



LA TROBE UNIVERSITY AUSTRALIA

Technology Infusion Grand Challenge (2022)

894-2025 TIGC 2025 Technology Infusion Grand Challenge - Undergraduate edition

Detection of unauthorized vehicle in BRT Lane



zqBAbGaO

Participant details

Phone number	+918766859419
--------------	---------------

Entry details

How did you hear about this competition?	✓ From my University
What is your team name?	CodeFusion
Which country are you based in?	India
What is the name of your University?	Savitribai Phule Pune University
What is the name of your Department?	CSE (AIML)
Team Leader's Given Name	Pankaj
Team Leader's Family Name	More
Team Leader's Gender	Male

Team Leader's contact email	morepanky2004@gmail.com
Team Leader's contact phone number	+918766859419
Team Leader's current course	B.Tech
Team Leader's year of undergraduate study	3rd Year
Number of team members (2, 3, or 4)	3
Team Member 1 - Given Name	Pratham
Team Member 1 - Family Name	Mali
Team Member 1 - Gender	Male
Team Member 1 - email	prathamkali0102@gmail.com
Team Member 1 - contact phone number	+917058025957
Team Member 1 - current course of study	B.Tech
Team Member 1 - year of undergraduate study	3rd Year
Team Member 2 - Given Name	Prathmesh
Team Member 2 - Family Name	Mohite
Team Member 2 - Gender	Male
Team Member 2 - email	prathmeshmohite1904@gmail.com
Team Member 2 - contact phone number	+917385154120
Team Member 2 - current course of study	B.Tech
Team Member 2 - year of undergraduate study	3rd
Team Member 3 - Given Name	Harsh
Team Member 3 - Family Name	Vahal
Team Member 3 - Gender	Male
Team Member 3 - email	harsh.vahal@gmail.com

Team Member 3 - contact phone number +918177871895

Team Member 3 - current course of study B.Tech

Team Member 3 - year of undergraduate study 3rd

What is the name of your project? Detection of Unauthorized Vehicle in BRT Lane(Busways).

Describe the problem you are solving and its context.

Problem Statement: Unauthorized Vehicle Detection in BRT Lanes

Bus Rapid Transit (BRT) systems are implemented to offer smooth and efficient public transport by reserving certain lanes for buses only. One of the biggest problems that urban traffic authorities have to deal with is the misuse of these lanes by private or non-authorized vehicles. Misuse causes congestion, public transport timing delays, and higher chances of accidents, thereby decreasing the efficiency of BRT systems.

The illegal occupation of BRT lanes by vehicles creates bus flow interruptions, resulting in unnecessary delays and unpredictable travel times. This not only inconveniences passengers using public transport but also contributes to overall urban traffic congestion. Traffic rule offenses in BRT corridors also raise the likelihood of bus-unauthorized vehicle collisions, putting commuters at risk.

Traditional methods of enforcement like manual surveillance by police or the examination of tapes from fixed CCTV cameras are wasteful and labor-intensive. They tend to lack real-time detection and instant enforcement, permitting numerous violators to escape detection. Manual enforcement is also subject to human frailties and variability in application, resulting in selective or capricious enforcement of rules.

In the absence of an effective mechanism to identify and penalize violators, illegal entry of vehicles into BRT lanes remains a common phenomenon in most cities. Solving this problem is critical to upholding the reliability of public transport, achieving road safety, and maximizing urban traffic flow. Automated identification and tracking of unauthorized vehicles can greatly enhance enforcement and restore the planned efficiency of BRT lanes.

Who will benefit from your solution?

Traffic police will have an easier time catching rule breakers without manual work. Bus passengers will enjoy faster and smoother travel. Cities will have less traffic and safer roads. Public transport will run on time, and everyone using the roads will benefit from better traffic flow and fewer delays.

What technology is core to your solution?

- Computer Vision – Used to analyze traffic camera footage.
- Deep Learning – Enables accurate detection and classification of vehicles.
- YOLOv8 – Detects license plate number in BRT lanes in real time.
- EasyOCR – Extracts and recognizes license plate numbers.
- Database Matching – Identifies unauthorized vehicles by comparing plate numbers with authorized dataset.

Provide an overview of your solution's technical feasibility and why you think it will work effectively?

The solution is technologically owing to its application of YOLOv8, a object detection model, for the detection of vehicles and license plates in real-time. EasyOCR reads license plate numbers effectively even in low-light . The system cross-verifies detected plates against an approved vehicle database, making automated enforcement possible. Its real-time processing, scalability, and flexibility render it applicable in different environments. Through minimization of human surveillance and the

accompanying errors, it achieves rapid detection and high accuracy, enhancing traffic control. It is also economical as it saves the costs associated with widespread human monitoring, thereby providing a cost-effective long-term solution.

What do you think will be the most innovative aspect of your proposed solution?

The most innovative aspect is that it is a fully software-based solution, eliminating the need for specialized hardware like ANPR cameras. Using YOLOv8 and EasyOCR, it can process standard CCTV footage for real-time detection. This makes it cost-effective, scalable, and easily deployable across various locations without additional infrastructure.

Tell us of any experience and skills your team have that will help you get your solution to market?

Our team specializes in Artificial Intelligence and Machine Learning (AI/ML) and has strong expertise in Computer Vision (CV), Machine Learning (ML), and Deep Learning (DL). We have hands-on experience with object detection, image processing, and OCR-based recognition using models like YOLOv8 and EasyOCR. We have worked on similar projects, such as traffic sign detection, vehicle classification, and facial recognition, which required training deep learning models for real-world applications. Our technical knowledge, combined with practical experience in developing and deploying AI-driven solutions, gives us the confidence to build an effective, software-based system for detecting unauthorized vehicles in BRT lanes.

University approval

Please provide the name and contact details of the Head of Department who will be required to confirm team members are students at the university and approve participation in this competition.

The Approver will receive an email with instructions on how to complete the approval process online.

Approver's Title	Dr
Approver's Name	Anuratha thakre
Approver's Email	anuradha.thakare@pccoepune.org
Approver's Phone	+919011698166

Log in to grand-challenge.la.tribe.edu.au to see complete entry attachments.