Identification And Classification of Number Plates Using Convalutional Nenural Network

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Abstract- *An identification and classification number plate recognition system has been proposed. Here the image has been processed by MATLAB to identify and classify the number plate of the vehicle. Image extraction is done using the Optical Character Recognition with the Edge detection and CNN algorithm. It is simultaneously used to record number plate automatically. The proposes system is robust enough to process the detection under dark lighting conditions and achieve 95.5% accuracy based on 450 number plate testing images, which is a relatively good result under dark and fog conditions. The proposed system automatically reveals the details of vehicle number, its crossing date and crossing time. The proposed system is robust in capturing the image of vehicle number plate against dust and fog. Through this system, security and authorized person will be able to keep track of vehicle movement along with its vehicle information. In future, Vehicle owner information can also be included and keep track in this system. This will be primarily useful in the traffic system.*

Keywords- Image Processing, Number plates Detection, Classify , Edge detection, CNN method.

I. INTRODUCTION

Image Processing is any shape of sign processing for which our enter is an picture along with pics or frames of video and our output may be both an picture or a hard and fast of traits or parameters associated with the picture. It typically refers to processing of dimensional photograph and through manner of manner of dimensional photograph we implies a digital picture. A virtual picture is an array of actual or complicated numbers represented via way of means of a finite quantity of bits. But now optical and analog photo processing is also possible. There are types of techniques used for photo processing namely, analogue and virtual photo processing. Analogue photograph processing can be used for the tough copies like printouts the pics. Image analysts use numerous basics of interpretation whilst the use of those visible strategies. Digital photograph processing techniques help in manipulation of the digital pix thru manner of method of using computers. The 3contemporary-daytiersthat every one varieties of facts need to go through even as the usage of

virtual approach are pre-processing, enhancement, and display, records extraction. Convolutional Neural Network (CNN) is one of the Deep Learning strategies to apprehend photos, instances collection facts, sign patterns. This studies will construct a computational version that could become aware of the picture of the car quantity plate. In this computational version, there are numerous functions or lessons where in the quantity plate picture out comes might be diagnosed the use of the CNN method, or a actual-time deployment of a registration code popularity system, elements along with excellent of the camera, its positioning, excellent of the plates to be detected and environmental versions are key elements that decide the overall performance of the system.

II. PROPOSED WORK

This paper had proposed work for a Edge detection technique and CNN network set of rules that consisted of the following steps: picture retrieval and pre-processing, Number plates detection and finally, the evaluation of the overall ordinary overall performance measurement
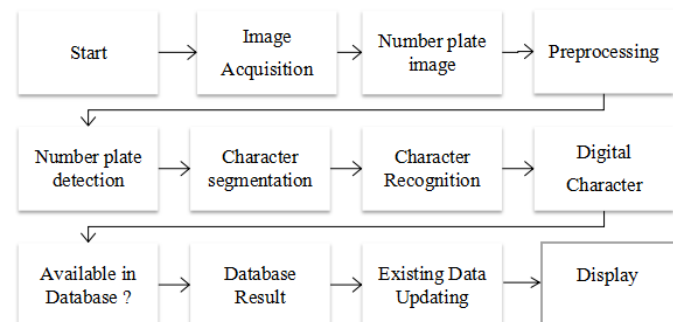

Fig 1 : Work flow of Proposed System

IMAGE ACQUISITION

The pix of Indian large variety plates are captured the use of a real-time digital virtual digital digicam organized at the doorway of the gate.

IMAGE PRE-PROCESSING

Here, the set of policies of the pre-processing phase in is observed to get a clearer variety plates edge of number plates images .At this stage, the photo will go through alpha numerous manipulations inclusive of pixel smoothing, normalization, white line detection and saturation earlier than the License plate is detected. Figure 2 shows the precise photograph and the pre-processing photograph with its grey stage histogram.
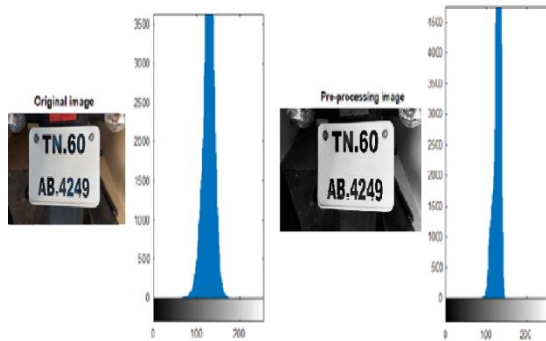

Fig 2. Gray level

Let's assume the fixed partitioning for each of the resolution as such:

$$L_{1,1} \in \text{COG} \tag{1}$$
$$L_{2,1}, L_{2,2}, L_{2,3} \text{ and } L_{2,4} \in \text{CO2} \times 2 \tag{2}$$
$$L_{3,1}, L_{3,2}, L_{3,3}, L_{3,4}, L_{3,5}, L_{3,6}, L_{3,7}, L_{3,8} \text{ and } L_{3,9} \in \text{CO3} \times 3 \tag{3}$$
$$L_{4,1}, L_{4,2}, L_{4,3}, L_{4,4}, L_{4,5}, L_{4,6}, L_{4,7}, L_{4,8}, L_{4,9}, L_{4,10}, L_{4,11}, L_{4,12}, L_{4,13}, L_{4,14}, L_{4,15}$$
$$\text{and } L_{4,16} \in \text{CO4} \times 4 \tag{4}$$

CHARACTER SEGMENTATION

Image segmentation is the system of an picture into components or area. This department into components is regularly primarily based totally at the traits of the pixels with inside the photograph. For example, one manner to locate areas in an photograph is to search for abrupt discontinuities in pixel values, which commonly suggest edges. Image segmentation entails changing an photograph into a group of areas of pixels which might be represented through a categorized photograph. By dividing an images into segments, you may system best the crucial segments of the photo graph rather than processing the complete photograph. A not unusual place approach is to search for discontinuities in pixel values, which commonly suggest edges that outline a region.
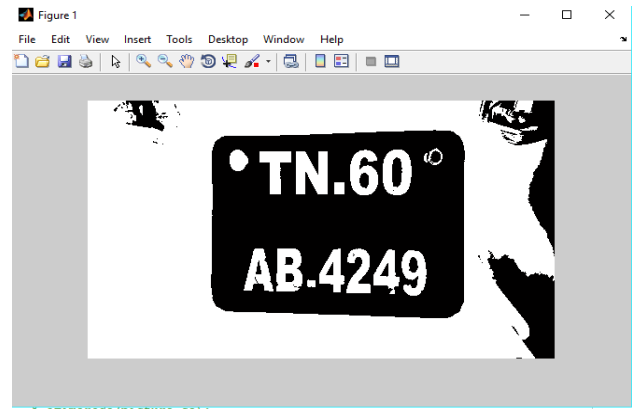

Fig.3 Segmentation of alpha numerals

CNN TECHNIQUE RESULT

Binarization is the method of converting any gray – scale image (multi tone image) into black – white image (two tone image) .To perform binarization process, first find the threshold value of gray scale and check whether a pixel having a particular gray value or not.
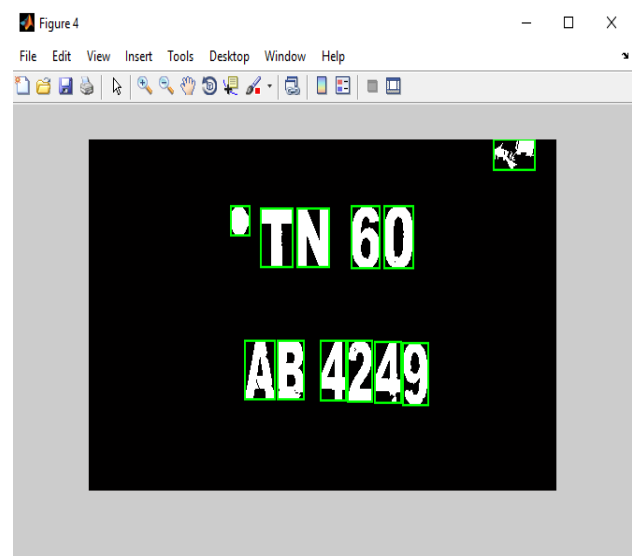

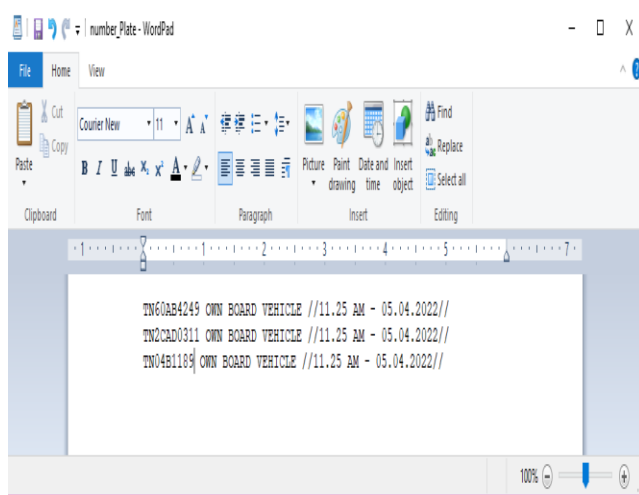**Fig 4 Find the characters and numbers**

Fig 5 Result

III. CONCLUSION

The proposed method can be used to stumble upon extensive range of number plates, Measurement of area, length and breadth of the extensive range of number plates. The depth of the voids additionally may be calculated. Further, extensive range the number plate propagation assessment can be completed the use of extrapolation techniques. , extensive range number plates detection relying on the identical antique CNN method can't deliver fine effects. The new edition employs an photograph enhancement set of policies known as Edge detection Gray Level Discrimination for boosting the CNN method. The newly constructed model is capable of identifying extensive range plate gadgets and analyzing their developments which consist of the area, perimeter, width, length, and orientation. The experimental effects confirm that the extensive range plates in attempting out images were because itought to be identified. The definitely can beautify the general overall performance of the CNN method. The method observed with the resource of the use of the CNN method described with inside the contemporary work. The Segmented characters are identified with the resource of the use of the use of Template Matching Method. The advised method is tested with numerous types of cars like four wheelers and with yellow and white background. The extensive range plates with greater useless data are also segmented with high-quality accuracy.

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