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(57) Abstract :
Driver Somnolence, Drowsiness & Fatigue Detection Model based on Eyes & Facial Movement using OpenCV Library Abstract: Drowsiness, or excessive sleep, otherwise referred to as somnolence, and fatigue, or lethargy, severely disrupt driver alertness hence leading to accidents because of longer reaction times and lack of good judgment. Prompt and early identification of those conditions is very important in enhancing road safety. Monitoring eye activity has been suggested as an appropriate way to inspect the presence of somnolence; it is argued that several studies have pointed to the fact that such technologies and algorithms for evaluating driver alertness are potentially useful. YOLO is commonly applied to analyze facial features in real-time, whereas PERCLOS and EAR are mainly used to quantify eye closure time and blinking rates, respectively. However, these single approaches have their shortcomings, such as imposters due to variation in illumination and inability to differentiate between normal blinking and drowsiness. We, therefore, propose an end-to-end algorithm which takes the best from PERCLOS, YOLO, and EAR-based approaches while at the same time minimizing the disadvantages these approaches have. Experimental findings authenticate that our model has elevated real-time detection accuracy, decreased false-positive alerts, and provided a much more stable solution to avoid accidents caused by tired drivers. The developed system looks to have a lot of potential for large-scale implementation and saving lives in drowsiness-related accidents.

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