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# Development of Traffic Violation Trackerusing Machine Learning

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**Abstract:** In the new evolving world, traffic rule violations have become a central issue for the majority of developing countries. The number of vehicles is increasing rapidly as well as the number of traffic rule violations is increasing exponentially. Managing traffic rule violations has always been a tedious and compromising task.

Even though the process of traffic management has become automated, it's a very challenging problem, due to the diversity of plate formats, different scales, rotations and non-uniform illumination conditions during image acquisition. The principal objective of this project is to control traffic rule violations accurately and cost-effectively[6].

The proposed model includes an automated system which uses a camera-based on a PC to capture video. [4]The project presents Automatic Number Plate Recognition (ANPR) techniques and other image manipulation techniques for plate localization and character recognition which makes it faster and easier to identify the number plates. After recognizing the vehicle number from the number plate the SMS-based module is used to notify the vehicle owners about their traffic rule violation. An additional SMS is sent to Regional Transport Office (RTO) for tracking the reportstatus.

## I.INTRODUCTION :

The numbers of vehicles are increasing rapidly as well as the numbers of traffic rule violations are increasing exponentially. Managing traffic rule violations has always been a tedious and compromising task. The project aims to provide total safety for bike riders.
The proposed system is faster and efficient than human, as known already traffic police is the one who captures the image of individuals violating traffic rule but the traffic police will not be able to capture more than one violation simultaneously. Transport department records show that around 70% of the vehicles registered from Bangalore are two-wheelers and the number of helmetless riding cases in the city has been increased rapidly.

Since motorcycles are affordable and a daily mode of transport rules must be strict in order to avoid any accidents. As helmet is mandatory as per traffic rules violation of which attract heavy fines[7]. This system using YOLOV5 (You only look once) instead of hand-crafted feature, to improve the classification performance

## II IMPLEMENTATION

The application's responsiveness model includes an automated system which uses a camera-based on PC to capture video. For detection of objects like persons, vehicles and helmets Yolo V5 algorithm is used. Yolo V5 is the latest object detection technique which results in more accuracy level for plate localization and character recognition and makes it faster and easier to identify the number plates. For collection and processing of data like previous fines and mobile numbers of CSV files will be done using machine learning algorithms [2].

The project mainly consists of 4 modules:
1.Helmet ,triple riding and signal jumping violation detection2.Numberplate recognition after the violations
3. Sending SMS to registered mobile numbers
4. User can check the fines using there mobile numbers

The Block diagram of the project describes the flow of data. The below figure shows Block of thesystem. It is a well-defined and well-specified software application architecture that organizes applications into logical and physical computing.

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## BLOCK DIAGRAM

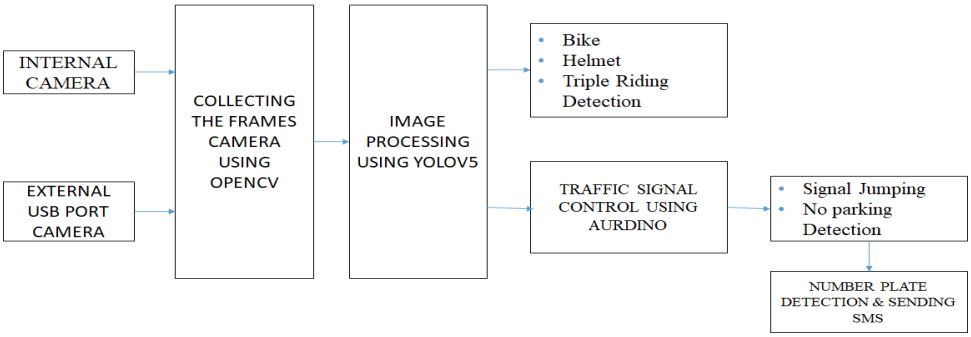


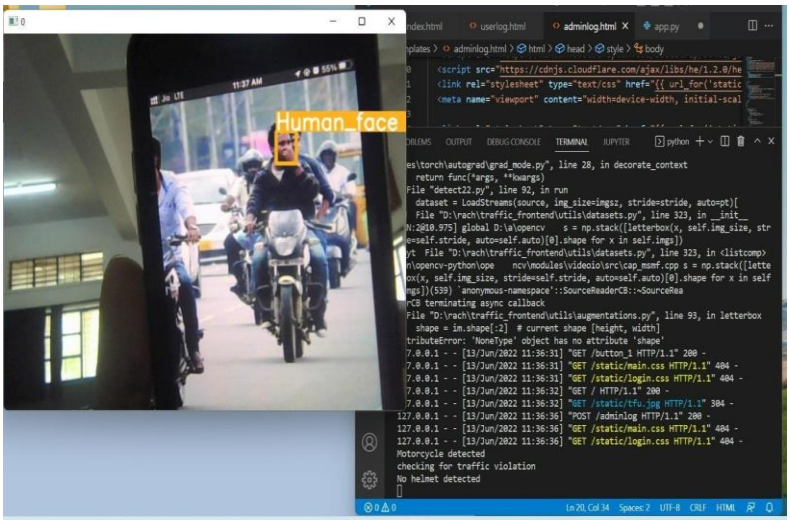

**Figure 1: Block Diagram**

## III ANALYSIS OF TRAFFIC VIOLATION TRACKER

**i . Admin:** Admin of the system can log in through his/her email id and password and then he will beable to see the Violations lively. Live detection of Helmet, Triple riding traffic rules violations

**Figure 2: Admin Login**


**Figure 3: Admin Page**



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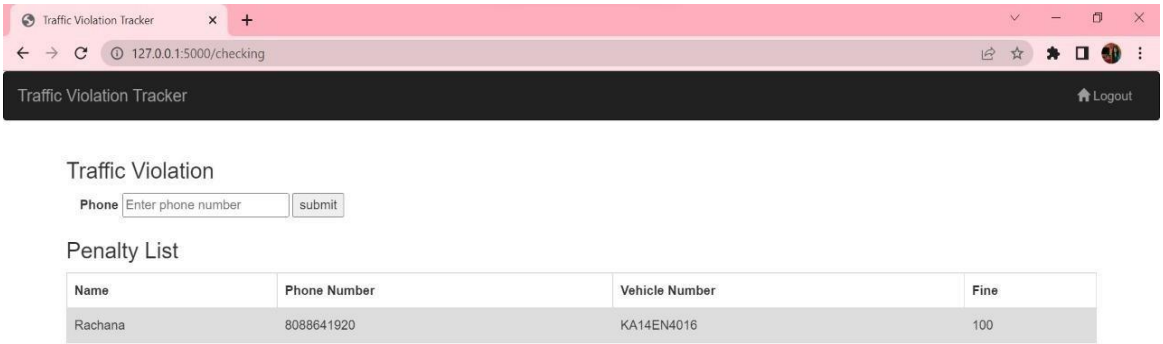
**ii.** **USER :** User can log in through email id and password. Then a user can check the finesof their vehicle registered mobile numbers.

**Figure 4: User Page**


**Figure 5 : User Page Result**




## RESULT AND CONCLUSION

This project is for developing a web application for traffic management. For developing the application, a systematic approach has been taken into account. The extreme Programming method of the waterfall model has been applied to develop the system. The application has been developed using a Flask framework.

The project successfully implemented a working complex prototype of traffic violation tracking. The implemented prototype software has been fully tested to demonstrate the quality and performance of the system. This report also documented all the relevant research details. In summary, the project has satisfied itsobjectives and fulfilled its purpose. I hope, the application can meet most of the requirements of traffic violation detection accurately and detect number plates and SMS to registered mobile numbers.

## ACKNOWLEDGEMENT

We are happy to present this project after completing it successfully. This project would not have been possible without the guidance, assistance and suggestions of many individuals. We would also take this opportunity to offer our sincere gratitude to our project guide, **Prof. Saravanan C**, for his excellent support throughout the development of this project and for providing the necessary information on our demand at all times. We are also thankful to the lab in-charge, staff and all faculty of the department for their help and support during the project.

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