E Challan System for Non-Parking Areas

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Abstract: The Traffic in the metropolitan urban communities plays an essential part in transportation problems. Though many changes are happening in the E-Challan systems and traffic maintenance methods, some new methods are indispensable to control the traffic in urban areas. Mainly no-parking areas are the main concern and it always leads to the traffic problem. A regular monitoring system is needed to monitor the no parking zones which help to solve the problem occurred by parking the vehicles in no parking areas. So, E-Challan is the solution to resolve the issues at significant spots like no-parking regions. This project proposes an E-Challan system with the help of number plate detection using OpenCV library. Cameras are used to get the images of vehicles parked in the restricted areas. License numbers which are detected through traffic cameras automatically search for the registered phone numbers in the database and send this E-Challan as an SMS to the registered phone numbers of the people who violated the regulation proposed by the respective government.

Key words: OpenCV, E-Challan, Text extraction.

I. INTRODUCTION

Congested traffic in some way affects any country a lot concerning economically, socially and technically. In India particularly with such an oversized population of over 4 billion, as everyone from rural to urban was aspiring for superior opportunities and benefits made India have heavy traffic congestion on its roads. The valuable time of every working professional is being wasted on the roads. It also increases air pollution, travel time, fuel cost, energy consumption, which in some ways affects the quality of the services of the organizations and mankind. Besides these Indian roads are not enough to serve the demand and supply needs of the population, unbalanced transportation of goods and services in Serious impact on the development of each individual. Basically, there are many reasons for the traffic congestion out of them one major problem is due to parking of a vehicle in crucial areas. Previously Indian Government had introduced many methods for traffic management so, we are using one of their innovations in a strategic way to reduce traffic congestion in some way through i.e., through E-Challan System [2].

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The aim of this paper is to provide a simple way to use every innovation of traffic management and their public investments like high-resolution cameras. As it involves the detection of vehicle number plates through the cameras placed in public places. later on, the license number from the image is extracted using Google Vision API and sent to the database for the search of its associated phone numbers in the database and send penalties in the form of E- Challan to the associated phone numbers through third-party software. Hopefully this solution is used to defend the parking violation concern.

II. LITERATURE SURVEY

In previously there are many existing models for number plate detection. Most of them are common with the grey conversion of image initially but differed with the character extraction from the number plate.K-NN (k-nearest neighbors) is a non-parametric algorithm, used for pattern recognition and classification. It uses 'feature similarity' to speculate the values of new obtained data points which further implies that the new data point is going to be assigned a worth supported how closely it matches The points within the training set of knowledge [3].In other methods of the license plate detection, the number plates have vertical edges to detect the potential license plate.2D-Wd is used to extract the vertical edges. The high-density areas of the vertical edges are extracted by calculating the maximum entropy areas to detect the potential license plate candidates. CNN classifier to remove the false positive. In the character recognition stage, the characters are segmented first by detecting the empty lines between the characters, then these segmented candidates are classified by training 42-class CNN classifier to acknowledge thecar place characters. In one more way is python tesseract, it is an optical character recognition tool which helps in extraction of the characters from the license plate of a vehicle and send to the database for the further use [4].

The other method is the detection of Edges of the number plate using Robert's operator to make sure the difference between the license plate front and back part of license plate. Image erosion operation and morphological closed operation are performed, eliminating the smaller parts which are not a part of the registration plate region [6].

III. PROPOSED METHODOLOGY

In this project python libraries along with few third-party software's are used to perform processing. Initially, it uses the cameras placed in the public and crucial areas for Acquisition of the license plate of the vehicles through the OpenCV module [3]. The OpenCV is integrated with the Harscascade file which is patterned with features of the Indian number plate .so this OpenCV module along with the Harcascade file finds the position of the number plate within the car and save the corresponding image of the number plate for the further processing.

The image is further operated by the Google Vision API for the Extraction of the characters from the Number plate.

So, with this Vision API we perform text extraction from the images which are previously captured using the OpenCV. In addition to this we actually get fewer unwanted symbols if our number plate is not so clear in the resolution or if there is no proper light. The operation of this Vision API totally depends on the kind of image taken by the OpenCV (in terms of pixels). So, if an image is high in pixels, we can easily get the required text from the image else we might end up with few other symbols along with the required text. The text (characters from number plate) extracted from here is sent to the database for further processing. Within this project we initially connect XAMPP to the code by enabling port numbers of Apache and MYSQL and we administrate through MYSQL for quarrying operation so this will enable the PHP MyAdmin local host for retrieving datasets and later on we deploy few datasets which are related to the License numbers and their associated phone numbers into XAMPP database through SQL queries just like an RTO database. On the other hand, the google vision API OCR extract the characters from the number Plate image and send them directly to the XAMPP to perform search operation for the license number associated phone number, if it finds any phone number then the XAMPP commands the Twilio for the next action. So, the Twilio, a third-party software used   for the purpose of sending E -Challan to the phone numbers found in the XAMPP database, we actually get a unique identification and a token for each individual who created an account for the service. The XAMPP commands the Twilio for messaging the required format of penalty to the license plate associated phone numbers if it found in the database. Here we can use this messaging service, i.e., Twilio only for a limited period.

IV. PROBLEM STATEMENT

The traffic monitoring system of maintaining the no-parking areas healthy followed by the respective authorities needed to be automated since one cannot monitor the no-parking zones all the time. So, they should aim at an automated monitoring system which helps them to keep no-parking zones free from parking.
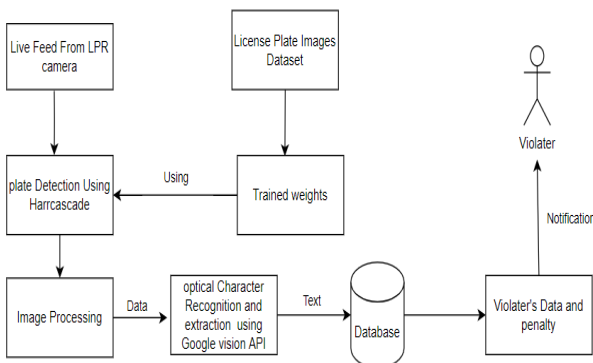
V. SYSTEM ARCHITECTURE

Fig 1. Block diagram of proposed system

Initially live feed from the license plate recognition Camera is taken to detect the license plate of a vehicle, the camera is integrated with the python code and *a* few libraries like OpenCV which performs the image acquisition.The

Harcascade file of the licenseplate is retrained with license plate images Datasets of Indian format. After the exact image of license plate is detected, the image processing like image gray conversion, setting upscale factor and minimum neighbor is done.The processed image is sent for the extraction of characters using the GoogleVisionAPI, later on the extracted characters are sent to the database.The data within the database is deployed through SQL queries and the extracted text from the google vision API OCR is checked with the datasets of database, if the text matches with any of the primary keys of the data set then its associated phone number is retrieved. The retrieved phone numbers are further sent to the third-party software's like Twilio. These software sends the penalty in the SMS format to the violators phone

VI. RESULTS

With this proposed system we utilize the Cameras placed in crucial areas which are monitoring the no parking areas 24/7. The detection of license plate within a vehicle is performed, this can be observed in Fig:2

Fig 2: Frames of the detecting images

The image of this detected license plate is operated by the Google Vision API in the background for the extraction of the characters from the number plate console and send those characters to the database for the search operation. If there is any license number registered phone number, then the database commands third party software's for the further action, this can be observed from the fig: 3

Fig 3: Steps followed in console.

As the number plate associated phone number is found within the database then the towel comes into action for sending the SMS format of E-challan to the respective phone number. This can observe from fig:4
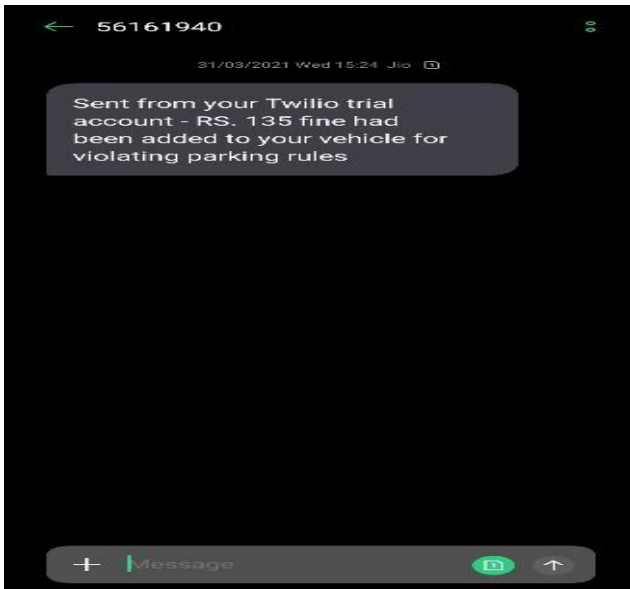
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Fig 4: Message sent by Twilio

V.   CONCLUSION

Improving he traffic maintenance system is still needed an active and challenging research in many areas which causes traffic problems. Because road transportation plays   a crucial role in human daily life. This research provided a solution for the traffic problems occurred by roadside parking vehicle at no parking zones. Maintaining no parking areas is an essential part of controlling traffic in urban areas since these vehicles consuming a roadside place and creates a congested way to moving vehicles. To resolve this issue, a complete monitoring system is needed to be installed in non-parking zones. Hopefully the proposed system gives a solution for monitoring the non-parking areas. The proposed E-challan system reflects the reduction of vehicle count in no parking zones, as penalty made people restricted towards the rule passed by the respective authority.

REFERENCES

1. S R Samal et.al, "Analysis of Traffic Congestion Impacts of Urban Road Network under Indian Condition", "IOP Conference Series: Materials Science and Engineering", 2020.
2. Allokik Pranshu et.al, "E-Challan: Online Traffic Rules Violation Penalty and Management System", "International Journal of Computer Applications", 2020
3. International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056, p-ISSN: 2395-0072 Volume: 07 Issue: 05 | May 2020 www.irjet.net Automatic License Plate Recognition using OpenCV
4. International Research Journal of Engineering andTechnology (IRJET) e-ISSN: 2395-0056 p-ISSN: 2395-0072 Volume: 07 Issue: 05 | May 2020 www.irjet.net Single line license plate detection using OpenCV and tesseract
5. Keechul Jung et.al, "Text information extraction in images and video: a survey", "Pattern Recognition" volume 37.
6. C K Gomathy and V Geetha. Article: Evaluation on Ethernet based Passive Optical Network Service Enhancement through Splitting of Architecture. International Journal of Computer Applications 138(2):14-17, March 2016. Published by Foundation of Computer Science (FCS), NY, USA, ISSN No: 0975-8887
7. Ibtissam slimani et.al, "An automated license plate detection and recognition system based on wavelet decomposition and CNN", 2020.
8. DR.C.K.Gomathy , V.Geetha , S.Madhumitha , S.Sangeetha , R.Vishnupriya Article: A Secure With Efficient Data Transaction In Cloud Service, Published by International Journal of Advanced Research in Computer Engineering & Technology (IJARCET) Volume 5 Issue 4, March 2016, ISSN: 2278 – 1323.
9. C.K.Gomathy.(2010),"Cloud Computing: Business Management for Effective Service Oriented Architecture" International Journal of Power Control Signal and Computation (IJPCSC), Volume 1, Issue IV, Oct - Dec 2010, P.No:22-27, ISSN: 0976-268X
10. Dr.C K Gomathy, Article: A Semantic Quality of Web Service Information Retrieval Techniques Using Bin Rank, International Journal of Scientific Research in Computer Science Engineering and Information Technology (IJSRCSEIT) Volume 3 | Issue 1 | ISSN : 2456-3307, P.No:1563-1578, February-2018
11. Dr.C K Gomathy, Article: A Scheme of ADHOC Communication using Mobile Device Networks, International Journal of Emerging technologies and Innovative Research (JETIR) Volume 5 | Issue 11 | ISSN : 2349-5162, P.No:320-326, Nov-2018.
12. Dr.C K Gomathy, Article: Supply chain-Impact of importance and Technology in Software Release Management, International Journal of Scientific Research in Computer Science Engineering and Information Technology (IJSRCSEIT) Volume 3 | Issue 6 | ISSN : 2456-3307, P.No:1-4, July-2018
13. Hemalatha. C.Kand N. Ahmed Nisar (2011)., Explored teachers' commitment in self financing engineering colleges, International Journal of Enterprise Innovation Management Studies (IJEIMS), Vol2. No2. July-Dec 2011 ISSN: 0976-2698 Retrieved from www.ijcns.com
14. Hemalatha. C.Kand N. Ahmed Nisar (2019)., A STUDY ON TEACHERS PROFESSION LOYALTY IN EDIFICATION IMPROVEMENT, Journal of Emerging Technologies and Innovative Research (JETIR) , JETIR June 2019, Volume 6, Issue 6, (ISSN-2349-5162)from etir.org/papers/JETIR1906W84.pdf
15. Dr.C K Gomathy, Article: The Efficient Automatic Water Control Level Management Using Ultrasonic Sensor, International Journal of Computer Applications (0975 – 8887) Volume 176 – No. 39, July 2020.

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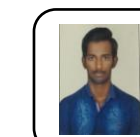
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