Developing Driver Safety System by Detecting and Monitoring Drowsiness of Driver

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Abstract: *Drowsy driving is the state of a person driving in a sleepy condition. Drowsy driving is a very serious and dangerous issue that can lead to fatal accidents on the road. Not only does drowsy driving risk the life of the driver behind the wheel, but also the lives of people boarding the same vehicle and people along the road. Every year, thousands of accidents are caused by drowsy driving. To prevent such accidents, a system has to be developed that detects and monitors the drowsiness and sleeping condition of the driver and gives an alert to the driver. This paper discusses the solution to the same discussed problem, which is an AI (artificial intelligence) based system that detects and monitors the drowsy and sleeping conditions of the driver. This driver safety system is designed using Python, OpenCV, and the Dlib model. OpenCV is a computer vision library that maintains a directory of pre-trained Haar cascades which are used in face detection. The Dlib library's pre-trained facial landmark detector is used to estimate the location of 68 (x, y)-coordinates that monitor the aspect ratios of eyes and mouth to detect drowsiness. The proposed system is tested in real time with inputs from cameras and videos.*

Keywords: Python, Dlib, OpenCV, Eye Aspect Ratio (EAR), Mouth Aspect Ratio (MAR), drowsiness detection, face detection, facial landmark

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