

SURVEY ON AUTOMATED TOLL SYSTEM FOR NUMBER PLATE DETECTION

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ABSTRACT

Number Plate Detection using Image Processing is used for Toll System Management. At Present day Time, efficiency, fuel and pollution are a matter of priority. Image processing technology is used to overcome the important issues of vehicle time consumption and congestion. In this system image of the number plate of vehicle will be captured as an input. Using this image the number plate is detected and further process continues. Based on vehicle type Toll admin module is used for the calculation purpose of toll deduction. The Regional Transport Authority (RTO) enrolls the vehicle information and links it with the vehicle number plate. This system is based on OCR technique with python language.

Keywords: OCR, Number plate detection, Image processing, Toll

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I. INTRODUCTION

Number plate recognition is a form of automatic vehicle identification. A number plate is the unique identification of vehicle. It is an image processing technology used to identify vehicles by their own number plates. Real time number plate recognition plays an important role in maintaining law enforcement and maintaining traffic rules. It has wide applications areas such as toll plaza, parking area, highly security areas, boarder's areas etc. Number plate recognition is designed to identify the number plate and then recognize the vehicle number plate from a moving vehicle automatically. Automatic number plate recognition has three major parts: vehicle number plate extraction, character segmentation and Optical Character Recognition (OCR). Number plate extraction is that stage where vehicle number plate is detected. The detected number plate is pre-processed to remove the noise and then the result is passed to the segmentation part to segment the individually characters from the extracted number plate. The segmented characters are normalized and passed to an OCR algorithm. At last the optical character information will be converted into encoded text. The characters are recognized using Template matching. The final output must be in the form of string of characters.

Problem Faced:

1. Corruption in money collection at toll booths:- On the tollbooth corruption is occurred at the time of paying the toll tax, the toll cashier collect the correct amount of money but not give the collected count of money to toll admin at that time mostly chances of corruption.
2. Increasing rate of stolen vehicle:- In previous system, there is no any mechanism to detect the stolen vehicle which is pass through toll this increases the rate of stolen vehicle.
3. Vehicle congestion at toll booths:- In the existing system, the owner pass the vehicle through the toll then the cashier was give the receipt to every owner and by this the existing system is got slow and by this lots of vehicles is get waiting in the queue and by this vehicle congestion is occur.
4. Toll deduction is time consuming:- In the existing system, the payment of toll tax is as manual process, the toll payment is done by hand, giving cash due to the manual process the system is time consuming.

5. Manual system and Wastage of paper:- The payment process of existing system is manual process not an automatic process and the user of the vehicle pay the toll tax by hand and the cashier provide the paper receipt as the payment acknowledgment to the user by this the paper waste is more.

6. Handling cash and carrying credit cards:- The previous system is manual system and the payment of tax was the manual process hence a user always had to carry the cash or the credit cards for the payment of the tax.

II. LITERATURE SURVEY

[1] K. Hung and C. Hsieh, "A Real-Time Mobile Vehicle License Plate, "Tamkang Journal of Science and Engineering", vol. 13, no. 4,2010, pp.

Description: This method can eliminate any environmental interference during the license plate detection and improve the rate of accuracy of license plate detection and recognition.

[2] Ms.Sushama H.Bailmare, Prof. A.B.Gadicha ,” A Review paper on Vehicle Number Plate Recognition (VNPR) Using Improved Character Segmentation Method” International Journal of Scientific and Research Publications, Volume 3, Issue 12, December 2013 1 ISSN 2250-3153.

Description: Here he use the Sobel edge detection method, Automatic license plate recognition, Novel method used for detects edge & fill holes less than 8 pixels only, categoring features in each stage ,identifying & recognizing car license plate.

[3] M. M. Shidore, S. P. Narote, “Number Plate Recognition for Indian Vehicles” IJCSNS International Journal of Computer Science and Network Security, VOL.11 No.2, Feb. 2011 143.

Description: In this present the number plate extraction, character segmentation and recognition work, with english characters. Number plate extraction is done using Sobel filter, morphological operations and connected component analysis. Character segmentation is done by using connected component and vertical projection analysis.

[4] Dhiraj Y. Gaikwad Pramod B. Borole, “A Review Paper on Automatic Number Plate Recognition (ANPR) System”, International Journal of Innovative Research in Advanced Engineering (IJIRAE) Volume 1 Issue 1 (April 2014).

Description: The system first senses the vehicle and then gets an image of vehicle from the front or back view of the vehicle. The system has four main steps to get the required information. These are image acquisition, plate localization, character segmentation and character recognition. This system is implemented and simulated in Matlab.

[5] Takkedasila Johny, M. Maruthi Prasad Reddy,” RFID and Number Plate Based Two Level Authentication System

for Vehicles” ijmetmr,2015.

Description: Here Vehicle number plate is extracted by using the image segmentation and Optical character recognition technique which is used for the recognizing the character. And then resulting data is used to compare with the records on a database and data extracted from RFID. And in database there can be specific information like vehicle’s owner name, place of registration, or address, etc

III. BLOCK DIAGRAM

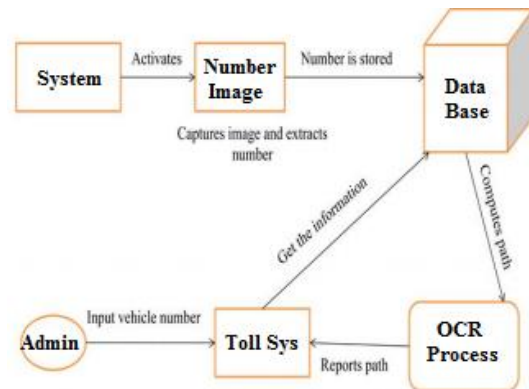


Fig 1. System block diagram

Description:

This system is to provide a base for building automatic number plate detection using image processing for toll collection at toll checkpoints. This system will help to save time as well as help to reduce congestion at toll checkpoints. This system will also help in monitoring any fraudulent behavior that takes place at the toll checkpoints. The proposed system will maintained the database of captured images placed at the toll checkpoint and will perform certain processes to detect the number plate of a vehicle.

IV. CONCLUSION

In this system we have checked and evaluated the accuracy of the OCR technique. The Template matching affects the accuracy of number plate recognition. We have found that there are some factors which affect the effectiveness of template matching based on OCR technique i.e. font type, noise in image, tilting etc.

In future the work can be done on these factors and efficiency may be increased further for better results.

REFERENCES

[1] K. Hung and C. Hsieh, "A Real-Time Mobile Vehicle License Plate, "Tamkang Journal of Science and Engineering", vol. 13, no. 4,2010, pp.

[2] Ms.Sushama H.Bailmare, Prof. A.B.Gadicha ,” A Review paper on Vehicle Number Plate Recognition (VNPR) Using Improved Character Segmentation Method”

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[3] M. M. Shidore, S. P. Narote, "Number Plate Recognition for Indian Vehicles" IJCSNS International Journal of Computer Science and Network Security, VOL.11 No.2, Feb. 2011 143.

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[5] Takkedasila Johnny, M. Maruthi Prasad Reddy, "RFID and Number Plate Based Two Level Authentication System for Vehicles" ijmetmr, 2015.