Project Synopsis

on

Vehicle Driver's Drowsiness Detection

In the partial fulfillment for the award of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE & ENGINEERING

Submitted by

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1. Introduction

Drowsiness of the drivers is one of the key issues for majority of road accidents. It threatens the road safety and causes severe injuries sometimes, resulting in fatality of the victim and economical losses. Drowsiness implies feeling lethargic, lack of concentration, tired eyes of the drivers while driving vehicles. Most of the accidents happen in India due to the lack of concentration of the driver. Performance of the driver gradually deteriorates owing to drowsiness. Various studies have suggested that around 20% of all road accidents are fatigue-related, up to 50% on certain roads.

To avoid this anomaly, this project presents a system for driver drowsiness detection. This is a car safety technology which helps prevent accidents caused by the driver getting drowsy. This system will capture images as a video stream through a camera, detect the face and localize the eyes. The eyes will then be analyzed for drowsiness detection. Based on the result, the driver will be alerted for drowsiness through an alarm system.

2. Proposed Work

A drowsiness detection system which will use a camera placed in front of the driver for the input data. It will capture the images/videos, further analyze the video images that have been recorded and come up with a system that can examine each frame of the video.
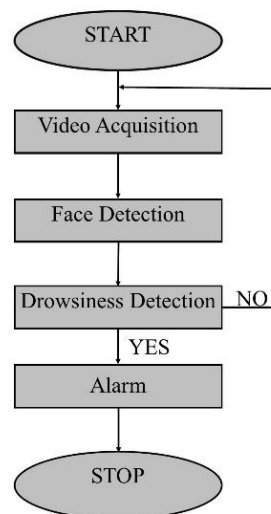
Following is the flow diagram:

Fig 2.1: Flow Diagram

3. Objective

The project focuses on these objectives, which are:

- To investigate the physical changes on the face of driver due to fatigue and drowsiness.
- To develop a system that uses eyes closure to detect drowsiness and then alert by ringing an alarm.
- To deploy the system on Raspberry Pi 4, attach a camera to detect drowsiness and alert as when required.

4. Methodology/Technology or any specific tool to be used

- **Technology**: Deep Learning

- **Language**: Python

- **Framework**: TensorFlow, Keras, PyGame

- **Architecture**: CNN

5. Hardware & Software requirements

Hardware: Raspberry Pi 4 with 4GB/2GB RAM, Compatible Camera, Power Adapter, Bootable 16GB/32 GB SD Card, Processor Fan, Heat Sink, Detachable Keyboard, Detachable Mouse, Detachable Monitor, Google Collab.

Software: Raspbian, Anaconda, Jupyter Notebook, PyCharm