

AUTOMATIC NUMBER PLATE RECOGNITION USING IMAGE SEGMENTATION

Ms. V. Poornima¹, Ms. A. Carolin flora², Mrs. J. Priyadharshini³

^{1,2}Dept of computer science, Research Scholars, St. Joseph's college for women- Tirupur, India.

³ Head of the Dept of computer science (PG), St. Joseph's college for women- Tirupur, India.

Abstract- This method of Automatic Number Plate Recognition (ANPR) is one of the solutions of such a kind of problem. There are various methodologies used but it is a challenging task as some of the features like high speed of vehicles, languages of number plate & mainly non-uniform letter on number plate issues a lot in recognition. License Plate Recognition plays main role on the traffic monitoring and parking administration. They investigate the vehicles and capture the image and the number plate of vehicles is extracted from image using image Segmentation and Optical Character Recognition technique. The follow-on data compares the database record so that we come up with the License plate number such as open to industrial system which effectively detects & recognizes the vehicle number plate on true image fair when the pixel is of low resolution.

Keywords: Number plate recognition, Optical character recognition, image segmentation, template matching.

1. INTRODUCTION

The ANPR (Automatic Number Plate Recognition) plays a main part in various systems like traffic observance system, Fault detection system, lifted vehicle detection etc. Hence ANPR is used by the city traffic department to monitor the traffic and track the lifted vehicle. While ANPR is an extremely old research area in image processing it is expanded year by year. Identifying the number plate from the image or video is not an easy task. The task of number plate writing style varies from country to country so that recognizing the number plate is difficult. In Indian number plate, writing style changes from state to state. In India, the number plate is distinct for two wheelers and four wheelers. For Four wheelers, the number plate's framework are also different, i.e. yellow for tourist vehicles and white for private cars. These are the basic challenges to keep in mind before executing the ANPR system.

1.1 Image Capture: In this step, video image has to be captured by any quality camera or by extracting the attracted frame a stream of video. Capture the image from the video stream and it's needed an additional work.

1.2 Image Preprocessing: Once the involved image is being captured in which number plate obvious and fine texture pattern, then the furthest processing of the image is carried out. It has many steps: resize the image

resolution, removal of noise from an image, and conversion of the image from RGB to gray and then Binary (black and white).

1.3 Character Segmentation: After Preprocessing the number plate region of the image is extract.

1.4 Optical Character Recognition (OCR): Electronic conversion of handwritten or printed text images into machine-encoded text. Here, OCR used to recognize the number from the segmented Image.

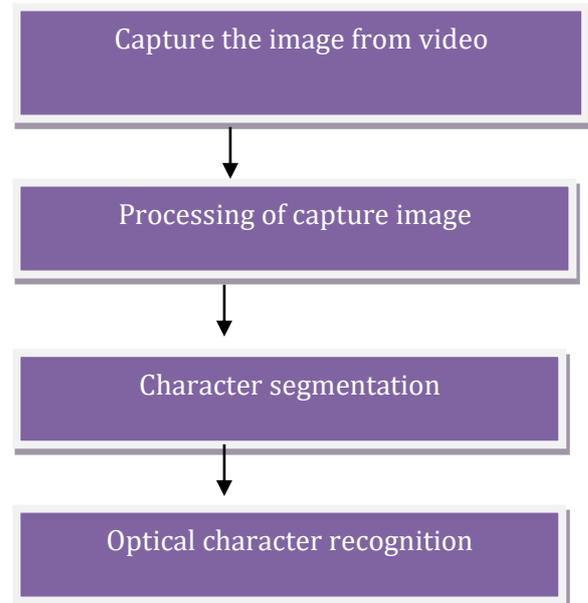


Fig-1: Flow Diagram

2. LITERATURE REVIEW

In [1], it presents an online corrected structure for automatic number plate recognition which can be utilized as a reason for some genuine universes ITS benefits. The framework is calculated to handle misty vehicle number plates, varieties of climate and various lighting conditions, distinctive activity circumstances, and rapid vehicle plates. Additionally, it addresses variable problems by indicate legitimate equipment stages alongside ongoing, strong, and imaginative calculations. And have assembled enormous and unexpectedly comprehensive information sets of Persian tags for assessments, examinations, and change of different included calculations. The information sets

include pictures which were fixed in the junction, roads, roadways, day and night, different climate variations, a particular number plate clarities. Using these information sets, the structure accomplish 99% 99.2%, and 98% exactness's to plate localization, character division, and plate identification, separately. The negative concern rate in plate localization is under 0.7%.

The general accuracy on the confused plate's segment of our information sets is 91.5% The ANPR framework has been introduced in a few areas and has tried usually for over a year. The projected calculations for every part of the framework are exceptionally fine to lighting variations, measure varieties, number plate clarity, and number plate imbalanced. The framework is also autonomous of the quantity of number plates in acquire pictures. The framework has been also tried on three other the Iranian information sets and has accomplished 100% exactness in both localization and identification parts.

To demonstrate that the ANPI is not dialect lower, they have tried the framework on accessible English number plates information set and accomplished 97% general exactness. In [2], ANPR is built-up an observation technique that uses optical character identification on pictures to analyze the license plates on vehicles. This framework is outlined with a neural network which is prepared to recognize characters that can be found in an Indian standard High sanctuary Number Plate and is executed utilizing MATLAB. A straightforward and effective framework has been created to control the license plates from the picture of a caught vehicle containing Indian criterion license plate. A neural network builds a character identification framework has been actualized to distinguish every one of the characters that can be found in an Indian criterion number plate.

A framework is set up to have great execution in completing and coordinating the check example and before put apart examples. Framework is talented and gives good-looking result if there should be a happening of slight variety in similar characters because of disorder. The framework limit was experiential to be 0.85 which can be other enhanced preparing. For, same character recognition remainder is as high as 0.937 while for various characters it is lesser than 0.5 accordingly the framework gives fine clearing up if there should be a happening of various characters.

In [3], they execute RGB color extractor on different sorts of tags. More than 225 color pictures taken by the iPhone 5s camera are utilized as a part of this examination. The test pictures are fixed from the front and back of the vehicles below different conditions, for example, unique edges, diverse luminance, and individual climate conditions. Even though the fact that the calculations were enhanced for the Illinois number plate, which can be naturally enlarge out to perceive

other state tags of different situation of the United States. RGB color observer is a standard instrument in picture examination that allows us to separate the color data for the pre-preparing in this procedure. The examining outcomes display that the planned approach is about forceful and practical. It maybe, there is opportunity to get better in calculation because it doesn't work feasible in situation below dark lights and mistakes as of various states of characters we remove. The execution of analyze tags from different states is additionally very much fulfilled the achievement rate is near 100% which indicate this strategy is rather skilled and exact at extricating the characters with an empowering result. The outcome examination of the framework gives 95.1% exactness.

In [4], Automatic Number Plate Identification (ANPI) framework screens and finds countless enlistment license plates by perusing the vehicle license plates as information and perceives the license plates' characters as yield naturally. Truth is told, mistake of recognition can be brought about by different variables, for example, pivot of the plate and non-uniform light amid picture procurement. In [4], de-skewing operation and format coordinating procedure are planned to keep up the precision of the auto license plate at the abnormal state. All the information images needs to experience 5 phases of improvement as wants to be, which incorporate pre-handling stage, plate constraint organize, skew detection and amendment arrange, character segmentation organize and finally, character recognition organize for the framework to create yield.

Each of the stages consists of demanding frameworks that were tried and connected to complete the ideal yield. At long last, it is to be turned out to be 100% precise for the plate localization, 99.6% for character division, 91.5% for character recognition and the general exactness of the framework is 91.1%. In [5], one more approach is being presented for quick and talented execution of ANPI framework.

In this move towards, the vertical boundary discovery calculation is connected and evacuates undesirable boundaries by picture equality method. The License plate area is separated by unification factual and the morphological image preparing methods. For character identification, the layout coordinating is utilized for optical character recognition (OCR). It functions admirably in different regular situations self-determining to varieties of shading, sort and size. This approach can maybe work in most negative scenario situations. A few adjustments in OCR are necessary for recognition of a deeply partial font. The algorithm is tried on 500 continuous pictures, which are procured under various light location and various situations. General production of the planned strategy is 84.8% and the implementation time is under 0.5sec.

3. PROPOSED METHODOLOGY

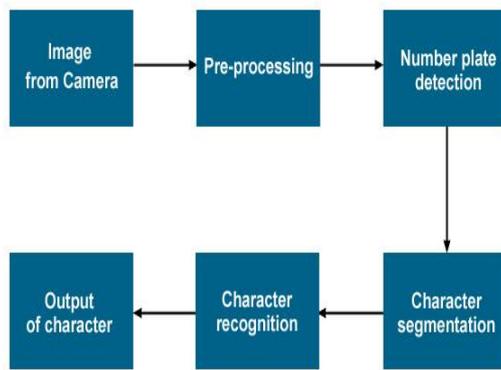


Fig-2: STEPS INVOLVED IN VEHICLE NUMBER PLATE RECONGITION

- ✓ An Input image is captured by the camera.
- ✓ Input image will be change to gray scale value. Then, gray scale is change into double image by thresholding method.
- ✓ After, that we have to identify the size of the number plate. But in general the plates are rectangle in shape hence the edges of the plate are detected. Then, the detection techniques are applied to calculate the properties of the image region. Directly, after the type connected components, the region will be exact from the input image.
- ✓ Now segmentation methods are applied to get individual character and number image.
- ✓ Finally, recognition techniques are applied for identification of alienated characters and numbers.

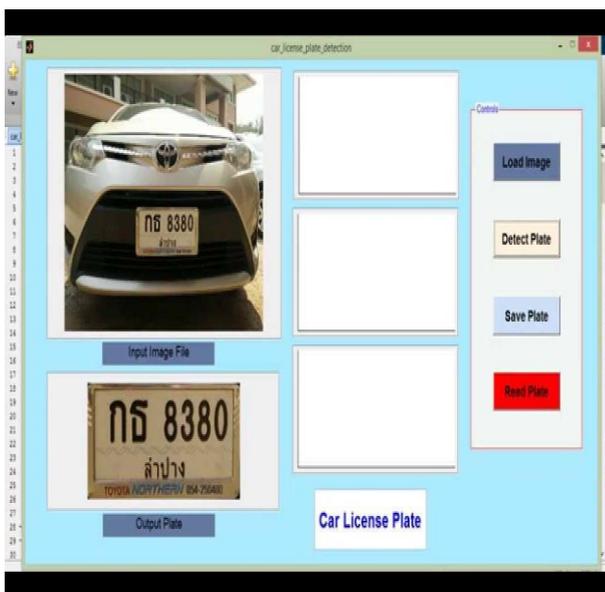


Fig -3: Car license plate

4. CONCLUSION

In this paper various Number Plate recognition strategies have been inspected in indirect elements which were handling by several researchers. The Number Plate Recognition (ANPR) framework is mostly includes three significant strides, number plate localization, character division and character identification. Also, use of various methods and techniques which are proposed by researchers earlier are discussed. Personally have even mentioned the basic and common steps involved in the vehicle number plate identification. These types show the absolute in order regarding how the traffic inspection systems used the image processing methods and analysis tools for detect, segment, and track the vehicles.

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