# Eye Gaze Tracking Alarm System For Driver Distraction Detection: A Literature Review and Framework

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## ABSTRACT:

Driver distraction have emerged as critical factors contributing to the high incidence of road accidents globally, necessitating the development of effective monitoring systems to enhance road safety. These impairments can range from visual distractions like using a cell phone, to cognitive distractions such as conversing, and physical impairments including drowsiness or fatigue, all of which compromise a driver's awareness and reaction time. To address this problem, numerous research efforts have focused on leveraging computer vision and machine learning techniques to develop real-time driver monitoring systems. These systems employ a variety of methods, including the analysis of facial landmarks, eye gaze, eye blinking patterns, head pose, and even in-vehicle signals, to accurately detect and classify driver behavior. A prominent approach involves the use of deep learning models, particularly Convolutional Neural Networks (CNNs), to process visual data and identify signs of distraction or drowsiness. Transfer learning techniques, utilizing architectures like ResNet50 and MobileNetV2, have also been explored to improve the efficacy and accuracy of these systems. Furthermore, some studies investigate the use of multimodal data, combining vision-based information with physiological and vehicle dynamics data, To secure a more detailed analysis of the driver's state. The objective of these systems is to enable timely intervention through warning systems, thereby mitigating the risk of accidents. Evaluations of these systems emphasize not only classification accuracy but also real-time performance metrics like inference time and resource utilization, which are crucial for practical deployment in vehicles.

**KEYWORDS:** Computer vision, Machine learning, Real-time, Facial landmarks, Eye gaze, Eye blinking patterns, Head pose In-vehicle signals, Deep learning, Convolutional Neural Networks (CNNs), Transfer learning, ResNet50, MobileNetV2, Multimodal data, Warning systems.