WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

License Plate Recognition System using Image Processing with (OCR)

Khald M Hassen Wane[1], Ibrahim Abdlahafiez Amar Alnogga[2], Ahmed Said Ahmed Ashit[3]

Higher Institute of Sciences and Technology-Sokna-Aljufra, Libya[1]

Sirte University , Libya [2]

High institute of technical and medical science ,Aboslim , Libya

A B S T R A C T

A license plate recognition system is an automatic system that is able to recognize a license plate number, extracted from an image device. Such system is useful in many fields and place such as parking lots, private and public entrances, border control, theft and vandalism control. Intelligent Transportation System (ITS) has become the main part of the Transportation Industry these days and it consists of License Plate Recognition (LPR). It also called Car Plate Recognition (CPR) or Automatic Number Plate Recognition (ANPR) System. This paper presents car license plate recognition system, this system consists of three main stages. First stage is locating the license plate from the input image i.e. license plate extraction. The second stage is extracting the characters and third stage consists of character recognition. Therefore, as a part of vehicle license plate recognition system, license plate detection is the most important part. As the license plate is detected at correct position then character recognition rate has been greatly increased. In LPR system, License plate detection is the first and fundamental stage. In the final stage the character will recognized using (OCR)

Keywords: LPR, Character Segmentation, feature extraction, OCR

1. Introduction

With the consistently expanding request of hostile to psychological oppression and public security overall tag location and acknowledgment frameworks are utilized to battle against hoodlums. With improvement of transportation innovation and the all-inclusiveness of the vehicles, numerous issues emerges, for example, security control of confined regions, parking garages the board, traffic checking and so on, hence, programmed vehicle tag the executives framework has turned into a well-known subject. Tag is the ID of a vehicle. Ere introduce the paper, and put a nomenclature if necessary, in a box with the same font size as the rest of the paper. The paragraphs continue from here and are only separated by headings, subheadings, images and formulae. The section headings are arranged by numbers, bold and 9.5 pt. Here follow further instructions for authors.

1.1 *Image Processing History*

Ahead of schedule of 1920s link picture transmission framework was found by Bart lane , it was utilized to communicate paper pictures across the Atlantic. The pictures were coded and sent by transmit then printed by an extraordinary message printer. It required around three hours to send a picture. The primary frameworks upheld 5 dim levels.

In 1964 - NASA's Jet Propulsion Laboratory started dealing with PC calculations to further develop pictures of the moon. Picture was sent by Ranger 7 test.

1.2 *Image Processing Techniques*

1.2.1 *Image Segmentation*

In computer image segmentation is the process of partitioning a image into multiple segments (sets of pixels). Segmentation is used to simplify and/or change the representation of an image into more easier to analyse. Image segmentation is used to locate (lines, curves, etc.) in images. (Ohlander, Ron etal..(1978))

1.2.2 *Edge Detection*

Edge detection is a set of mathematical methods which used to identify points in a digital image at which the image brightness changes sharply. The points which changes sharply are typically organized into a curved line segments called edges. (Ohlander, Ron etal..(1978)).

1.2.3 *Feature Extraction*

Feature extraction is an important step for simulating and training the system. It is performed on each segmented character.

2. Optical Character Recognition (OCR)

Optical character recognition "OCR", is the electronic, mechanical conversion of scanned images of typewritten text into computer-readable text. It is used as a form of data entry from some sort of a paper data , like passport documents, invoices, bank statement, mail, or any recorded number. OCR is used in field of research in pattern recognition, computer vision and artificial intelligence. The first versions needed to be programmed with images of each character, then worked on one font at a time. "Intelligent" systems that have a high degree of recognition accuracy for most fonts are now common. OCR is used to process checks and credit cards.

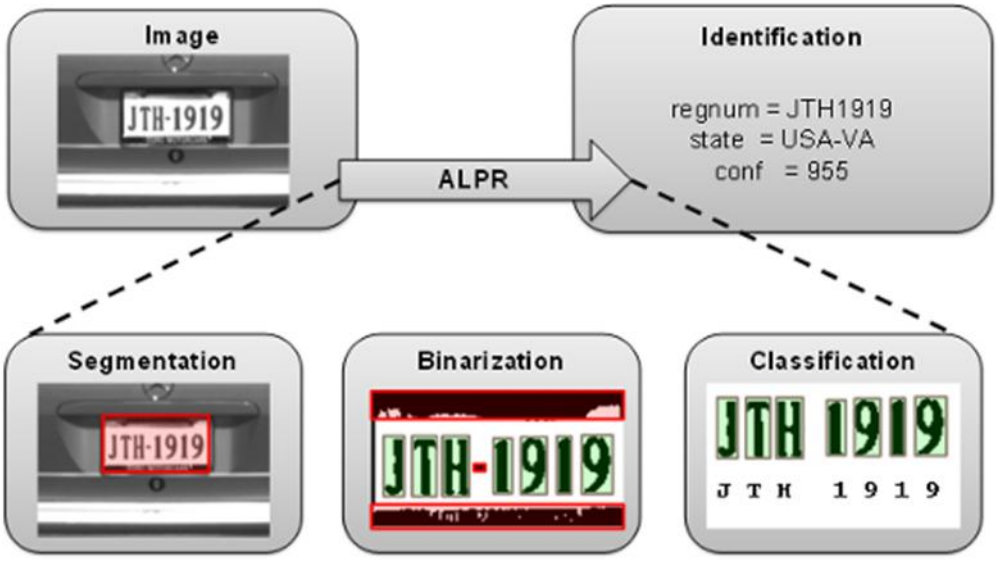

Figure 1. The OCR Application

3. METHODOLOGY

Inn this paper we use Matlab software and tools .License Plate Recognition consists of three main phases: 1. License Plate Detection/Extraction 2. Character Segmentation and 3. Character Recognition. In this paper pictures of vehicles are used as input to the System. In the first step image enhancement is performed using Contrast stretching followed by Tophat-Bothat Transform. Then in the next step Sobel Operator is used for edge detection. After edge detection series of morphological operations are performed in order to detect the license plate. Then character segmentation is done using line scanning technique, scanning is done from left to right of the plate. After Character Segmentation, feature extraction is performed to obtain the unique features of every character, finally the character recognized using OCR

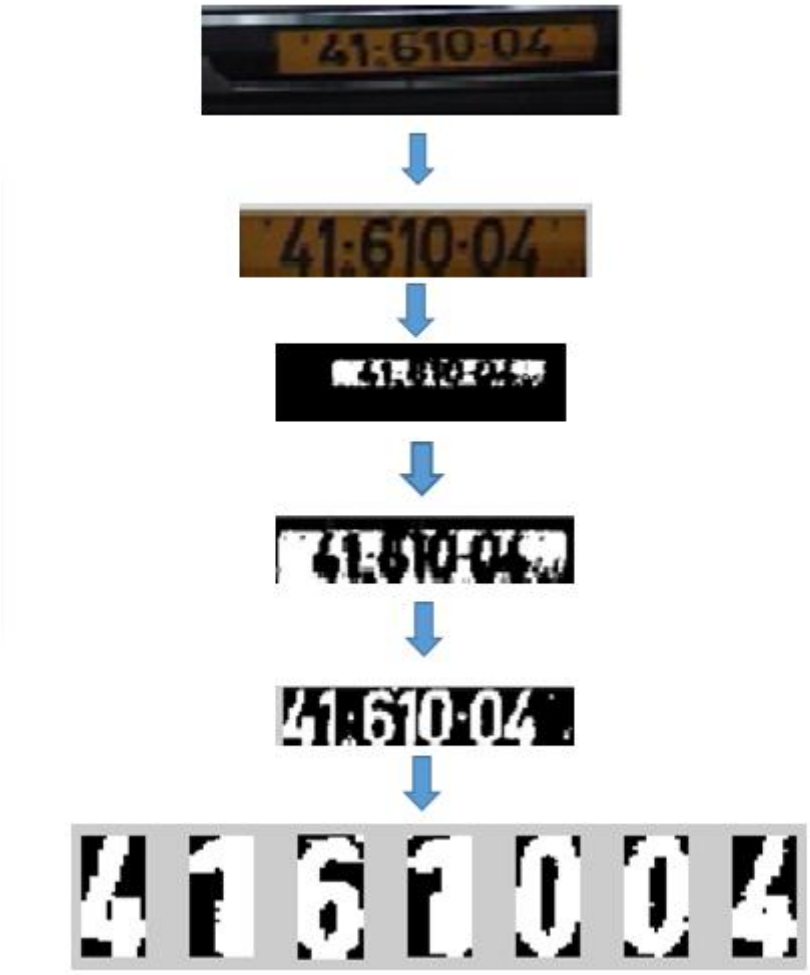

Figure 2. Flowchart of the proposed system

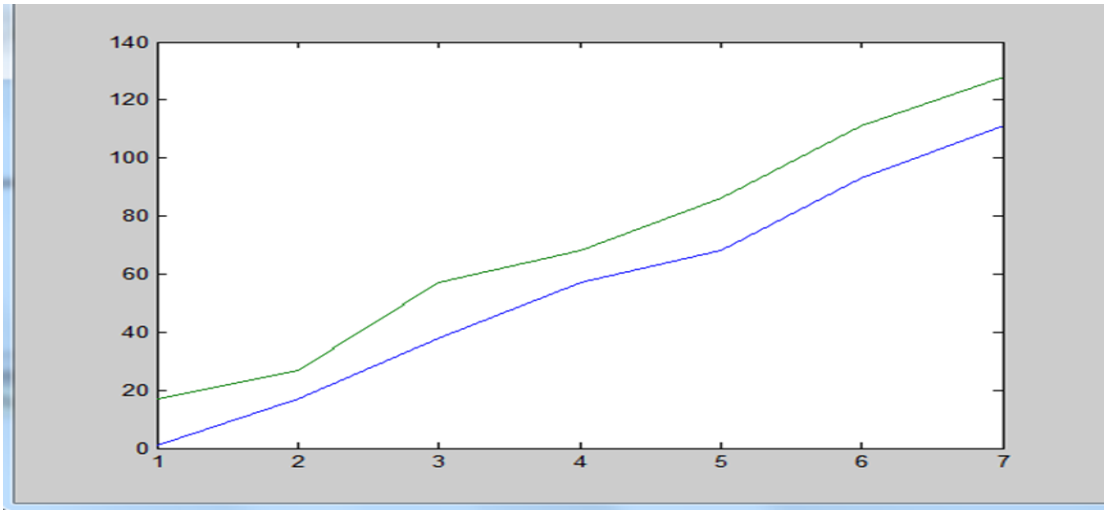

Figure 3. System performance

4. Test & result

In this paper, nine License Plate images where used to test the system, the result show that the system recognized 8 License Plate images, which the accuracy was 88%.

Table 1. the system result

	Character Recognition Rate (Recognized image/Total Image)	Accuracy
(OCR) optical character recognition	8/9= 0.88	88%

5. Conclusion

In this paper license plate character recognition system was designed with Optical Character Recognition(OCR) method was used to develop the system. The structure of license plate character recognition system was designed. Method for character recognition of license plate image based on feature extraction approaches are proposed. It is observed that, as a feature extraction method has more features for training the system thus its simulation accuracy is higher. Using feature extraction for OCR is trained. The proposed approach of license plate recognition can be implemented by the police to detect speed violators, parking areas, highways, bridges or tunnels. The character recognition result using optical character recognition (OCR) was 88%.

References

Marta de Ruijter-Villani Utrecht University, the Netherlands Workshop: Doppler Ultrasonography in Equine Reproduction 26th October 2012.

Andrew G. Tescher San Diego Convention Centre • San Diego, CA USA 10-14 August 2008 .

HardikPandit&Dr. D M Shah Application of Digital Image Processing and Analysis inHealthcare Based on Medical Palmistry,2011.

H. Cheng, X. Li, On the application of image decomposition to image compression and encryption, in: P.Horster (Ed.), Communications and Multimedia Security II, IFIP TC6/TC11 Second Joint WorkingConferenceon Communications and Multimedia Security, CMS '96, Essen, Germany, September 1996, Chapman & Hall, London, pp. 116–127.

Ohlander, Ron; Price, Keith; Reddy, D. Raj (1978). "Picture Segmentation Using a Recursive Region Splitting Method". *Computer Graphics and Image Processing* 8 (3)

J. R. Parker (2011). Algorithms for Image Processing and Computer Vision (2nd ed.).

Krieger, C. "Neural Networks in Data Mining", University of Massachusetts, 1996.

Oskoei, H., "An efficient simplified neural network for solving linear and quadratic programming problems", AppliedMathematics and Computation, 2006**.**

Russell D. Reed, Robert J. Marks II, Neural Smithing: Supervised Learning in Feedforward Artificial Neural Networks2011**.**

NeuroAI, "Neural networks: A requirement for intelligent systems", 2007.

Marzban, "Stochastic Neural Networks with the Weighted Hebb Rule", University of Oklahoma, 2001**.**