**“Efficient Traffic Surveillance Using OCR Algorithms and YOLOv7”**

**Under Guidance of:**

***Prof P. K. Deshmukh Sir***

**Submitted By :**

1. Ghansham Rajaram Salunkhe (111903033)
2. Kunal Dipak More (111903043)

**From,**

**B.Tech., College of Engineering, Pune**

**ABSTRACT**

We are creating a system that uses a combination of computer vision and Deep Learning techniques to detect and track vehicles in real-time, estimate their speed, and recognize their license plate numbers. The system will consist of CCTV captured video, detecting Vehicles using YOLOv6; Number Plate using OCR viz a viz license number; Speed using tracking Motion Estimation Algorithms such as Optical Flow. With the help of latest technologies like YOLO we aim to further enhance the existing Traffic Management Systems which used Ant R-Graph for object detection.

Keywords: YOLOv7(You Only Look Once);OCR(Optical character recognition); Optical Flow; MEA

**Workflow**

* Video Capturing
* Object Detection
* Speed Estimation (object tracing)
* Over-speed detection
* License Plate Recognition using Optimal image.
* Integration of all things

**Technologies To Be used** :

1. **YOLO (You only look once):**

Going to be used for object recognition and classification as yolo is based on CRNN it can prove to be helpful in finding real-time object recognition.

1. **Optical Flow:**

An OpenCV module-based Algorithm by detecting motion of objects between the consecutive frames of the sequence, caused by the relative motion between the camera and the object

1. **OCR (Py-tessaract algorithm)**

The OCR stands for Optical Character Recognition which can be very helpful to find out license number plate and one another challenge is there to find out optimal image from video which can help OCR to find out number plate conveniently.

1. **A Haar-Cascade classifier**

We will use the Haar-cascade classifier to detect the license number plate in the image. A haar cascade classifier is a machine learning based approach effective in object detection method.

1. **Over speeding algorithms on mathematical inferences**

There are 2 approaches to determine the overspeed namely:

1) Distance Method: Using predefined distance with respect to relative camera distance.

2) Average Method: Using average of other cars nearby to determine average speed and standard deviation.

**References**

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