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INDIAN VEHICLES NUMBER PLATE DETECTION AND RECOGNITION USING DIP

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ABSTRACT:

Number Plate recognition, also called License Plate realization or recognition using image processing methods is a potential research area in smart cities and Internet of Things. Many of the existing automated number plate recognition systems work only in a controlled environment where images are captured from a straight angle with good illumination, clarity and standard fonts. Another drawback of existing works is that, they are based on UK number plates and may not suite for Indian number plates. This paper presents a novel image processing system for Indian number plate detection and recognition that can deal with, noisy, low illuminated, cross angled, non-standard font number plates. This work employs several image processing techniques such as, morphological transformation, Gaussian smoothing, and Gaussian thresholding in the pre-processing stage. Next, for number plate segmentation, contours are applied by border following and contours are filtered based on character dimensions and spatial localization. Finally, after the region of interest filtering and de-skewing, Knearest neighbor algorithm is used for character recognition. The proposed methods demonstrated promising results.

INTRODUCTION

Number plate acknowledgment is a type of programmed vehicle recognizable proof. A number plate is the one of a kind recognizable proof of vehicle. It is a picture preparing innovation used to distinguish vehicles by their own particular number plates. Constant number plate acknowledgment assumes an essential part in keeping up law requirement and keeping up movement rules. It has wide applications ranges, for example, toll court, stopping region, exceedingly security territories, visitor's regions and so forth. Number plate acknowledgment is intended to distinguish the number plate and afterward perceive the vehicle number plate from a moving vehicle consequently. Programmed number plate acknowledgment has three noteworthy parts: vehicle number plate extraction, character division and Optical Character Recognition (OCR).Number plate extraction is that phase where vehicle number plate is recognized. The recognized number plate is pre-prepared to evacuate the clamor and after that the outcome is passed to the division part to portion the exclusively

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characters from the removed number plate. The divided characters are standardized and gone to an OCR calculation. At last the optical character data will be changed over into encoded content. The characters are perceived utilizing Template coordinating. The last yield must be through series of characters. In this framework, another thought is appeared for Automatic number plate acknowledgment framework for vehicle recognizable proof and control reason. Programmed Number Plate Recognition is a picture handling innovation used to distinguish vehicles by their number plates. The Vehicle Number Plate is a special recognizable proof number for each vehicle made. Dissimilar to enrollment number, number plate does not change all through the lifetime. Since the 21st century, with social advancement and change of expectations for everyday comforts, the quantity of vehicles is constantly expanded. The movement conditions are exacerbating, which conveyed immense weights to the general public and condition. . OCR systems [Pra 2012; Url 1] perform the translation of scanned images of handwritten, typed or printed text into machineencoded or computer understandable form. This enables us to save storage space, edit the text and search/index it. OCR systems play a very significant role in document image processing as it aids in converting electronic images into electronic text documents which can be edited, searched, indexed and stored effectively and efficiently. The generic OCR systems are capable of converting text from an image into machine readable text with limitations. Due to limitations, the OCR systems fails to read text from document images in majority of applications and requires the document images to be prepared suitably in order to enable the OCR systems to read the same. The objective of this research is to develop few preprocessing stages to document images for better readability by OCR systems.

LITERATURE SURVEY

Optical Character Recognition (OCR) is broadly utilized innovation which changes over filtered pictures of printed content, written by hand message characters into machine encoded content data, for example, ASCII. It can be perceived printed characters and written by hand characters yet the execution is straightforwardly reliant from the nature of information records. The OCR performed disconnected. K. K. Kim et. al. is entirely intended for Korean plates. It has planned a framework executing for Support Vector Machines and report amazing normal character acknowledgment. M.A. Ko et. al., T. Naito et. al.displays most optical character recognizers presented in a 2Dplane can keep up high achievement rate just inside a constrained scope of visual edge and shooting separation. X. Dish et. al. proposed a two phase cross breed acknowledgment framework joining measurable and auxiliary acknowledgment technique. This work incorporates Distinguishing comparable characters by nearby auxiliary elements and building up a framework engineering consolidating measurable and basic acknowledgment techniques. To begin with, the four subclassifiers autonomously perceive

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the character and after that acknowledgment results are consolidated utilizing the Bayes technique. Furthermore, if the perceived characters have a place with the arrangements of vague characters the auxiliary stage is utilized for further choice. The Automatic Number Plate Recognition was invented in 1976 at the Police Scientific Development Branch in the UK. The review process was adopted by surveying the research in last 5 years (2010-2015) for collection of information about Automatic number plate recognition issues. In the Existing system extensive research has been done in the area of number plate recognition since its invention in the year 1976.

EXISTING SYSTEM

Learning-based approach for license plate recognition

This paper presents Adaboost learning-based method for license plate detection in unconstrained environment (cluttered scenes, changing illumination, in-plane and out-plane rotation of license plates). Our approach is motivated by the idea that learning-based method can implicitly derive a robust object model through training using large set of positive and negative samples. In addition, edge rather than intensity information is used to train license plate detector (LPD) since edge information – using canny edge detector – has shown better representation than intensity for license plate problem. We present comparative results of our approach against intensity, selection of different number of stages as well as our LPD detection speed. Our approach achieves true positive rate of ~70%, with detection speed ~80 ms for image size of 320 x 240.

As the number of vehicles is growing, license plate detection is becoming more important. It can be applied to applications such as traffic control, security system, automated vehicle verification, car park payment system and etc. A license plate detector (LPD) locates the position of the license plate from a given image. It is challenging to detect a license plate from a cluttered background, and image with a lot of noises such as illumination, rotation, and etc. The rest of the paper is presented in the following structure. Section 2 presents background information related to license plate detection. The architecture of our algorithm is introduced in section 3, and section 4 is introduces Haar-like features with AdaBoost learning algorithm. Experimental results and discussion are presented in section 9. We conclude this paper in section Viola et al. [3] presented a framework for face detection that achieves high detection rate and yet with extremely rapid image processing. Motivated by [1], they introduced a new image representation known as the integral image that allows the features used in the detection to be calculated very rapidly.

"**Robust License-Plate Recognition Method for Passing Vehicle Under Outside Environment** In recent years, many researches on Intelligent Transportation Systems (ITS) have been reported. Automatic License Plate Recognition (ALPR) is one form of ITS technology that not only recognizes and counts vehicles, but distinguishes each as unique by recognizing and recording the license plate's characters. This paper discusses the main techniques of ALPR. Several open problems are proposed at the end of the paper for future research.

PROPOSED SYSTEM

Number Plate recognition, also called License Plate realization or recognition

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using image processing methods is a potential research area in smart cities and Internet of Things. Many of the existing automated number plate recognition systems work only in a controlled environment where images are captured from a straight angle with good illumination, clarity and standard fonts. Another drawback of existing works is that, they are based on UK number plates and may not suite for Indian number plates. This paper presents a novel image processing system for Indian number plate detection and recognition that can deal with, noisy, low illuminated, cross angled, non-standard font number plates. This work employs several image processing techniques such as, morphological transformation, Gaussian smoothing, and Gaussian thresholding in the pre-processing stage. Next, for number plate segmentation, contours are applied by border following and contours are filtered based on character dimensions and spatial localization. Finally, after the region of interest filtering and de-skewing, Knearest neighbor algorithm is used for character recognition. The proposed methods demonstrated promising results.

RESULTS EXPLANATION

Character segmentation

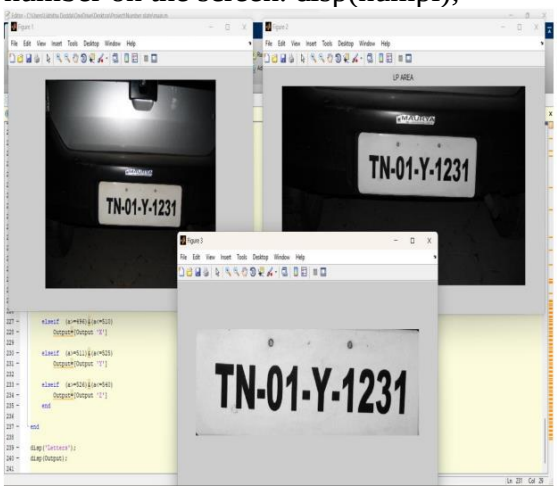
From number plate In this method we will be working on the image which is extracted from the gray scale image i.e. the number plate which is detected. We will divide each character of the number plate which is being detected to find the number from number plate. We will be performing further more methods on the segmented image.

Character Recognition

In this method we will be working on the segmented image of each character. We will detect each character using OCR technique i.e. optical character recognition. Here each character is recognized individually. Then those characters are combined to form a whole number that is present on the number plate which is taken in the form of image.

Display Vehicle Number

After performing all the methods of vehicle number plate detection using MATLAB. We will be displaying that number on the screen. disp(numpl);



CONCLUSION

In this paper 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.

FUTURE SCOPE

The future scope is that the automatic vehicle recognition system plays a major role in detecting threats to defence also, it can improve the security related to the women's as they can easily detect the number plate before using cab or other serives. The system robustness can be increase if bright and

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sharp camera is used. Government should take some interest in developing this system as this system is money-saving and eco-friendly, if applied effectively in various areas.

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