

Project Proposal

Real-Time Surveillance using Object Detection

Overview: Our team is planning to build a python based software which identifies fatigue in the driver that functions in a way where the opening and closing of eyes or blink rate determine whether the driver is drowsy. Another factor which is the yawn rate determines if the individual is drowsy and when these features are captured an alarm is set off to alert the driver to prevent fatal accidents. According to FMCA (Federal Motor Carrier Safety Administration) in the USA it is said that Fatigue is the major factor to cause accidents where fatigue shows about 64% of truck drivers experience some kind of fatigue regularly. Earlier studies indicate that drowsy driving could be involved in upwards of 40% of truck crashes and about 50% of accidents involving driver fatigue take place between midnight and 8 am. By applying our computer vision algorithm with the help of OpenCV we can clearly detect whether the person is drowsy or awake. If the driver is fatigued then an alarm is set off to wake the driver up.

Proposed System:

The project has a very systematic approach and is divided into seven sub-topics such as;

- Webcam/Image Input
- Region of Interest
- Detection of Eye Aspect Ratio
- Detection of Mouth Aspect Ratio
- Blink Rate and Yawn Rate
- Drowsiness Alert/Alarm

Requirement Specification:

Language - Python, Html, CSS, JavaScript, JQuery

IDE - VScode

Required packages - Numpy, Opencv, Pandas, Pygame, MediaPipe