



AI-based Truck Violation Detection System



TRUCKER

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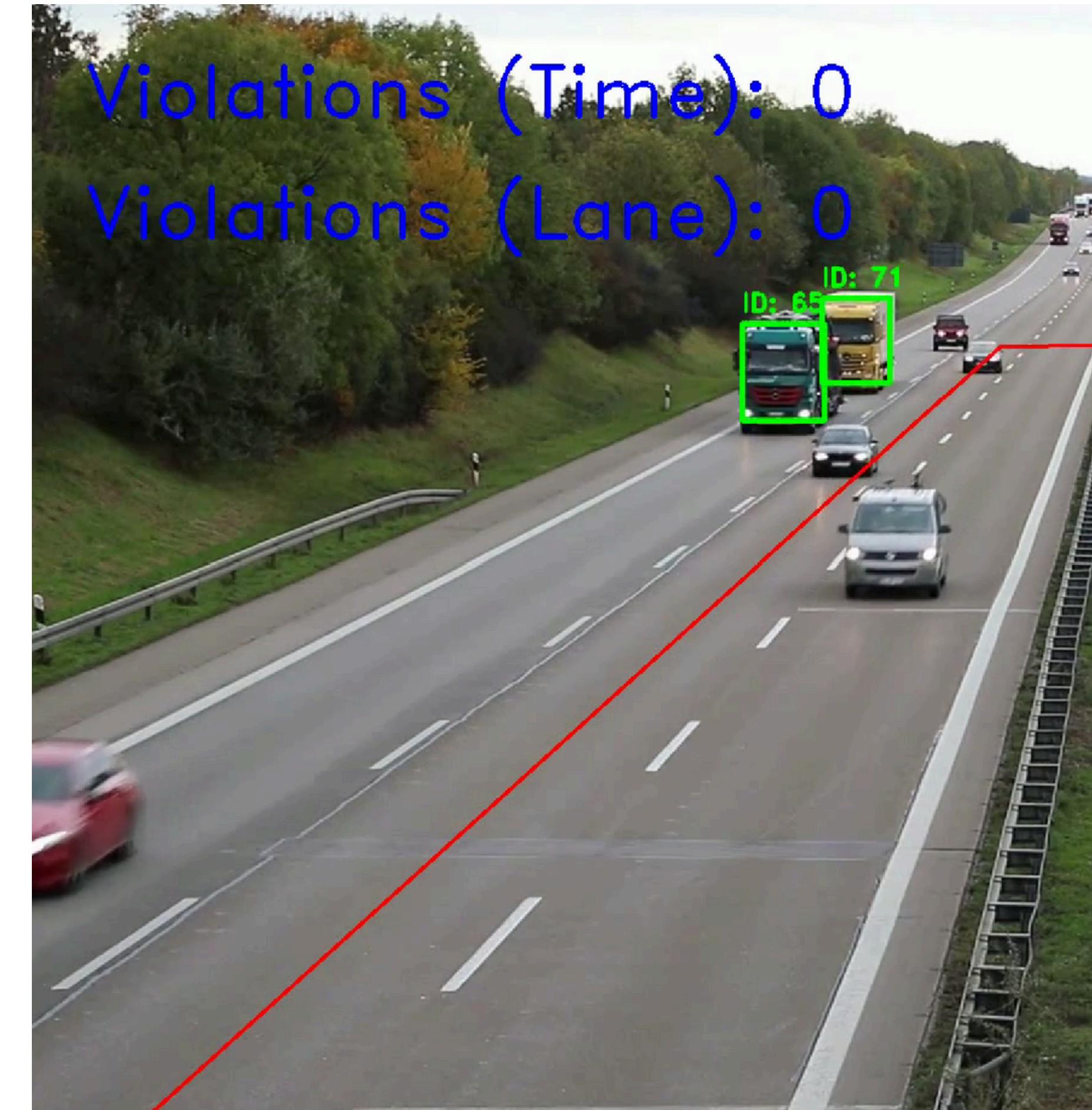
SAAD ALZahrani

Problem

Monitoring truck violations with current manual and camera systems is difficult. Trucks often misuse lanes and enter restricted areas at prohibited times, leading to traffic issues, accidents, and safety risks. Traditional methods are unreliable and error-prone.

Solution

We use AI to detect trucks violating lane restrictions and driving during prohibited hours, enhancing road safety and reducing the risk of severe accidents.





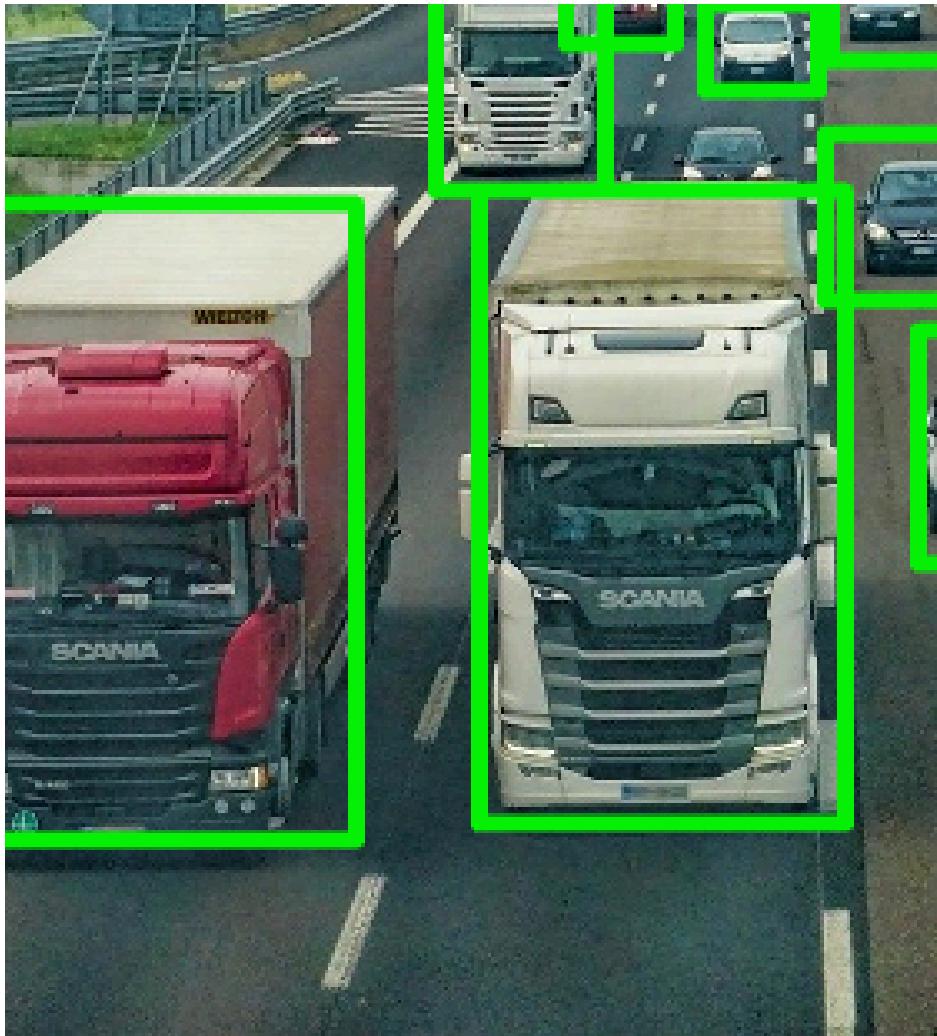
- Enhancing traffic safety.
- Improving local, regional, and international connectivity of trade and transport networks.
- Development for smart cities like NEOM.



Models

Truck Detection Model

- YOLOv8 fine-tuned.
- Trained on traffic videos and images.



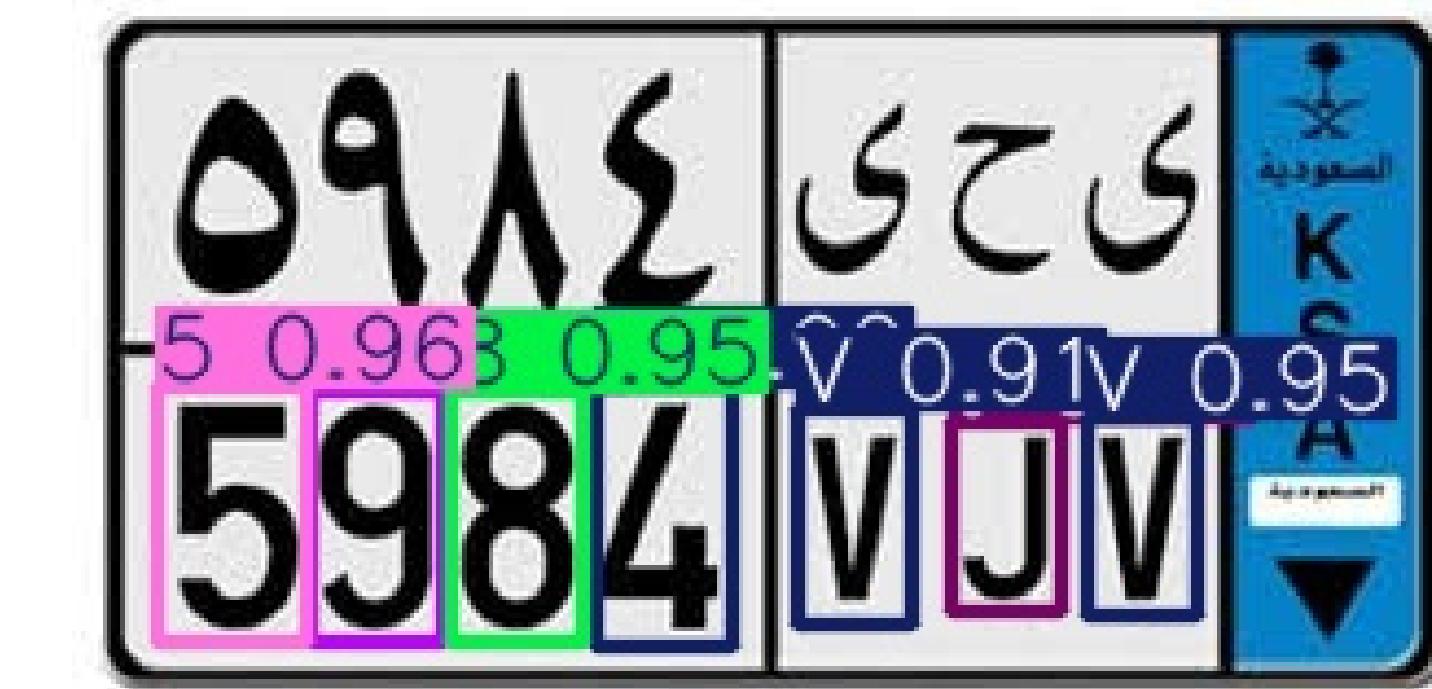
Plates Detection Model

- Fine tuned on Saudi license plate.
- Data used : 1600 images.

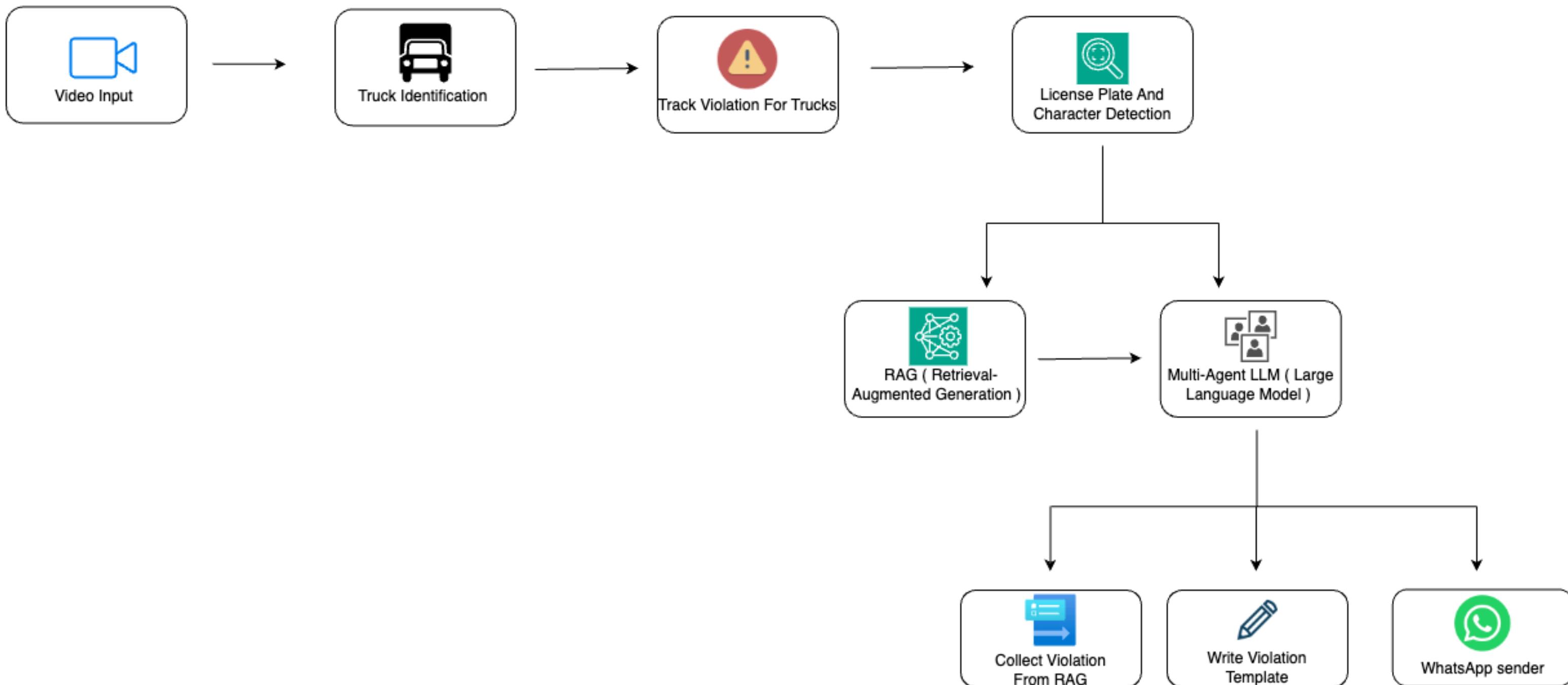


OCR Model

- Fine tuned on English letters and numbers for Saudi license plate.
- Data used : 3500 images.

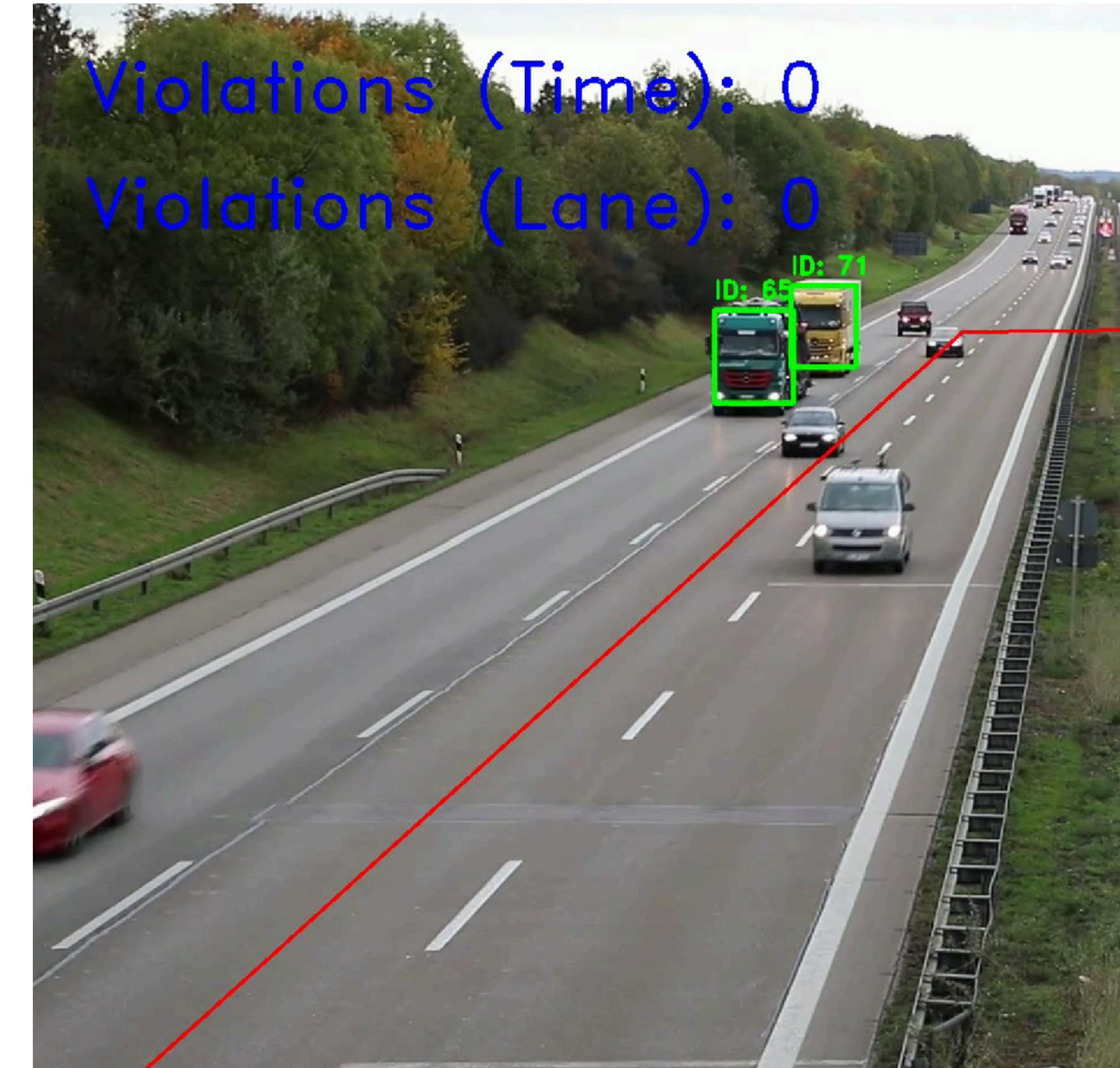


Solution Architecture



Detection for violations

- Focus detection on rightmost lane (**Region of Interest**), flagging trucks in middle or left lanes as violations.
- Monitor violation time when trucks enter restricted time zones, ensuring accurate detection.



APPLICATIONS ON SCALE

- Major highways and transport routes in Saudi Arabia.
- Smart cities under development (NEOM).
- Integration with Saudi Expo for showcasing smart traffic solutions.
- Hosting the World Cup will require logistical transportation.



NEOM



RIYADH
KINGDOM OF SAUDI ARABIA
EXPO 2030



السعودية 2034
SAUDI 2034

CHALLENGES

- Finding a suitable dataset for our problem.
- Challenges in integrating AI models into a cohesive system.
- Insufficient videos with appropriate camera angles make it difficult to detect lane violations.

