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## Development of a Driver Drowsiness Detection System with Smart Alerting Mechanisms Using Arduino and Image Recognition (DL)

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Abstract: This paper presents a Driver Drowsiness Detection and Smart Alerting System (DDDSAS) designed to enhance road safety by monitoring driver fatigue in real time. The system integrates a camera for facial analysis, a laptop running image recognition algorithms to detect drowsiness indicators, an Arduino microcontroller for data processing, and a GPS module to track vehicle movement. When signs of drowsiness, such as prolonged eye closure or head tilting, are detected, the Arduino triggers a buzzer to alert the driver, helping prevent potential accidents. This cost- effective and efficient solution aims to reduce fatigue- related road incidents through real-time monitoring and smart alerting mechanisms

Keywords: Driver Drowsiness, Smart Alert System, Image Recognition, Road Safety, Smart Alerting



