“ Real Time Vehicle Speed Estimation Number Plate Detection and Overspeed Monitoring using Video Footage ”

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ABSTRACT

With continuous development and improvement of intelligent transportation system we need a technology which can act as a real time speed and number plate detector.We aim to create a system that uses a combination of computer vision and machine learning techniques to detect and track vehicles in real-time, estimate their speed, and recognize their license plate numbers. The system will consist of several components like capture video/take real time snapshots; object detection, OCR (optical character recognition) to find out number plate viz a viz license number, speed detection. Such system can find its weight in many fields of Government Offices such as RTO like Automated Parking management systems, Automated Toll collection, Law enforcement.

Workflow

- Video Capturing
- Object Detection and Classification
- 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 realtime object recognition.

2. 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

3. OCR (Py-tessaract algorithm)

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

4. 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.

5. Overspeeding 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.