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Deep Learning-Based Helmet and Number Plate Detection

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Abstract: *Road accidents involving motorcyclists often result from non-compliance with helmet laws, leading to severe injuries and fatalities. Manual enforcement is inefficient, prompting the need for automation. This research presents a Deep Learning-Based Helmet and Number Plate Detection System using YOLOv8 for helmet detection and OCR for number plate recognition. The system ensures real-time, high-accuracy violation detection, integrated with a Django-based interface for law enforcement. Automated email alerts and a database-driven violation record system enhance efficiency. This AI-powered approach contributes to smart city traffic management and improved road safety.*

Keywords: Helmet Detection, Number Plate Recognition, Deep Learning, YOLOv8, OCR, Road Safety