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**AI-Based Traffic Monitoring and Violation Identification System Mrs.
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Abstract: In India, road safety is at risk due to overspeeding, mobile phone usage while driving, not maintaining one's lane, and riding motorcycles without seatbelts or helmets. Despite strong measures in the Motor Vehicles Act of 1988, there is still weak enforcement due to manual monitoring and delayed CCTV footage review which bordering on surveillance, results in inefficiency and errors. This project proposes an AI-based automated real-time enforcement system for immediate traffic regulation reinforcement. The system uses drone capture supervision to monitor and circumvent the no helmet, no seat belt, mobile use, triple riding, and red light violations detection. Over speeding is categorized as exceeding the defined optical flow based speed estimation, while number plate recognition is done using EasyOCR. The moment a violation is recognized the system collects details and issues an e-challan automatically. There is less manual intervention which increases efficiency, improves road safety, and promotes unbiased monitoring and enforcement.

Keywords: Traffic violation detection, YOLOv8, Deep Learning, Edge Computing, ANPR, Traffic Signal Optimization, Pollution Monitoring.