Automatic License Plate Recognition System

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Abstract: *Automatic Number Plate Recognition (LPR) plays an important role in numerous applications and various techniques have been proposed. In this paper we will learn about the automatic license plate detection of the security purpose and documentation of entry of vehicles inside any building. In this technique we are using easy-OCR for detection of the characters and numbers present in the number plate. By using this technique, we can store the number plate details and vehicle entry time in an accurate rate and in a faster way. In this project we are using the camera to take the picture of the number plate and then by using easy OCR we are taking the characters and number values from the image of the number plate and then the data is stored in the data base and can be exported when ever needed.*

Keywords: OCR, Licence plate, image, car, capture, pre-process, python

I. INTRODUCTION

Automatic range plate vehicle plate registration code recognition (ALPR) could be a kind of automatic vehicle identification. it's a picture process technology accustomed establish vehicle by solely their license plate [1]. Automatic registration number plate Recognition is one amongst the fundamental techniques of Intelligent Traffic System (ITS) [2], [3]. The ALPR was made-up in 1976 at the Police Scientific Development branch in UK. However, it gained loads of interest in last decade in along with the evolution of the camera and the increase in procedural activity, it is simply the ability to mechanically extract and recognize the character of a vehicle's license plates from the associate's image. Essentially, it contains an evil camera or frame that has the ability to take an image, perform amount placement within the image, and extract the character for the character recognition tool to translate the image into a clear numeric character [4]. It can be used to warn and stop criminal activity and for security management of restricted spaces, such as. B. military zones or areas around large government offices.

1.1 OCR

Optical character reputation or optical person reader (OCR) is that the virtual or mechanical conversion of photos of typed, written or written text into system-encoded text, whether or not or now no longer or now now no longer from a scanned document, a image of a document, a scene-image (for example the text on signs and symptoms and signs and symptoms and billboards in a totally landscape image) or from subtitle text superimposed on a picture (for example: from a television broadcast). extensive used as a number of data access from revealed paper facts records – whether or not passport documents, invoices, financial institution statements, computerised receipts, enterprise cards, mail, printouts of static-facts, or any suitable documentation – it is a not unusual place method of digitizing written texts so they may be electronically edited, searched, keep on a whole lot of compactly, displayed on-line, and applied in system methods adore mental function computing, system translation, (extracted) textual content-to-speech, key data and textual content mining. OCR will be a subject of evaluation in sample reputation, pc technology and laptop vision. Early variations required to gain knowledge of with pix of each man or woman, and labored on one font at a time. Advanced structures able to production a excessive diploma of reputation accuracy for lots fonts are presently not unusualplace, and with aid for a range of virtual picture record layout inputs. Some structures are able to reproducing formatted output that carefully approximates the preliminary web page collectively with images, columns, and opportunity non-textual components.

II. LITERATURE SURVEY

Chengpu Yu [1] Took over the feature of individual line width and plate satiation matching to find and section the plate. In the article, the writer used the satiation matching characteristic and the stroke width constraint to become aware of the

rims of the characters at the plate. When a letter has best one linked area, they use the range of holes to symbolize the inner shape and the peripheral define of the individual to symbolize the outside characteristic.

Jitendra Sharma [2] deliberate a license plate recognition method that makes use of ripple transform for the development of the recognition rate and time for character reputation. it is proposed a manner of Neural community for car registration code recognition. it is analyzed the overall performance of the gadget victimisation Radical Basis perform Network. The proposed method offers the better overall performance in comparison of correlation-primarily based totally method.

M. T. Qadri and M. Asif [3] Enforced the automatic range Plate Recognition (ANPR) machine on the entrance of extraordinarily limited area. in the course of this paper, the ANPR machine is carried out in MATLAB, and its overall performance is tasted on actual image.

Kaur and V.K. Banga [4] presented an set of rules for figuring out automobile numbers the use of optical man or woman recognition (OCR) technology. In this article, step one is to take the photo with a digital digicam approximately 1 meter away from the registration code. a clean photo with out distortion. The 2d step is to crop the registration code from the captured picture. The cropped picture is the enter for man or woman recognition. The 1/3 step is man or woman recognition. The OCR method is then used to apprehend a registration code with optically processed published characters primarily based totally on template matching. Template matching impacts registration code accuracy. Also referred exceptional strategies in detection of visitors factors at the Indian roads.

2.1 Proposed System Model

The proposed ANPR system is made up of four block as shown in Figure 2. Our system is capable of using either Edge-detection or Template matching combined to mathematical morphology to extract the number plate from the input image. Character recognition is done by the open source Tesseract OCR engine

III. PROPOSED METHOD

In this paper we are using the OCR to detect the number plate and to store in the database and later it can be exported to the excel sheet for further process. First, we use the camera to capture the image and then the image is later processed and is converted into image to text format and then the number plate details are stored in the data base.
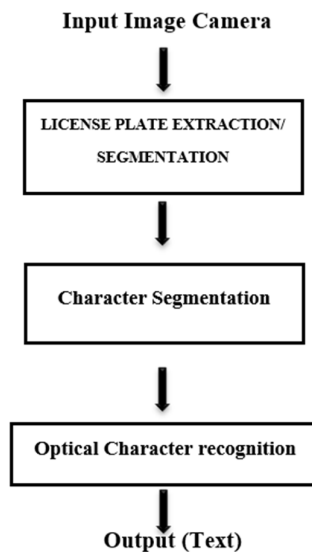

Fig1: Model of automatic license plate detection

3.1 Capture

The photograph of the automobile is captured using a high-decision photographic digital digicam. a miles higher choice is companion diploma Infrared (IR) digital digicam. The digital digicam may also be rolled and pitched with relation to the license plates.

216

Impact Factor **6.252**


Fig2: Original image

3.2 Preprocess

Pre-processing is that the set algorithms carried out at the photograph to reinforce the quality. It's a completely crucial and standard innovate any computer imaginative and prescient device. For the contemporary device pre-processing entails 2 processes: length – The photograph length from the digital digicam can be massive and can pressure the device slow. It's to be resized to a likely side ratio. Convert shade area – pix captured exploitation IR or photographic cameras are both in uncooked layout or encoded into a few multimedia device standards. Normally, those snap shots can be in RGB mode, with three channels (viz. red, green and blue).

Fig 3: Image converted to B/W

IV. RESULT
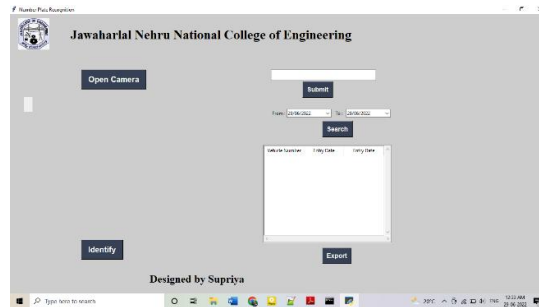
The above figure shows the dashboard of the application where all the controls are given like capturing the image, Identify the number, Submit button, database area and export button.

The above image shows the image captured by the application and further it will be processed to get the number plate data and store them.

The above figure shows the converted text of the number plate images and then the data will be imported into the database and later can be exported into csv file.

The above image shows the stored data set of the vehicles including the date and time of the arrival of the vehicles.

V. CONCLUSION

From the very last rankings we will see that OpenCV has the threshold over Matlab for picture and video processing improvement. Although Matlab has an smooth gaining knowledge of curve, constructed in reminiscence management, a superb assist section, it's miles very gradual to execute code, and is luxurious to get commenced in. While OpenCV and OCR may be tough to debug and calls for much "housekeeping code" wanted for reminiscence management, header files, etc., it wins out because of its unfastened cost, the importance of pattern code to be had at the internet, the quick improvement route from prototype code to embedding code, the beneficial programming talents learnt from its use, and its super-speedy speed. By the use of this technique we will effortlessly keep the automobile variety plate and additionally the date and time of the appearance of the automobile may be effortlessly stored.

REFERENCES

[1]. Chengpu Yu, Mei Xie, Jin Qi, "A Novel System Design of License Plate Recognition", International Symposium on Computational Intelligence and Design , 2008.

[2]. J. Sharma, A Mishra, K. Saxena and S. Kumar , "A Hybrid Technique for License Plate Recognition Based on Feature Selection of Wavelet Transform and Artificial Neural Network", International Conference on Reliability, Optimization Information Technology, 2014.

[3]. Muhammad Tahir Qadri, Muhammad Asif, "Automatic Number Plate Recognition System for Vehicle Identification Using Optical Character Recognition", International Conference on Education Technology and Computer, 2009.

[4]. Er. Kavneet Kaur, Vijay Kumar Banga, "Number Plate Recognition Using OCR Technique", International Journal of Research in Engineering and Technology, vol 2, Issue. 09, sep-2013.

[5]. Arunkumar K L, Ajit Danti, Manjunatha H, "Classification of Vehicle Make Based on Geometric Features and Appearance-Based Attributes Under Complex Background" , Springer 1035 (CCIS), pp 41-48

[6]. K L Arunkumar, Ajit Danti, "A novel approach for vehicle recognition based on the tail lights geometrical features in the night vision", International Journal of Computer Engineering and Applications, Volume XI

[7]. Manjunatha HT, Arunkumar K L, Ajit Danti, "A Novel Approach for Detection and Recognition of Traffic Signs for Automatic Driver Assistance System Under Cluttered Background", Springer 1035 (CCIS), pp 407-419

[8]. KL Arunkumar, A Danti, HT Manjunatha, "Estimation of vehicle distance based on feature points using monocular vision", IEEE 8816996 (2019), 1-5

[9]. KL Arunkumar, A Danti, HT Manjunatha, D Rohith, "Classification of Vehicle Type on Indian Road Scene Based on Deep Learning", Springer, Singapore 1380 (2021), 1-10

[10]. HT Manjunatha, A Danti, KL ArunKumar, D Rohith, "Indian Road Lanes Detection Based on Regression and clustering using Video Processing Techniques", Springer, Singapore 1380 (CCIS), 193-206

[11]. Arunkumar K L, Ajit Danti, "Recognition of Vehicle using geometrical features of a tail light in the night vision, National Conference on Computation Science and Soft Computing (NCCSSC-2018)

[12]. Manjunatha HT and AjitDanti. "A Novel Approach for Detection and Recognition of Traffic Signs for Automatic Driver Assistance System Under Cluttered Background" - Recent Trends on Image Processing and Pattern Recognition, Springer Nature Singapore, Pte Ltd. 2019, RTIP2R 2018, CCIS 1035, pp. 1–8, 2019, ISBN 978-981-13-9181-1

[13]. Manjunatha HT and Ajit Danti. "Detection and Classification of Potholes in Indian Roads using Wavelet Based Energy Modules", IEEE- 978-1-5386-9319-3/19 © 2019

[14]. Manjunatha HT and AjitDanti," Indian traffic sign board recognition using Normalized Correlation Method", International Journal of Computer Engineering and Applications (IJCEA), Volume XII, Issue III, March 18, ISSN 2321-3469

[15]. Manjunatha HT and AjitDanti, "Segmentation of Traffic Sign Board in a cluttered background using Using Digital Image Processing", National Conference on Network Security, Image Processing and Information Technology, March 2017.