



Vehicle Detection and Alert System Using Advanced ANPR Technology

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ABSTRACT

There is very large number of vehicles in India as it is very densely populated country across world. So, there is a need of analysis of vehicles for Intelligent Transportation Systems(ITR)[2]. This project presents a recognition method in which the vehicle plate image is obtained by the digital cameras and the image is processed to get the number plate information.

It is an application of Computer Vision[6]. An efficient automatic vehicle identification system Is useful for various applications such as automatic toll tax collection, parking systems, Access control, stolen vehicles, etc [7]. This technology includes the reading image, segmentation and identifying text using OCR.

Keywords

Automatic number plate recognition (ANPR), Intelligent Transportation System (ITR), Optical Character Recognition (OCR), segmentation, Computer Vision.

1. INTRODUCTION

The exponential growth in the number of vehicles is causing a major complexity in identifying, controlling and managing transportation systems especially for vehicles that need to reach their destined place in as much as less time.

In today's world where we are gradually shifting towards automation and information technology, there is a growing demand for development and automation in transportation systems. ANPR can play a major role in its development. The main goal of the ANPR system is to read number plates without any human intervention and use it for the benefits of society. This ANPR technology can be used to detect specific important vehicles such as ambulances, firetrucks and many more and further create a alert system.

2.LITERATURE SURVEY

From the proposed system we can review that the technology that we will be using can be successfully used to detect the number plate region from the image which consists of vehicle number. The existing technology works on the toll gates and for highway monitoring, here we propose an application that our system can be used in ambulance detection. We know that in today's rush it is that most ambulances are stuck in the traffic.

These papers presents a novel deep learning-based ANPR application that is implemented and tested for specific vehicle access control applications. By using object detection and DL models, we counter the heterogeneity and assortment problem of number plates across various Asian and European regions number plates.

For achieving this approach, this ANPR uses techniques such as OpenCV, Image Processing, OCR. Also, Automatic Number Plate Recognition systems would work fine in the dark and low light environments.

In the papers, after the preprocessing stages. the canny edge approach was used to detect the plate edges, and multiple threshold strategies were employed to minimize the image noise. The plate was divided into rows using vertical projection during the segmentation process. After that. the masking technique was used to find and divide the image's regions of interest.

The letters and numerals in English are read individually using OCR on the processed pictures. Template matching become used on quantity plates acquired from static photos and an average Accuracy of 82.6% has been obtained.

With help of this system after detection of ambulance/ambulances from the taken frame/photo of the road we can send the call, indication to the next signal stop in the locality or the nearer traffic control room so that they can be alerted that an ambulance is on the way or else the ambulance is stuck in the traffic

in the specific km area around them .The advantage of this system is that the way can be made clear for the ambulance and the patient’s life can be saved.

Sr No/ Citations	Methodology	Analysis
1	Automatic Number Plate Recognition Using Tensor flow And Easy OCR	Use of tensor flow and easy OCR with better accuracy
2	A Novel Deep Learning Based ANPR Pipeline for Vehicle Access Control	3. OCR: 90.94% 4. R-CNNL3: 87.24% AlexNet: 87.56%
3	Automatic Number Plate Recognition	Use of techniques such as OpenCV, Image Optical,
4	Automatic Number Plate Recognition of Saudi License Car Plate	and English language respectively
5	Automatic Number Plate Recognition	Exactness (result) of this system was established as 75-85% for Indian number plates.
6	A Review paper on recognize automatic number plate and blurred number plates	This work proposes to implement the system using Gabor filter, OCR and Vision Assistant to make the system faster and more efficient.

Table 1: Analysis of Previous Technology

3.PROPOSED WORK

It is a technology which can be used to detect specific type of vehicles like ambulance, fire truck and alert nearby services about that. Alerting other systems like RTO officers in that area will be helpful for further coordination with that vehicle to escort it prior. Giving prior information about arrival of vehicle will also helpful for the people on that road to prepare properly for the arrival.

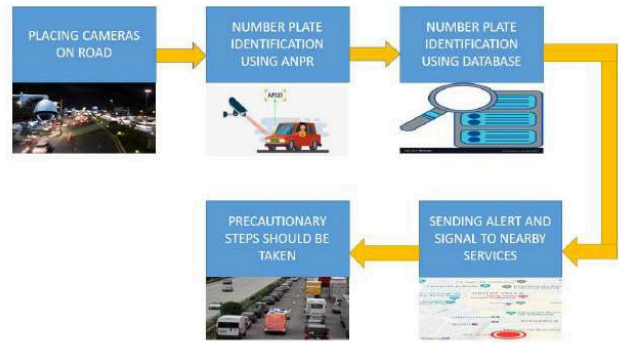
This system basically consist of

Processing System (Computer, High Spec Micro Controller)

Cameras for Capturing Footage

Database of Number plate for recognition of special Vehicle

Fig 1: Methodology



In this project, we propose an automatic and mechanized license and number plate recognition system which can extract the license plate number of the vehicles passing using image processing algorithms. Using special cameras, the system takes pictures from passing vehicle and forwards the image to the computer for being processed by the ANPR software. Plate recognition software uses different algorithms such as localization, orientation, segmentation and finally OCR.

The resulting data is applied to compare with the records on a database and find out if the vehicle belongs to particular system or type of vehicle. If we perform this experiment we can say that we will be able to detect and recognize the number plate. The main purpose of the system is to be used for security and traffic control and alert system like ambulances. No additional equipment needs to be installed on vehicles for operating this system. The images taken by these cameras are subsequently processed in a computer Typical ANPR systems include a digital image capture unit (camera), a processing unit, and different algorithms for video analytics.

4.CONCLUSION

From our proposed system we can conclude that the technology that we will be using can be successfully used to detect the number plate region from the image which consists of vehicle number & then character segmentation and recognition .We will be applying this technology on many images and can be used to successfully recognize the numbers from vehicle number plate. Number plate extraction has different phases and accuracy of each phase dependent on previous phase. This project is designed keeping in mind the automation of the number plate detection system for alert systems especially in ambulance vehicles.

With the help of our system we can add a digital board or sirens at traffic signals. After we get information of the ambulance arrival or being stuck in the traffic congestion we can display such a message of ambulance arrival on the next traffic signals so that the citizens may make the route clear or least be aware of the situation. Another perspective of this project is, after the number plate recognition, with the use of data base we can segregate the ambulance number plate and hence after detection of ambulance we can provide them with the route with most less congestion through maps or GPS. Making sure that the ambulance and patient reaches hospital in time.

5. REFERENCES

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