AI – POWERED TRAFFIC MANAGEMENT SYSTEM

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Abstract:

The proposed solution leverages deep learning and computer vision to develop an automated traffic violation detection system. Utilizing YOLO v11, OpenCV, and Python, the system analyzes live traffic video feeds to identify violations such as riding without a helmet, triple riding on a motorcycle, and over speeding. The system processes video frames, identifying key violations based on predefined patterns. Upon detection, it triggers an alert to notify law enforcement or traffic authorities for immediate action. This AI-driven solution enhances road safety by providing real-time monitoring, reducing manual intervention, and promoting compliance with traffic regulations. The system ensures scalability, accuracy, and efficiency, helping to reduce traffic violations, improve traffic management, and save lives. By automating traffic violation detection, this project contributes to creating safer roads and smarter traffic management systems.

Keywords: Traffic Management, Real-Time Violation Detection, Deep Learning, YOLO Algorithm, Automated Enforcement, Road Safety, Helmet NonCompliance, Triple Riding, Mobile Phone Usage, Image Processing, Object Detection, SMS Notifications, Email Alerts, Live Video Analysis, Traffic Monitoring, Machine Learning, AI-Based Surveillance, Policy Insights, Smart Cities, Violation Reports, Analytics, Law Enforcement Automation.