Driver Drowsiness Detection System In Automotive Vehicles

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INTRODUCTION / PROBLEM AREA :

An ITS (intelligent transportation system) have a goal of reducing accidents and improving the public safety. Driver fatigue or distraction is main reason in many accident cases on rural roads. Drowsiness or fatigue breaks the driver concerntration while driving which results into loss of decision making functionality for controlling car. So a drowsiness detection system is needed. The driver drowsiness monitoring system comes under digital image processing and is a part of Advanced Driver Assistance System(ADAS).

PROBLEM STATEMENT:

Nowadays car accidents because of driver distraction and fatigues are causing many damages to human being. Therefore, recently different methods are introduced by many researchers for early detection of driver drowsiness in order to prevent accidents on road. Through this project our goal is to present novel framework for detecting the driver's drowsiness or fatigue efficiently which means that even if the driver is alerted with the alarm ,there are the high chances of sleeping again repeatedly and cause accidents. So more work is needed in this area to ensure safety.

SOLUTION:

For this project we are assuming that customer is usign smartphone .We would like to extend the existing work by adding a few other techniques to make driver conscious of driving such as: by playing music in the spotify and by sending text to the emergency contacts, whenever driver is detected drowsy . Also only detection methods are not enough and have limitations, so we will further explore the ways to predict the driver’s drowsiness and currently only detection methods are available.

To play music in spotify whenever the driver is drowsy, we will connect raspberry pi with spotify , then whenever driver is detected sleepy, music will be played. This is not sufficient since the driver may go into a deep sleep; thus, we will ensure that close relatives to the driver become aware of this situation and reach to driver asap.For this, we will connect raspberry pi to telegram messenger, with which SOS messages will be sent automatically to close people contacts, whenever driver is drowsy.

For capturing behavioral/physiological expressions of driver, to determine whether driver is drowsy or not, we will use a camera connected with raspberry pi ,fitted on a stirring of vehicle. That camera will be continuously recording behavioral expressions of drivers' faces, and with help of opencv, whether driver is drowsy or not will be detected and if drowsiness is detected then music will be played ,also call/text will be sent through telegram to close people. Opencv will use Euclidean distance of eye and Eye aspect ratio, to determine driver is sleepy or not.

EVALUATION:

In the initial Phase of the project we will be doing a detailed study of the existing technique on Drowsiness Detection system . After this we will connect Raspberry pi with spotify and telegram . In other words we will use our Pi as audio output device beaming music from spotify on pc or phone to play it through Pi and telegram for sending the emergency text to the close relatives.

Also in the end, we have thought of evaluating the accuracy of our model with existing models using ML.

TAKEAWAY:

This project will help in saving life of drivers and contribute to minimizing the number of vehicle accidents. Any car, truck driver can use this system. This will be an improved/enhanced version of existing work.

So this project will give a efficient Driver Drowsiness detection System .