

CMR students design real-time AI Solution to detect Defective Vehicle Number Plates

Smart System Uses AI to Identify Damaged or Illegible Plates Instantly



Bengaluru, Karnataka Jul 2, 2025 ([Issuewire.com](https://www.issuewire.com)) - Final-year Computer Science and Engineering students from CMR University, Bangalore, have developed an AI-based real-time system that detects and monitors defective vehicle number plates, addressing a key challenge in monitoring and tracking related traffic enforcement.

The 'Detection and Monitoring Defective Number Plate System' was developed by students Shreyas M S, Vanukuri Prasant Reddy, Vivek Kumar, and Yamini Rathore under the mentorship of Dr. Manjunath C R, Professor and Head, Department of CSE (AI & ML).

The system integrates the concepts of AI and ML models and computer vision to process the data captured via CCTV or any other source (like photos captured by a smart device, footage from highways, toll booths, and intersections). A model is developed using the YOLOv7 object detection algorithm, which accurately identifies vehicles and localises their number plates. A custom-trained CNN-based OCR module extracts the alphanumeric characters, even from partially damaged or obscured plates. The system then classifies each plate as undamaged, damaged (scratched, faded, or broken), or tampered (intentionally altered or obscured) using a CNN classifier.

If a defective plate is detected, the system triggers real-time alerts to predefined recipients, enabling timely action. The model is designed for integration with smart city surveillance networks. The modular solution is designed to strengthen traffic law compliance and minimise evasions.

The system has been tested rigorously with the data captured, and the project has demonstrated high accuracy in both detection and classification, offering a robust improvement in monitoring and detection systems.

This student-led innovation reflects the growing role of AI and ML in intelligent systems and is a testament to the fact that relevant academic research can offer practical solutions for real-world problems in areas including urban mobility and law enforcement. Designed as a smart surveillance solution, the project showcases the students' ability to apply deep learning, image processing, and automation to address real-world regulatory and safety challenges.

Visit the CMR University official website at <https://www.cmr.edu.in/>

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