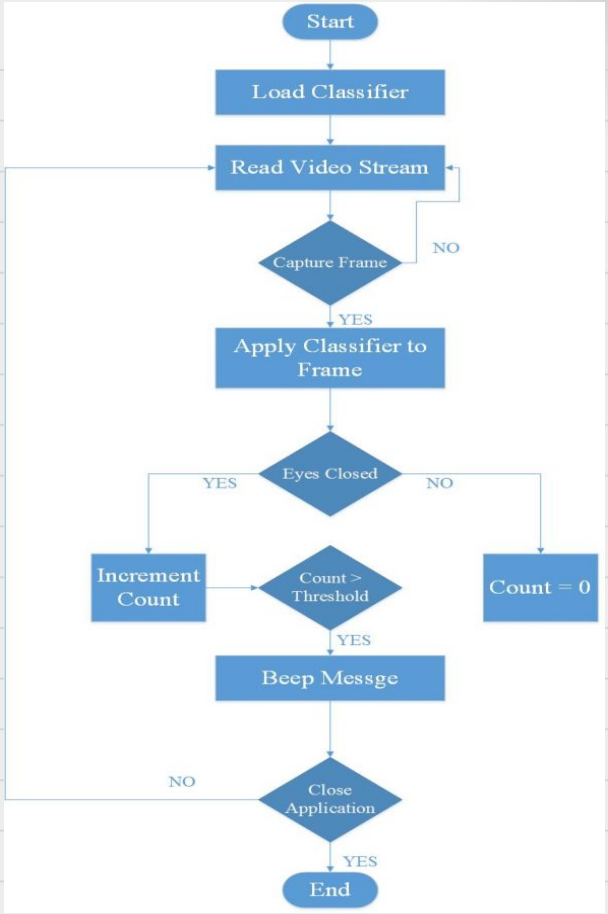
NEW DELHI: To reduce road accidents, Union minister Nitin Gadkari on Tuesday pitched for fixed driving hours for commercial truck drivers similar to that of pilots, as well as on-board sleep detection sensors in commercial vehicles.

In a series of tweets, the road transport and highways minister said driving hours for truck drivers should be fixed similar to pilots' to reduce fatigue-induced road accidents.

Architecture:



Flow Chart:


Start
Load Classifier
Read Video Stream
Capture Frame
NO
YES
Apply Classifier to Frame
Eyes Closed
YES
NO
Increment Count
Count > Threshold
Count = 0
YES
Beep Messge
NO
Close Application
YES
End

Module split-up:

- 1st week Research will be done by all the group members about the required python libraries.
- 2nd week Algorithm and Pseudocode developed by TSP Abhishek and Shagun Chaudhary.
- 3rd week Implementing it in Python code by Vinayak Hingrajiya, Rajarashi Mishra and Akhil Chatte.

Conclusion:

In present day one of the major cause of road accidents in India or even across the world are fatigue drivers. Exhausted drivers who doze off at the wheel are responsible for about **40% of road accidents**, says a study by the Central Road Research Institute (CRRI).

To reduce these type of accidents we are planning to build a Python program which takes the video feed from a camera to detect the eye movements and decide whether the driver is drowsy or not and alarm accordingly.

Thank
You...