Driver Drowsiness Detection

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Abstract: *Every year many human beings lose their lives because of fatal road injuries round the arena and drowsy driving is one of the number one causes of avenue accidents and demise. Fatigue and micro sleep at the using controls are often the basis reasons of significant injuries. But preliminary signs of fatigue may be detected earlier than a vital scenario arises and therefore, detection of driving force's fatigue and its indication is an ongoing research subject matter. Most of the conventional strategies to hit upon drowsiness are based on behavioral aspects while some are intrusive and might distract drivers, at the same time as some require costly sensors. Therefore, the development of a lightweight as well as affordable driver's drowsiness detection system has become necessary. The major aim of this project is to develop a drowsiness detection system by monitoring face features. It is believed that the symptoms of driver fatigue can be detected early enough to avoid a car accident. In such a case when drowsiness is detected, a warning signal is issued to alert the driver. This detection system provides a noncontact technique for judging different levels of driver alertness. The implemented system records the video and detects the driver's face in every frame by employing image processing techniques and sends a warning message to the driver about his/her improper driving and raises the alarm (in case of drowsiness). Machine learning algorithms (like SVM and YOLOV5) have been employed to test the efficacy of the carried-out technique. Due to the COVID pandemic, usage of the mask is mandatory. So, the application also includes face mask detection which means this application can keep track of whether the driver is wearing a mask or not. Driver's drowsiness can be detected using different gestures and postures such as yawning. So, the whole system is comprised to detect driver's drowsiness as well as mask usage.*

Keywords: Image Classification, Deep Learning, Machine Learning, Driver drowsiness, Image Processing, YOLOV5, Accident Prevention

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