

Vehicle Number Identification and Logging System Using Optical Character Recognition

G. Sai Sudheer¹, Ch. Ram Prasad², M. Kalyan Chakravarthi³
and B. Bharath⁴

ABSTRACT

Number Plate Recognition is a picture preparing innovation which utilizes number (permit) plate distinguish the vehicle. The goal is to outline an effective programmed approved vehicle recognizable proof framework by utilizing the vehicle number plate. The primary reason for this paper is to plan a procedure called Optical Character Recognition (OCR) is an utilization of example acknowledgment which naturally identifies and perceives the optical characters without human intercession. The created framework first distinguishes the vehicle and afterward catches the vehicle picture. Vehicle number plate district is extricated utilizing the picture division as a part of a picture Optical Character acknowledgment strategy is utilized for the character acknowledgment. The subsequent information is then used to contrast and the records on MS Access database in order to recover the particular data like the vehicle's proprietor, spot of enlistment, location, and so forth. It has an extensive variety of uses intoll collection system, parking lot system. Toll gate is controlled using the LabVIEW by interfacing the Arduino board. In this proposed system is implemented using Vision Assistant and LabVIEW imageprocessing tools.

Keywords: Optical Character Recognition (OCR), Vision Assistant, NI smart camera, MS Access data base, Lab VIEW

1. INTRODUCTION

The Vehicle Number Plate Recognition was gained much interest during the previous years, along with the improvement of digital camera and the increase in Recognition techniques. It was simply ability to automatically extract and recognition a vehicle number plate's characters from an image^[4]. Number Plate Recognition system have a variety of Possibilities. It has a wide range of applications in toll collection system, parking lot system, etc^[1]. In general, recognition of vehicle number plate is done by manpower, who takes more time to enter the data into data base and need more members to do this and indeed there is loss of accuracy in many situations.

The Optical Character Recognition (OCR) is developed for vehicle's Number plate identification to assist the human operator and to improve the speed^{[2][3]}. Many of these applications require real-time performance to be practical. This system is capable of taking the pictures of moving vehicles with a acquisition rate of 65FPS and resolution of 640 × 480 pixels. The number plate acknowledgment framework works in three stages

Stage I-Identification and capturing the vehicle picture.

Stage II-Extraction of number plate in a picture.

^{1,2,3} School of Electronics Engineering, VIT University, Chennai, India, *Emails: saisudheer94@gmail.com, chillapalli.ramprasad423@gmail.com, maddikerakalyan@vit.ac.in*

⁴ School of Electronics Engineering, Lovely Professional University, Phagwara, Punjab, 144411, *Email: bharath.15385@lpu.co.in*

Stage III-Image division system to get singular character and optical character acknowledgment (OCR)^[6] to perceive the individual character and to store the perceived characters in the information base.

In the proposed framework, optical character acknowledgment is created utilizing Vision Assistant^[5] and LabVIEW picture preparing devices.

2. OBJECTIVE

The paper is produced for acknowledgment of number plate of vehicle utilizing Optical Character Recognition (OCR) system. The perceived optical characters are sent to the database. The subsequent information is then used to contrast and the records on database to recover the particular data like the vehicle's proprietor, spot of enrollment, location, and so on in the event that it approved vehicle, it can allowed else it won't allowed. It has an extensive variety of utilizations in toll accumulation framework, parking garage framework.

3. BLOCK DIAGRAM

In this paper we are using NI 1772 USB smart camera captures the image. The captured image is given to the vision assistant in LabVIEW where optical character recognition is performed and the recognized

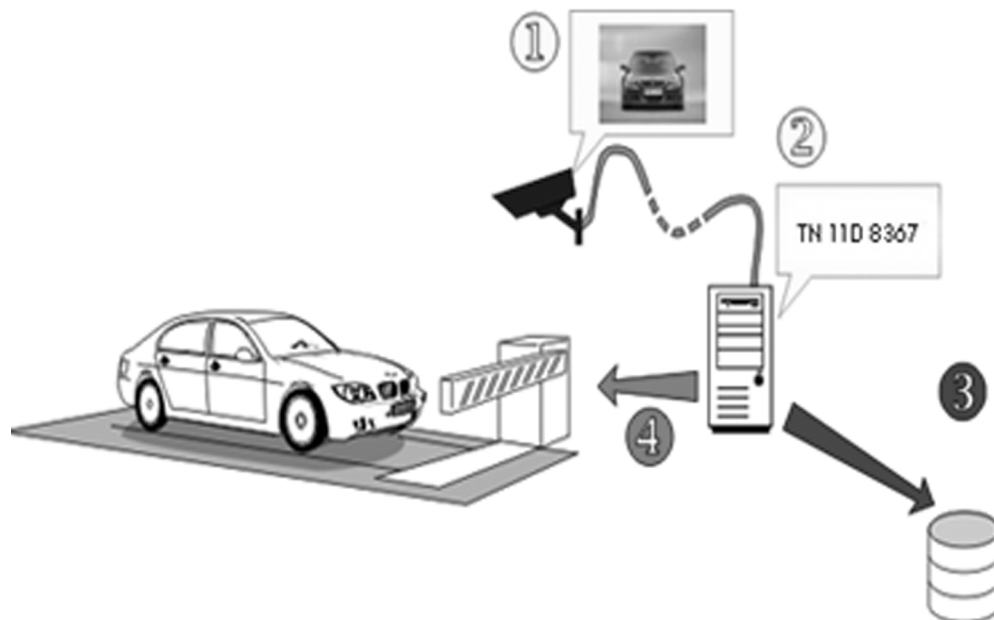


Figure 1: Block Level implementation of project schematic

optical characters are stored in database .LabVIEW and arduino are connected using LIFA to control the servo motor. The servo motor provides the opening and closing of the toll gate.

4. FLOW CHART

The general number plate acknowledgment framework can be separated into two models i.e programming model and equipment model. The area will talk about the both models in point of interest.

4.1. Programming Model

The fundamental part of this framework is the product model. The product model uses picture preparing procedures which are actualized in LabVIEW

The number plate acknowledgment calculation is partitioned into four sections:

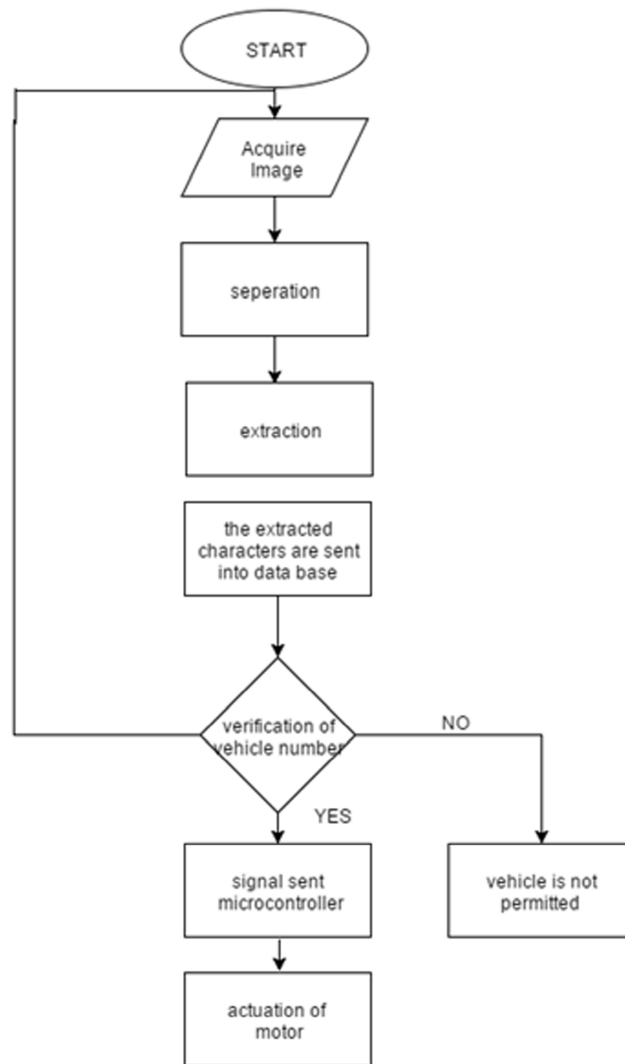


Figure 2: Process Flow of the extraction and detection of the characters

1. Image Acquisition
2. License Plate Extraction
3. Selecting the Region of Interest (ROI)
4. Character Recognition

4.1.1. Image Acquisition

Image Acquisition is the first step in Vehicle Number Plate Recognition system and there are a number of ways to acquire images, the current literature discusses different image acquisition methods used by various authors. The catching of a picture utilizing NI 1772 USB camera associated with the PC.

4.1.2. License Plate Extraction

License plate extraction is the most important phase in Vehicle Number Plate Recognition system. The second step is to extract the plate from the image and the recognized number plate. The proposed a method for extracting characters without of their position and size in the image. The technique is based on scale shape analysis, which in turn is based on the assumption. The remove the plate from the picture and the perceived number plate.

4.1.3. Selecting the Region of Interest (ROI)

The ROI applies to both the preparation and perusing of the characters. Amid preparing, the ROI is the area that contains the articles that we need to prepare. Amid perusing, the ROI is the area that contains the items we need to peruse by contrasting the articles with the character set. We can utilize the ROI to viably build the exactness and productivity of OCR.

4.1.4. Recognition

Recognition is final section. In the section presents the methods that are used to classify stored characters and then recognize the individual characters. The classification is based on the extracted features. Statistical pattern recognition approach for recognition but their technique found to be inefficient. This approach is based on the probabilistic model and uses statistical pattern recognition approach. In this approach identifies the characters based on the number of black pixel rows and columns of the character and comparison of those values to a set of templates or signatures in the database.

5. RESULTS

Figure 3 shows the training of the characters in the recognized in recognized plate using conservative approach

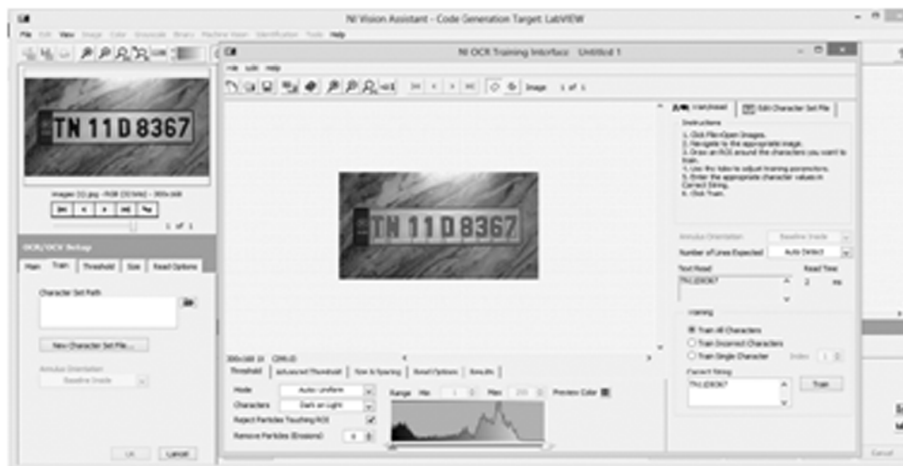


Figure 3: Training Console of the module in LabVIEW

Figure 4 shows the data base where the recognized optical characters are stored in MS ACCESS data base

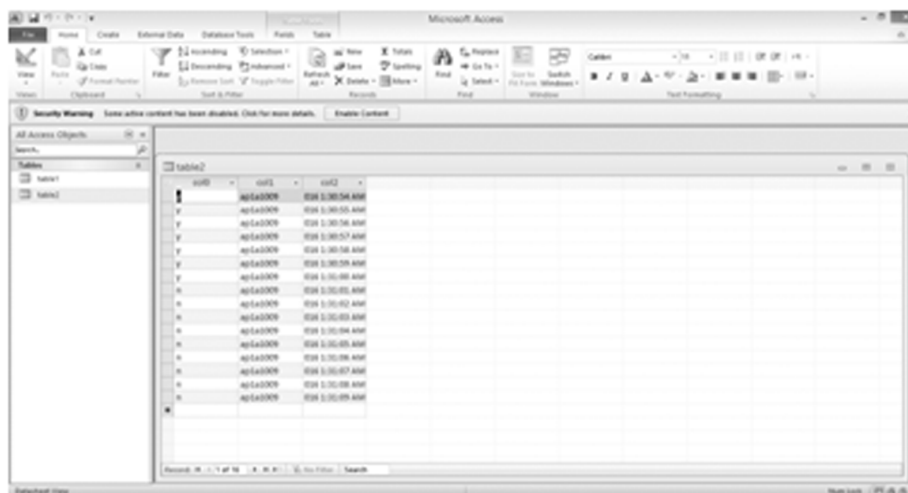


Figure 4: MS-Access Database used for logging

Figure 5 shows the interfacing between the data base and LabVIEW.

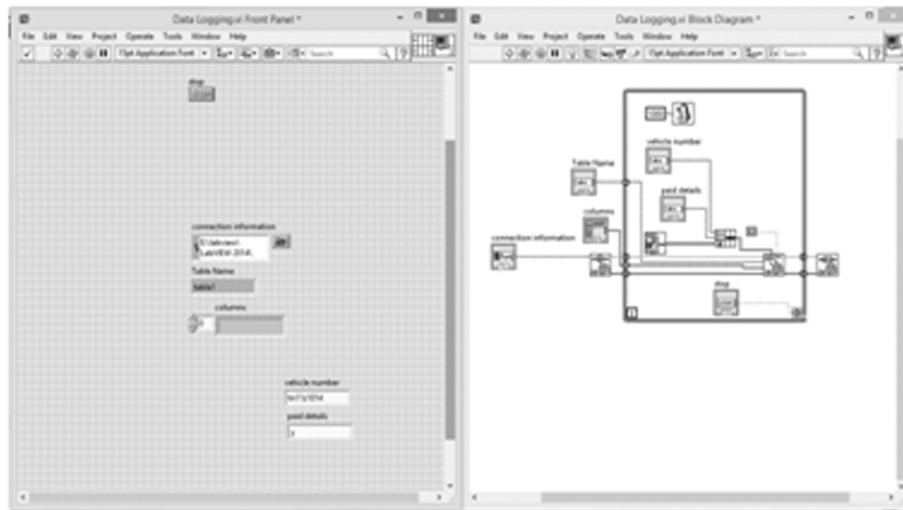


Figure 5: Interfacing between the data base and LabVIEW

Figure 6 shows writing an SQL query to search the specified data in MS ACCESS data base

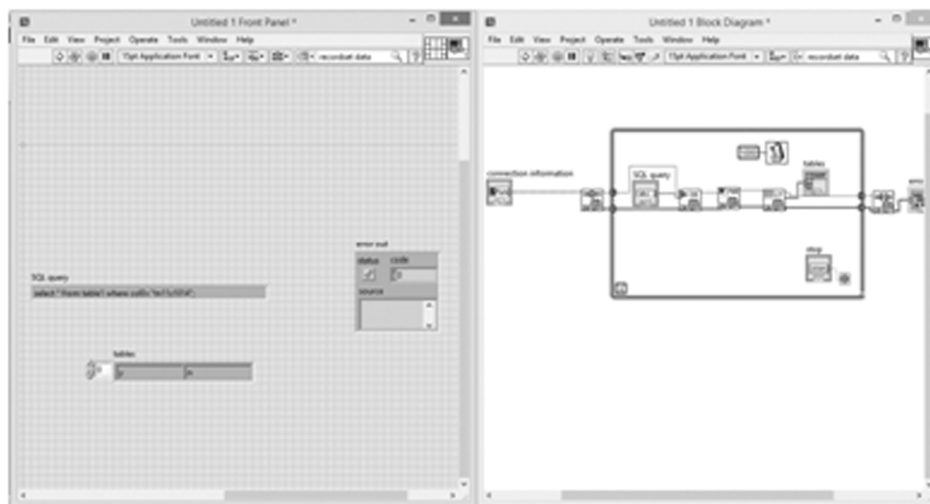


Figure 6: SQL structure to retrieve the data from data base

Figure7 shows the recognized characters in the string and characters are sent into the MS ACCESS data base.

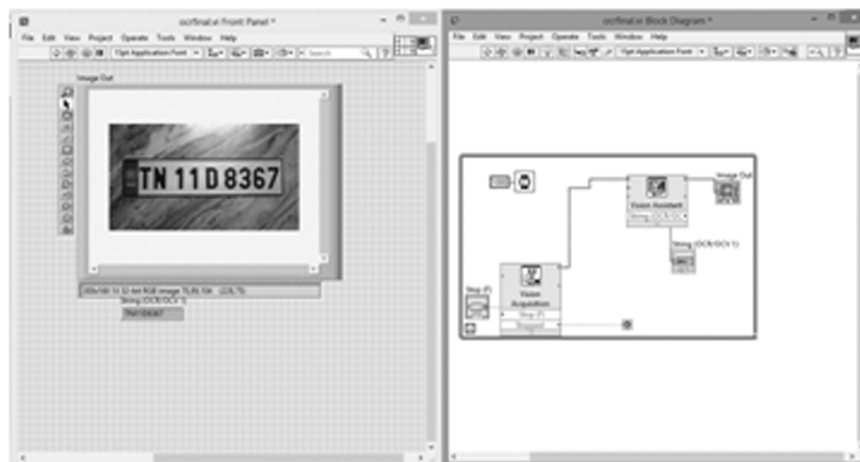


Figure 7: Character recognition using the trained LabVIEW module

6. CONCLUSION

The procedure of vehicle number plate acknowledgment requires high precision when we are taking a shot at an extremely bustling street or stopping which may not be conceivable physically as an individual has a tendency to get exhausted because of dull nature of the employment and they can't monitor the vehicles when there are different vehicles are going in a brief timeframe. A comparable exertion has been made in this work to build up a precise and programmed number plate acknowledgment framework. We have utilized Vision right hand alongside LabVIEW to get the wanted results. The setup has been tried for vehicles containing distinctive number plates from various states. We get a general effectiveness of 98% for this framework. In spite of the fact that this precision is not satisfactory all in all, but rather still the framework can be utilized for vehicle distinguishing proof.

REFERENCES

- [1] Seetharam S., Suresh Kumar M., Sai Saravana Harish R, Manikandan T “Registration Plate Recognition System”, International Journal of Scientific Engineering and Research (IJSER), ISSN: 2347-3878 Volume 2 Issue 3, March 2014.
- [2] Ayatullah Faruk Mollah, Nabamita Majumder, Subhadip Basu and Mita Nasipuri, “Design of an Optical Character Recognition System for Camera-based Handheld Devices”, IJCSI International Journal of Computer Science Issues, ISSN:1694-0814 Vol. 8, Issue 4, No 1, July 2011.
- [3] Ajanthan T, Kamalaruban P, and Ranga Rodrigo, “Automatic Number Plate Recognition in Low Quality Videos”, IEEE 8th International Conference on Industrial and Information Systems, ICIIIS 2013, Aug. 18-20, 2013.
- [4] Qadri, M.T.; Dept. of Electron. Eng., Sir Syed Univ. of Eng. & Technol., Karachi, Pakistan; Asif, M. Automatic Number Plate Recognition System for Vehicle Identification Using Optical Character Recognition
- [5] Y. K. Al-Audah, A. K. Al-Juraifani, “A Real-Time License Plate Recognition System for Saudi Arabia using LabVIEW”, M.A. Deriche King Fahd University of Petroleum & Minerals, Saudi Arabia.
- [6] Yan, Dai., Hongqing, Ma., Jilin, Liu., and Langang, Li, “A high performance license plate recognition system based on the web technique, Proceedings IEEE Intelligent Transport Systems, pp. 325-329, 2001.
- [7] Rajesh Bodade, Ram Bilas Pachori, Aakash Gupta, Pritesh Kanani, Deepak Yadav “A Novel Approach for Automated Skew Correction of Vehicle Number Plate Using Principal Component Analysis”, Military College of Telecommunication Engineering, Mhow, Indore, India, rajeshbodade@gmail.com Indian Institute of Technology Indore, Indore, India, pachori@iiti.ac.in
- [8] BALAMURUGAN.G SAKTHIVEL PUNNIAKODI RAJESWARI.K ARULALAN.V “AUTOMATIC NUMBER PLATE RECOGNITIONSYSTEM USING SUPER-RESOLUTIONTECHNIQUE”, 2015 International Conference on Computing and Communications Technologies (ICCCCT'15)
- [9] S. Kranthi, K. Pranathi and A. Srisaila “Automatic Number Plate Recognition”, International Journal o Advancements in Technology , ISSN 0976-4860, Vol. 2, No 3, July 2011.
- [10] Optasia Systems Pvt Ltd, [http ://www. Singaporegateway.com/optasia/imps](http://www.Singaporegateway.com/optasia/imps), Singapore.
- [11] Perceptics,<http://www.perceptics.com/lpr.html> , northrop grumman information technology, USA.