

Facial Movements Identification for Vehicle Drivers using Machine Learning

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Project Guide
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Overview

The number of road accidents has constantly been increasing recently around the world. As per the national highway traffic safety administration's investigation, 45% of vehicle crashes are done by a distracted driver right around each. We endeavor to build a precise and robust framework for distinguishing diverted drivers. While driving the vehicle, drivers frequently perform secondary activities that distract driving.

Results

The proposed method shows 97% accuracy and is capable to prevent drivers from distracting.

Procedure

A decrease in driver distraction is a critical aspect of the smart transportation system. Different convolutional networks had been trained on images by eliminating the final layer to get their feature vectors. By using the stacking ensemble technique, we stack all the feature vectors to train it on a convolutional network. This stacking technique, which is used to detect the distracted driver posture, achieves 97% accuracy. The study shows how models predict the desired classes. Real-time driver distraction detection is the core to many distraction countermeasures and fundamental for constructing a driver-centered driver assistance system.

Classifying drivers based on experience and age when assessing the level of distraction and further improving the system.

Review

Distracted driving is the act of driving while engaging in other activities which distract the driver's attention away from the road. By using

- Windows operating system
- Python Programming Language
- NumPy and Panda Libraries
- Cameras and Sensors

Summary

Distracted driving behaviors are a primary cause of traffic accidents. Hence, it is necessary to find methods to effectively identify distracted driving behavior. Different methods are:

- (1) A hybrid CNN framework (HCF) to recognize distracted driver behaviors.
- (2) To classify instances of distracted driving during phone usage via processing data collected from in-built accelerometer and gyroscope in the phones.
- (3) Classifying drivers based on experience and age when assessing the level of distraction is necessary.
- (4) A triple-wise multi-task learning framework to improve the accuracy of distracted driver recognition tasks.
- (5) A real-time EOR system using the video from a monocular camera installed on steering wheel column can help in prevention.
- (6) Stacked ensemble approach achieves better performance than other models.

