

# Automatic Traffic Rule Violation Detection and Fine Collection System Using AI

Jagruti Mahajan<sup>1</sup>, Vaishnavi Gange<sup>2</sup>, Shweta Gangurde<sup>3</sup>, Muskan Khan<sup>4</sup>

Students, Department of Information Technology<sup>1,2,3,4</sup>

Sandip Polytechnic, Nashik, Maharashtra, India

ORCHID ID :0009-0005-8516-6206, ORCHID ID :0009-0001-2368-5036

ORCHID ID :0009-0001-4399-8312, ORCHID ID :0009-0009-3796-7120

mahajanjagruti354@gmail.com, vaishnavigange1317@gmail.com

gangurdeshweta558@gmail.com, Muskan.Khan@sandippolytechnic.org

**Abstract:** *Traffic rule enforcement is a critical component of road safety management; however, traditional systems rely heavily on manual monitoring, delayed challan issuance, and voluntary fine payment, leading to inefficiency and revenue loss. This project presents an AI-powered Automatic Traffic Rule Violation Detection and Fine Collection System that integrates real-time computer vision, license plate recognition, and automated banking transactions. The system utilizes YOLOv5 for detecting traffic violations such as no helmet usage, triple riding, signal violations, speeding, and missing license plates from live video streams and images. Optical Character Recognition (OCR) is employed to extract vehicle registration numbers, which are mapped to pre-linked bank accounts. Upon successful identification, fines are calculated based on violation type and automatically deducted through a REST-based banking API. A desktop-based detection GUI and a modern web dashboard provide real-time monitoring, transaction history, and reporting capabilities. The proposed system eliminates manual intervention, ensures higher fine collection rates, and enhances transparency, making it suitable for smart city traffic management applications.*

**Keywords:** Traffic Violation Detection, YOLOv5, Computer Vision, License Plate Recognition, OCR, Automatic Fine Deduction, Flask API, Smart City, Road Safety

