

# Traffic Rule Violation Detection System

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**Abstract:** *The project introduces a robust system designed to identify instances of traffic rule violations and promptly notify offenders, thereby contributing to the enhancement of road safety and enforcement of traffic regulations. Leveraging advanced computer vision and machine learning techniques, the system performs real-time detection of violations such as the absence of helmets and seat belt usage, while also capturing vehicle number plates for subsequent identification. Key algorithms utilized include YOLOv5 for efficient object detection, EasyOCR for accurate optical character recognition, and OpenCV for sophisticated image processing tasks. Upon detecting violations, the system swiftly dispatches notifications to offenders via email, facilitated by the SMTP protocol, ensuring timely communication of infractions. Additionally, an intuitive administrative dashboard is implemented to systematically record violation details, enabling comprehensive monitoring and reporting functionalities. Through rigorous testing and evaluation, the system demonstrates its efficacy and reliability, underscoring its potential to significantly improve traffic management and foster adherence to safe driving practices.*

**Keywords:** Traffic Rule Violations, Road Safety, Computer Vision, Machine Learning, Yolov5, Easyocr, Opencv, Object Detection, Optical Character Recognition, SMTP Protocol, Administrative Dashboard, Monitoring, Reporting.