

Automation in existing traffic monitoring system and issue the E-challan

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ABSTRACT

The focus of this paper is to develop an online web application to facilitate the Indian citizens and the traffic police to manage the penalties for traffic violations happening in India nowadays. The proposed system is the online web application aimed at providing better assistance to traffic departments in monitoring the system for traffic violators, smoothing the experience for users to view and pay the E-challan fine to them accordingly. The proposed system is basically an interaction between Indian citizens and the traffic police easily through an online platform or a web application. This project prototype reduces the technical workload from the Traffic Department and handles the system efficiently. The online web applications aimed at reducing the paperwork, manual process of violating cases handling for both the Indian citizens and the traffic police.

General Terms

Web Application, Traffic Penalty, E- Governance.

Keywords

E-challan, Traffic Violation

1. INTRODUCTION

Governance is a challenge in a country as diverse, vast and rapidly developing as India. India now requires a new and latest technology for large-scale transformation and implementation of government plans. This proposed system is an attempt of e-governance for a country like India with a large population and high density.

India's road network has grown at an annual rate of 5% since 2019. As stated in The Hindu, In India, the third largest road network in the world, the total number of vehicles in fiscal year 2021 stood at 295.8 million. As rural and urban population density has increased the density of roads has risen in India. The change in population has turned into more vehicles on roads. This leads to a high rate of accidents nowadays. One of the major reasons for the high number of accidents on the road is that traffic rules are violated and not followed by the citizens of the respective country. According to an Indian Environment Portal survey, In India 77% of the accidents happen due to violation of traffic rules by the citizens such as speeding, without

helmet, underage driving, driving under the influence of alcohol or drugs, and hit and run cases.

With the number of vehicles of any size, it is very difficult to manually enforce laws and traffic rules for smooth traffic flow. Modern Traffic Management systems are installed on traffic signals like high resolution

cameras with machine learning algorithms to check for vehicles breaking the traffic rules. In order to automate these processes and make them more effective, a proposed system will help us detect the type of violation and issue the E-challan according to a particular user electronically.

India needs a highly regulated system of governance to prevent these avoidable accidents and manage the traffic on the roads. The proposed system is also a type of decentralized information system which allows all the stakeholders to access the needed information anytime anywhere.

This proposed system mainly focused on creating an automation in existing traffic monitoring procedures and allows different features to the stakeholders related to challan, vehicle details and license details.

2. LITERATURE REVIEW

A detailed review of existing projects or the models was done to arrive on a foolproof and successful model.

The paper [1] proposed an electronic governance model of e-challan and traffic penalty system using an integrated existing method of penalty in India. The system uses various image preprocessing techniques to extract the License Plate number from the Registration plate and integrate this with VAHAN data to fetch all information about the vehicle owner and impose penalty automatically from their account which is linked with the AADHAR card and Vehicle registration with help of Intelligent Expert System (IES) and ICT.

A similar approach is followed by [2] which implements the model using an automatic challan system using MATLAB. The model captures the image of the vehicle and extracts the number plate of the vehicle which breaches the traffic law. The designed model processes to automatically generate an E-Challan which can be directly paid by the user at any RTO office or can pay using online payments facility also.

A novel approach is discussed in the paper [5] stating an efficient e-challan generation using OCR technology, generating e-challan using developed android applications. The application detects the vehicle number plate, then fetches the details from the database for type of vehicle and owner details etc. and generates the e-challan for particulars. A similar approach is used by [6] suggesting the need of an efficient and smart automated traffic

penalty generation system. The authors suggest the retrieval of information of vehicles from the official database using Smartphone, by scanning the QR code. The officer can then approve an e-challan with the application and the e-challan will be sent to the driver using SMS.

The paper [7] discusses the disadvantages of manual e-challan generating process, the problem of fake challans, loss to the government and inconvenience caused to the driver. The author implements a smart automatic e-challan system based on RFID and GPS modules. The system is able to locate the vehicle using the GPS and the police officials can generate an e-challan using the information of the vehicle saved in the database, which will be then sent to the owner of the vehicle using SMS. In paper [8], the proposed system works on both live video feed, recorded footage and static images. Whenever any of the street cameras catch any vehicle breaking any of the laws, the officers monitoring the feed in the monitoring center draw a bounding box around that vehicle and then that image is fed to our proprietary API which performs object detection, license plate detection, character segmentation, character recognition and finally returns the extracted license plate number in the GUI of our system along with a magnified image of the license plate. In paper [9] the complete system includes the extraction of the vehicle number from the number plate and identifying its owner to alert him/her about their penalty by sending an SMS with the help of GSM module.

3. Methodology

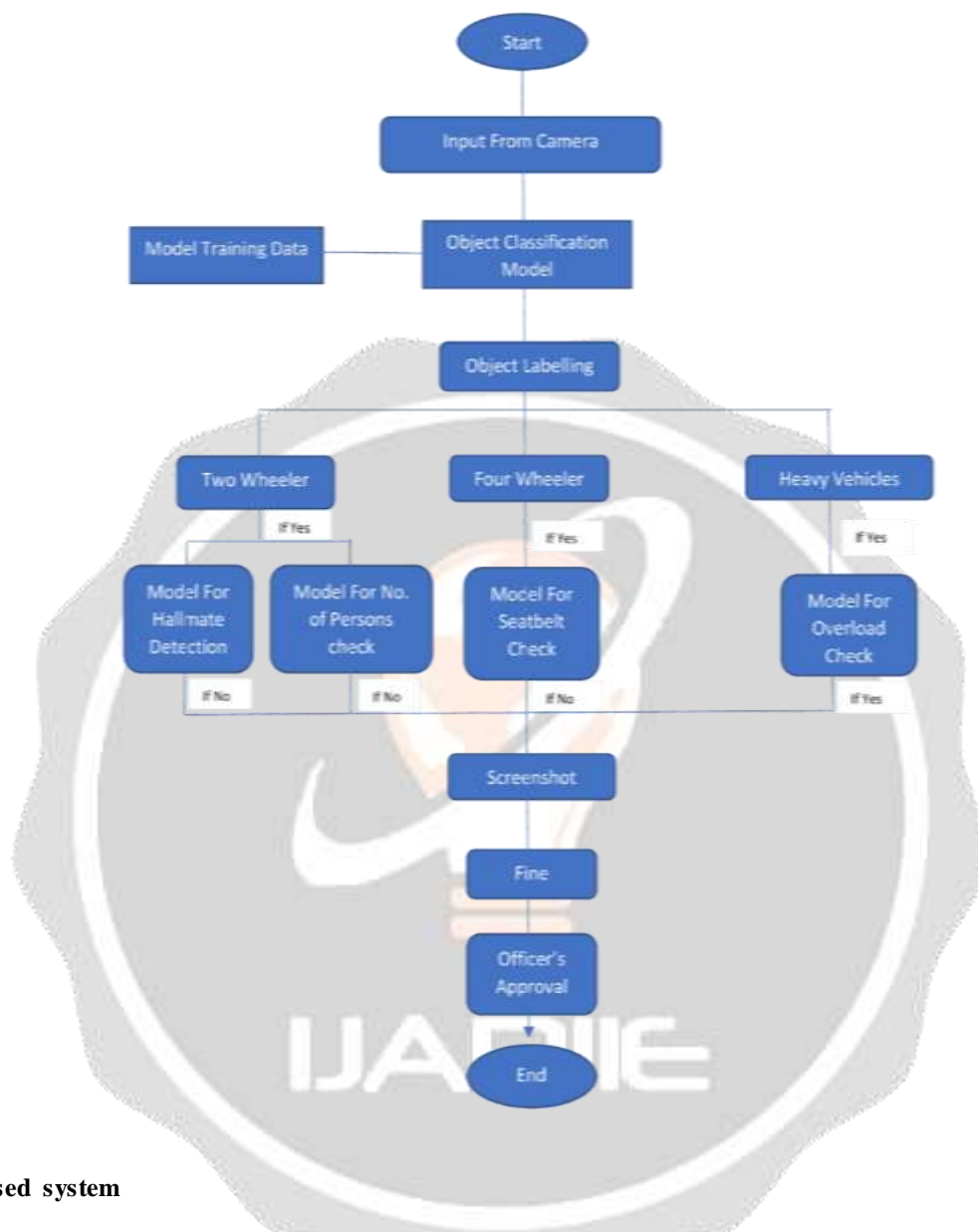
The title is the system by which the traffic department keep eye on the people which break rules of the road, and charge a penalty according to that. To implement this idea of traffic control system automation, we need to understand some concepts of machine learning and deep learning. Like to get captures and filters from the camera we need to understand the Deep Learning algorithm [YOLO V4] and OpenCV module of python.

To store the info, we need hands on the database,

To make the web application, we need to study the frontend and backend development.

We need to handle some APIs for sending intimations to the user via text messages or mail.

To make this process automated, deep study of Robotic Process Automation for example Automation Anywhere software is required.



Proposed system

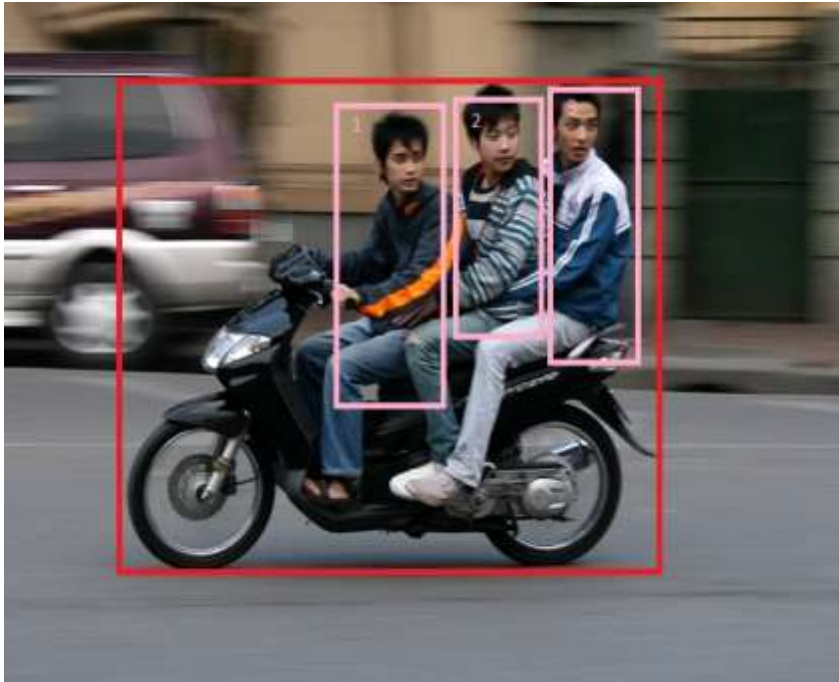
1) Traffic police officer's end This side of the application is only restricted to the use by the traffic police and the government authorities. The application is not available for the use of public. In short the officer can issue challan, check the details of the vehicle, alert other officers or the police department about any theft of vehicle or any crime attempt by a vehicle. On Logging in the officer get a menu

Vehicle Check: The vehicle check contains further sub options to check owner details an issue challan option.

Check Owner Details: The officer has option to check owner of the vehicle where full detail about vehicle as well as the owner is given.

Issue challan: The issue challan option lets the officer issue fine against the vehicle in case any rule has been broken.

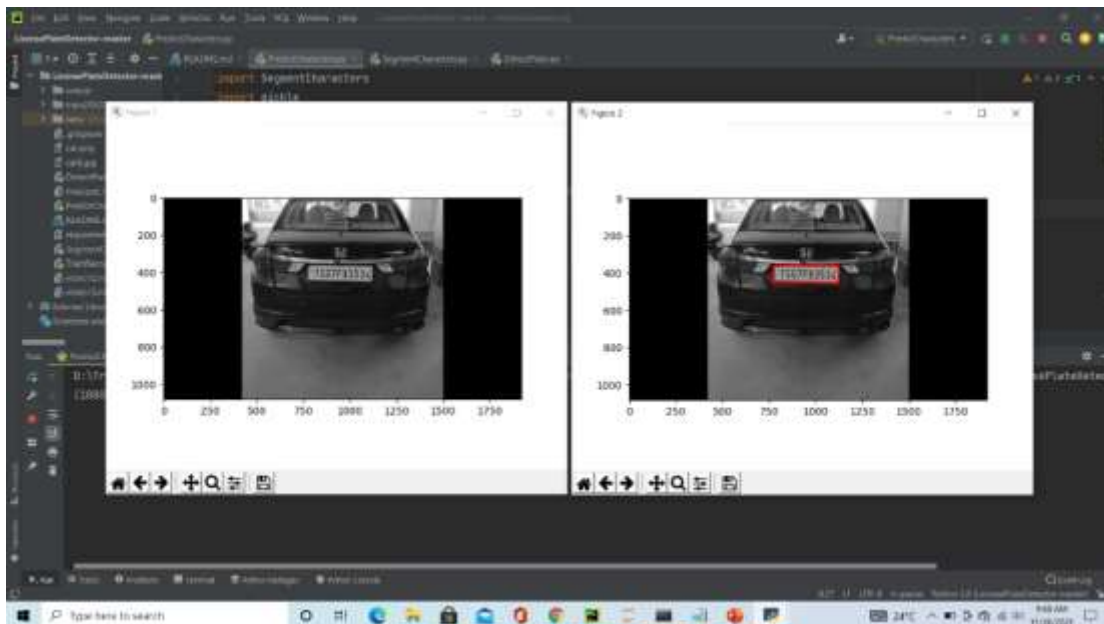
Triple seat Riding Detection



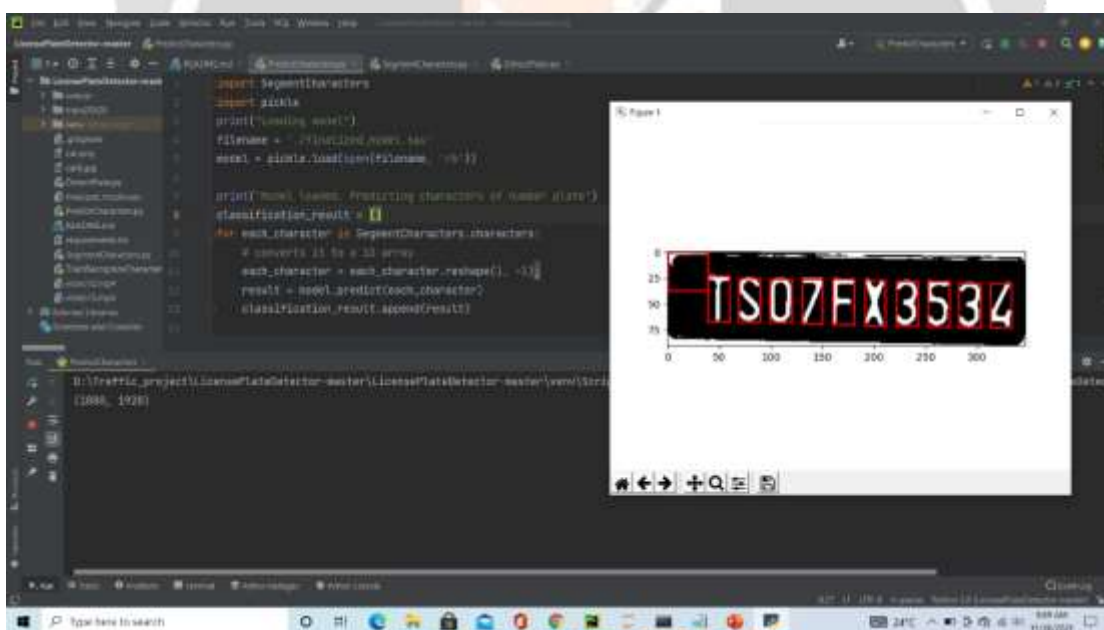
Truck Oversized Detection

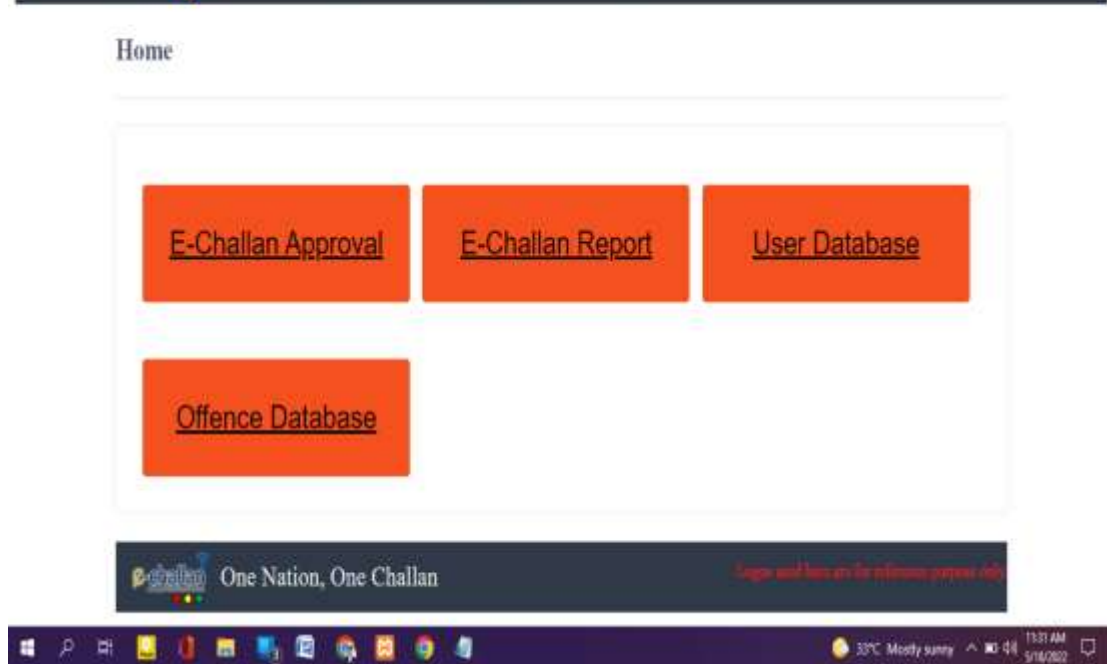
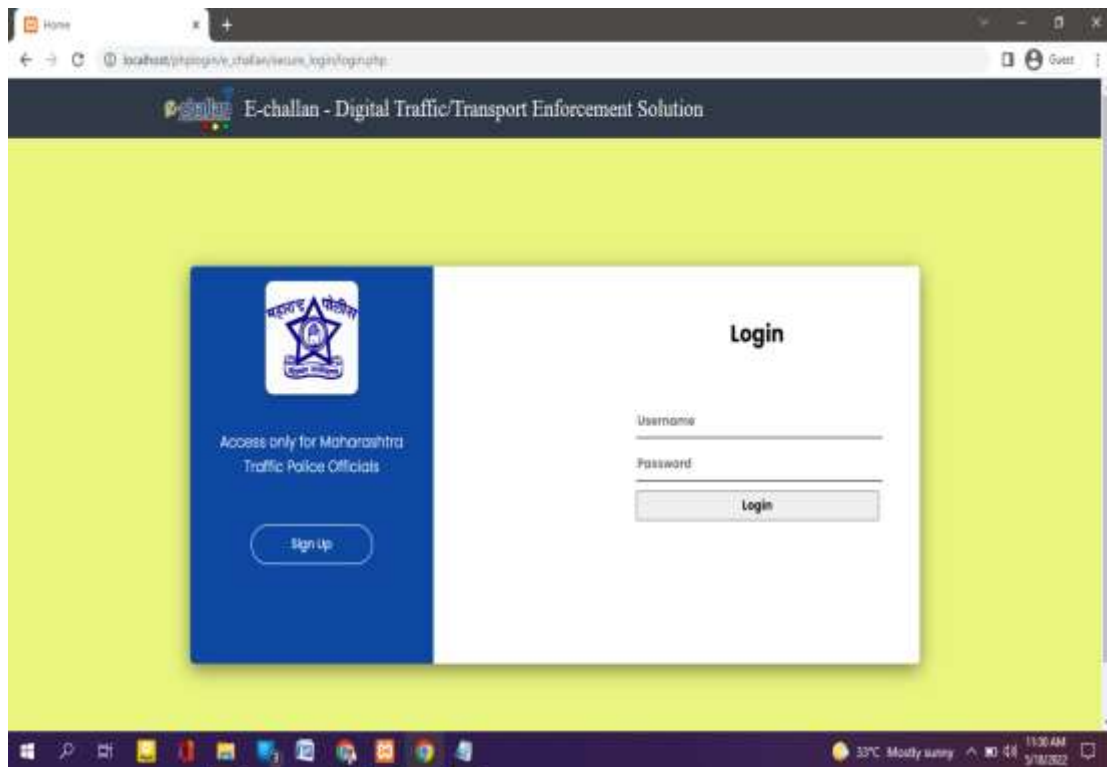


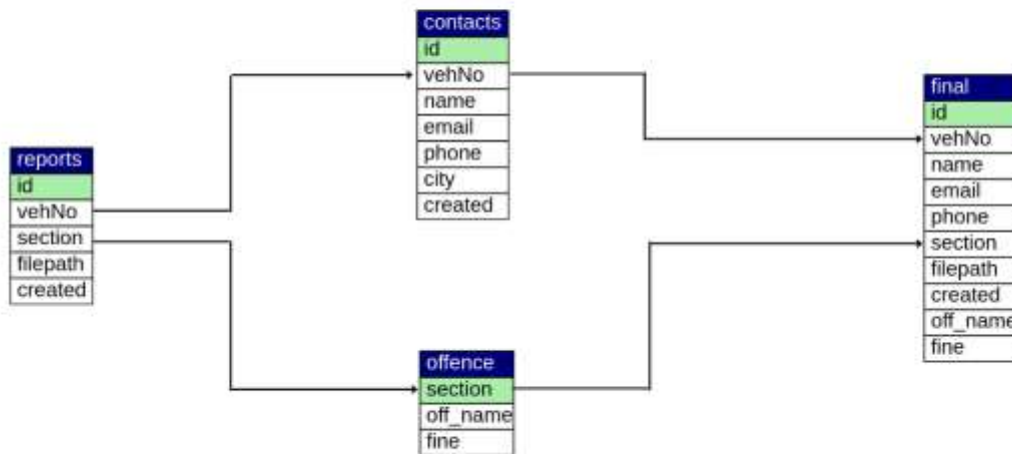
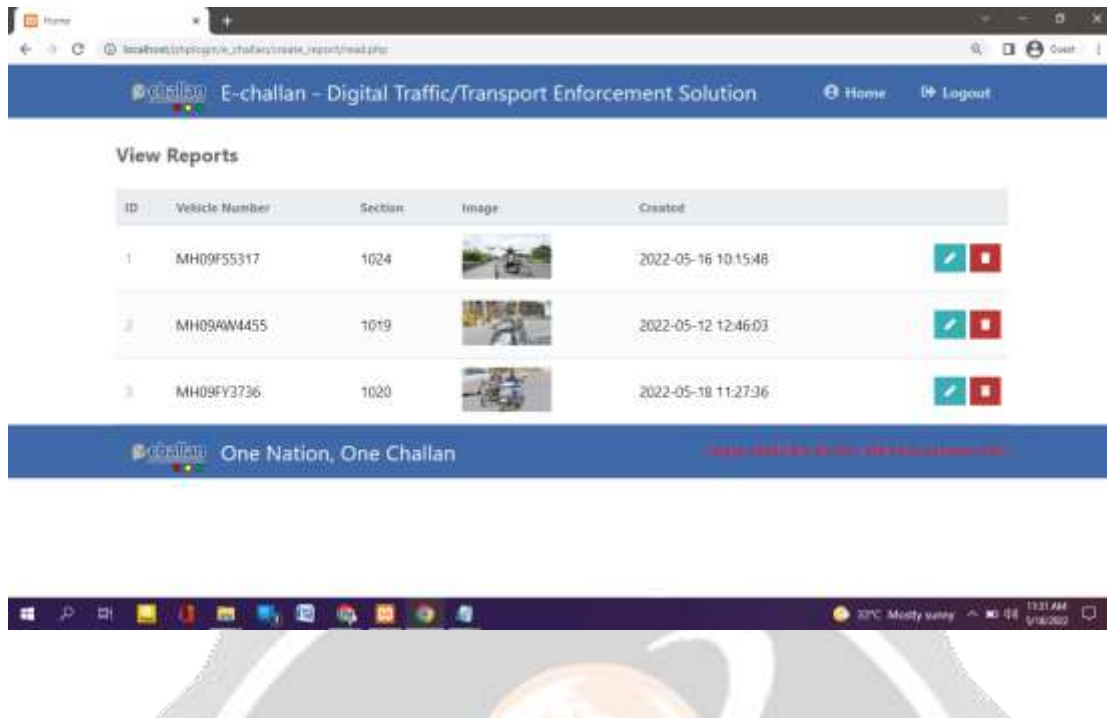
Number plate detecting

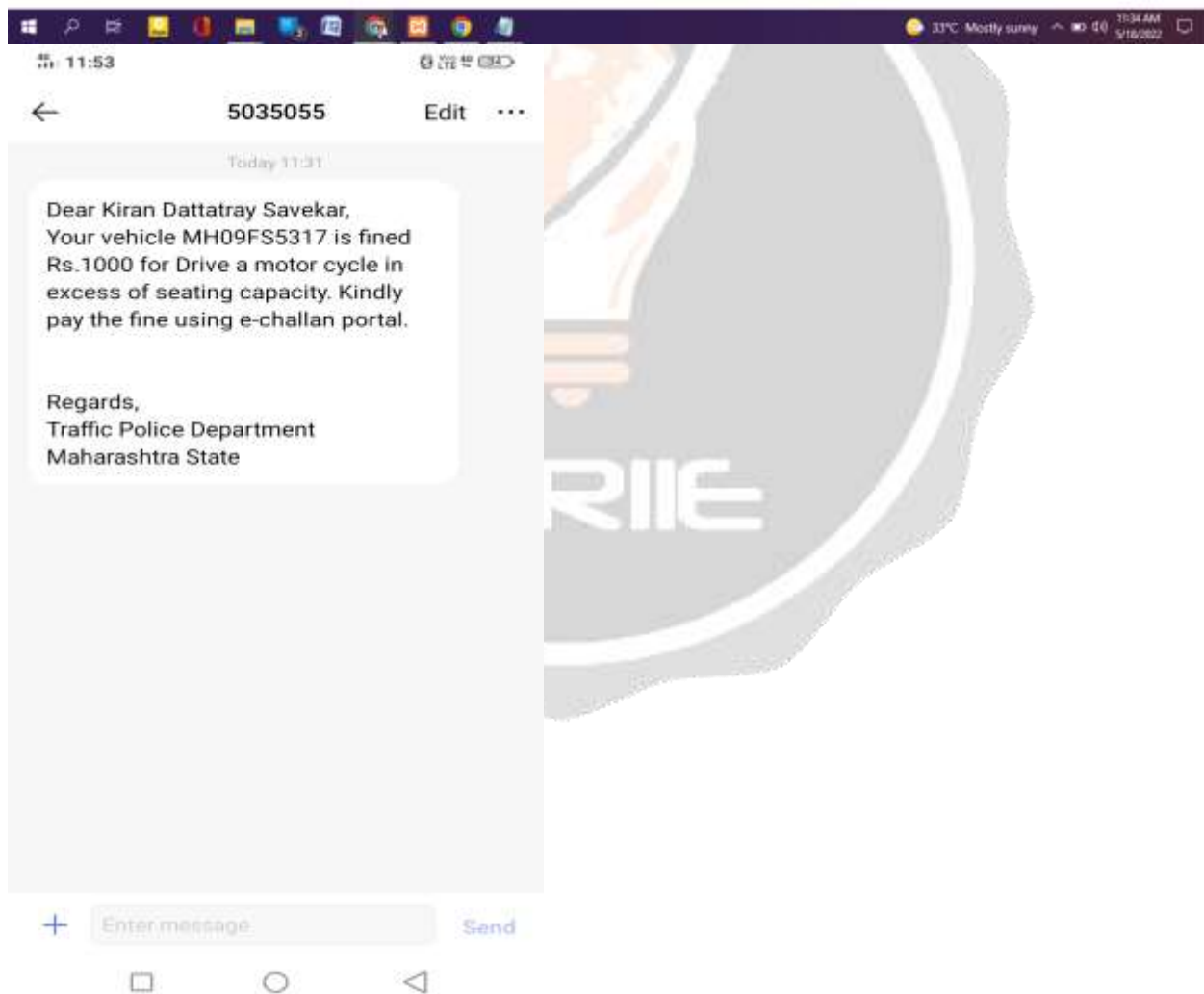
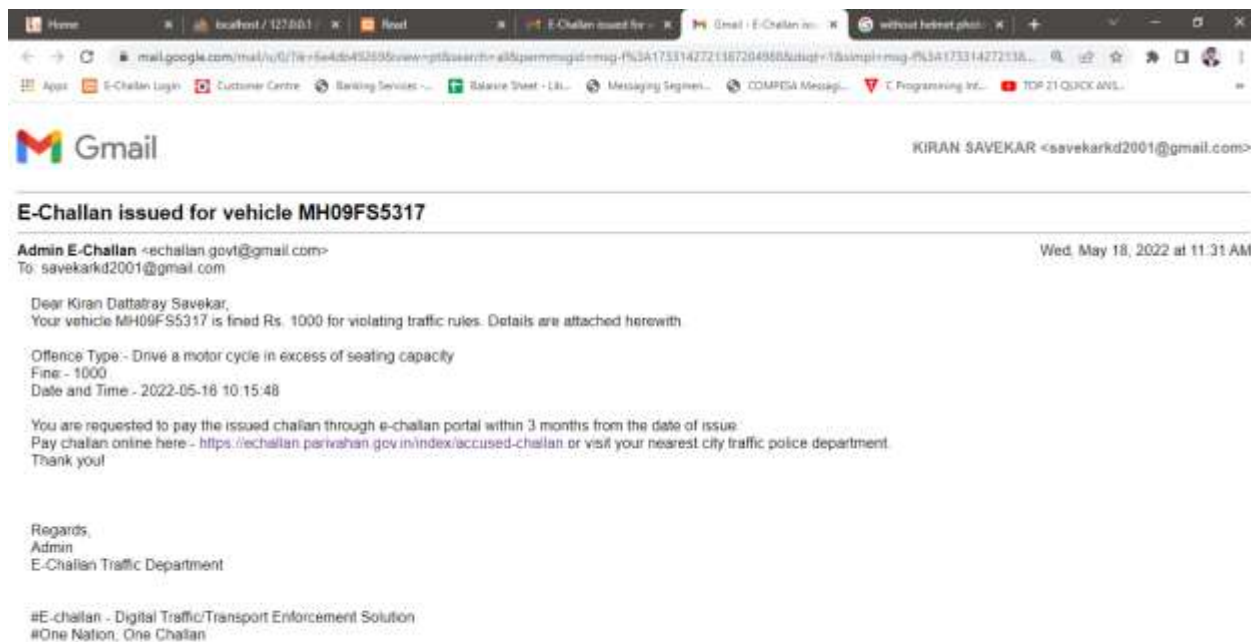


Numbers Extracting from Number plate









4. conclusion

To deal with traffic demands and expected to grow more and more from here on, the functionality of existing traffic monitoring systems based on the old system designed will become required thing to the system

operators in India.

This paper proposes an automation in currently existing traffic monitoring systems which interconnects vehicle number plate detector, traffic rules violation detects and signal side violence to manage the system remotely and automatically also process with fine accordingly. We along with Ichalkaranji City Police [Maharashtra Police] aim at the implementation of our new traffic control system with automation which can fully exhibit its functions in the oncoming 21st Century.

5. REFERENCES

- [1] Intelligent Road Traffic Control System for Traffic Congestion A Perspective
July 2018 INTERNATIONAL JOURNAL OF COMPUTER SCIENCES AND ENGINEERING
6(7):908-915
- [2] Review Paper on Intelligent Traffic Control system using Computer Vision for Smart City June 2017
International Journal of Scientific and Engineering Research 8(6):14-1
- [3] Recent Advances in Intelligent Transportation Systems for Cloud-Enabled Smart Cities View this
Special Issue Research Article | Open Access Volume 2020 |Article ID 8894812 |
<https://doi.org/10.1155/2020/8894812>
- [4] State-of-art review of traffic signal control methods: challenges and opportunities Syed Shah Sultan
Mohiuddin Qadri, Mahmut Ali Gökçe & Erdinç Öner European Transport Research Review volume
12, Article number: 55 (2020)

