

Automated Overspeed Vehicle Detection and Number Plate Recognition Using Deep Learning

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Abstract:
Overspeeding on highways is a leading cause of fatal road accidents in India. Traditional traffic enforcement methods are often labor-intensive, prone to error, and inefficient for high-volume traffic. This paper proposes an automated system for detecting overspeeding vehicles and recognizing their license plates using deep learning (YOLOv8, OCR) models and computer vision (image-based analysis). The system leverages the YOLOv8 object detection model to identify vehicles in real-time from surveillance footage. A Region of Interest is defined to calculate vehicle speed. If a vehicle exceeds the predefined speed limit, its image is captured. Subsequently, the number plate is detected, and the characters are extracted using EasyOCR. The recognized plate number can then be used to identify the vehicle's owner and send an automated alert. This approach aims to overcome the limitations of conventional systems by providing a scalable, accurate, and efficient solution for traffic law enforcement, ultimately enhancing road safety.

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