

**School of Computer Science**

**Masters in Applied Computing (M.A.C)**

**COMP8157**

**Advanced Database Topics**

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**Project Proposal**

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# Introduction:

The smart traffic system aims to improve road safety and reduce the number of road accidents by detecting traffic violations using computer vision. The system is designed to detect violations such as jumping a red light and record the plate number of the vehicles involved. The recorded information will be used to send an e-ticket to the violator.

# Problem statement:

Traffic violations such as jumping red lights, over speeding, and reckless driving are common and pose a significant threat to road safety. Conventional enforcement methods are time-consuming and not always effective. Hence, there is a need for a smarter and more efficient way to enforce traffic laws.

# Motivation for solution:

The use of computer vision technology in the smart traffic system offers several advantages over traditional enforcement methods. The system is quick and efficient in detecting violations and recording the information of the violator. It reduces the need for manual enforcement and minimizes human error. Moreover, the e-ticketing system makes it convenient for violators to pay their fines without having to visit a physical location.

# Methodology:

The smart traffic system will use computer vision algorithms and deep learning techniques to detect traffic violations. The cameras placed at intersections will capture images and feed them into the system for analysis. The system will use image processing techniques to detect the presence of a vehicle at the intersection and determine if it has jumped the red light. The license plate of the vehicle will be extracted and recorded. The recorded information will be used to generate an e-ticket and send it to the violator.

# Technology:

The smart traffic system will use computer vision and deep learning technologies, such as OpenCV and TensorFlow, to detect traffic violations. The system will also use image processing techniques, such as license plate recognition, to extract the license plate number of the violator's vehicle. The e-ticketing system will be developed using web technologies, such as HTML, CSS, and JavaScript.

* Computer Vision: OpenCV, TensorFlow, or PyTorch
* License Plate Recognition: ALPR (Automatic License Plate Recognition)
* Object Detection: YOLO, Faster R-CNN
* E-ticketing System: Node.js, Laravel, or Django.

# References:

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