CAR NUMBER PLATE DETECTION & RECOGNITION

Mahesh Bharat Salunkhe[1], Niraj Ramesh Pawar[2], Swaroop Sanjay Patil[3], Prof. Vijay Bhosale[4]

[1,2,3]*Student, Dept. of Computer Engineering, M.G.M College of Engineering and Technology, Kamothe, Maharashtra, India*
[4]*HOD. Dept. of Computer Engineering, M.G.M College of Engineering and Technology, Kamothe, Maharashtra, India*

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Abstract – *In today's world, the number of vehicles is increasing day by day. All of the vehicles are identified through their unique Number Plate/License Plate, which is a metal/plastic placeholder attached to the front & back of the vehicle. The number plate is useful in various ways, some of which are, Keeping track of the vehicles at public places such as Parking or Hotels, etc. The system presented in the paper uses OpenCV to detect & recognize the number plate of a vehicle.*

Key Words: Number Plate Detection, Plate Recognition, OpenCV3, Text Output, KNN.

1. INTRODUCTION

A vehicle registration plate, also known as a number plate (British English), license plate (American English), or license plate (Canadian English), is a metal or plastic plate attached to a motor vehicle or trailer for official identification purposes. All countries require registration plates for road vehicles such as cars, trucks, and motorcycles. Whether they are required for other vehicles, such as bicycles, boats, or tractors, may vary by jurisdiction. The registration identifier is a numeric or alphanumeric ID that uniquely identifies the vehicle or vehicle owner within the issuing region's vehicle register. In some countries, the identifier is unique within the entire country, while in others it is unique within a state or province. Whether the identifier is associated with a vehicle or a person also varies by issuing agency. There are also electronic license plates [1].

2. PROBLEM STATEMENT

In our daily life, sometimes we come across situations where we want to note the details of the Vehicle including its Number plate details as well. When doing these tasks on a large scale, noting down these details manually on paper or digitally would require a lot of time. On the other hand, recognizing the details via an image of the number plate and storing it for future purposes is a satisfactory & time effective solution.

3. EXISTING SYSTEM

Existing System includes noting down the details manually in the register/some registry software or keeping the details in the image format. The existing system is less efficient and is prone to human errors while noting the details. It may also need vast amount of storage if the data is stored in the form of images.
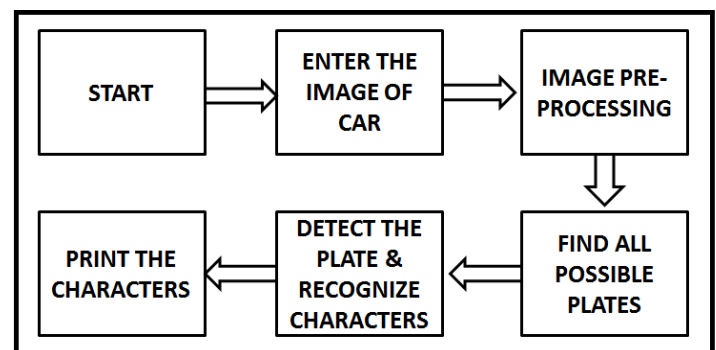
4. BLOCK DIAGRAM

Fig-1: BLOCK DIAGRAM

5. PROPOSED SYSTEM

Proposed methodology of number plate/license plate detection works in a way that it involves finding number plates, finding characters in the number plate, detecting the characters in the number plate, printing the characters of the number plate in a given image. Firstly, the image is preprocessed. The KNN data is loaded and trained for detecting characters. The system finds all the possible plates and then selects the plate in which the maximum number of characters is recognized. Then the characters of the number plate are printed.

5.1 IMAGE PRE-PROCESSING

The initial task of image processing is to convert the image from the RGB color pattern to a Grayscale image format. An image consists of pixels and every pixel holds its RGB colour values. By reducing the number of values stored by our pixels, we can minimize our processing by a large margin. Grayscale conversion carried out by retrieving the RGB contents from the image taking average of it and assign to the new pixel. After converting it to grayscale, thresholding of the image is performed. The threshold depends upon the environment in which the system will be used. An optimal threshold is needed for proper edge detection. If a pixel

exceeds certain thresholds, it is classified as an edge. We will get a barebones and skeletal representation of the environment through these methods.

5.2 DETECT PLATES & CHARACTERS

After the pre-processing of the image is done, the system moves on to detecting the possible plates in the image. After detecting the plates, image contours are found and all possible characters in the scene are detected. The function first finds all contours, then only includes contours that could be characters. Given a list of all possible characters, groups of matching characters are found and in the next steps each group of matching characters will be attempted to be recognized as plates.

5.3 EXTRACT THE PLATE & DATA

After the detection & recognition is done for each group of matching characters, attempt to extract the plate will be done. At last, after everything is done the plate data will be printed on the Original image passed to the system as well as it will be available in the text format.
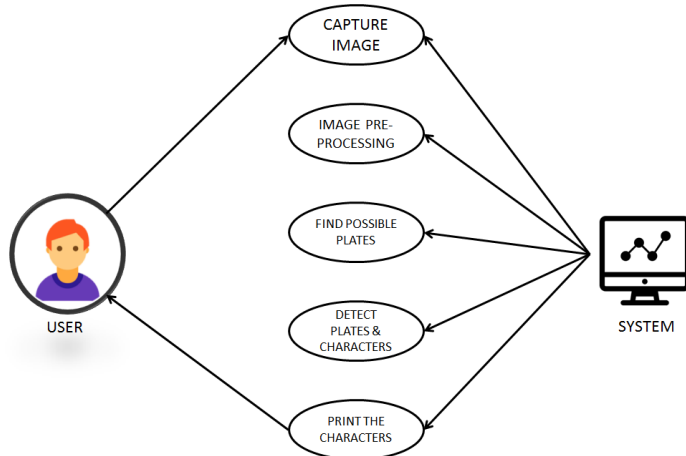
6. UR DIAGRAM

Fig-2: UR DIAGRAM

7. RESULT

As we can see how the system detects and recognizes the characters of a number plate. When the system is started the image is to be fed to the system at the start, and then it processes the image and then the data is obtained as output.
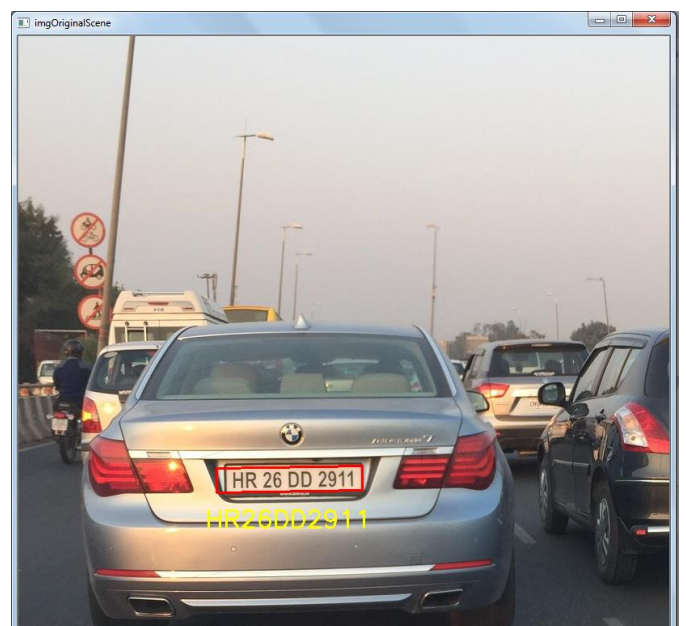

Fig-3: INPUT IMAGE

Fig-4: OUTPUT IMAGE-1

Fig-5: OUTPUT IMAGE-2

Fig-6: OUTPUT

8. CONCLUSION

The technologies have played a very important role in the development of various sectors. We tried to use some of them for the ease of the people involved in these sectors. The proper development of this system will surely be helpful in various sectors where this kind of data is required to be noted and on daily purposes.

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[3] Bhavin A Patel, Ashish Singhadia," Automatic Number Plate Recognition System Using Improved Segmentation Method", International Journal of Engineering Trends and Techn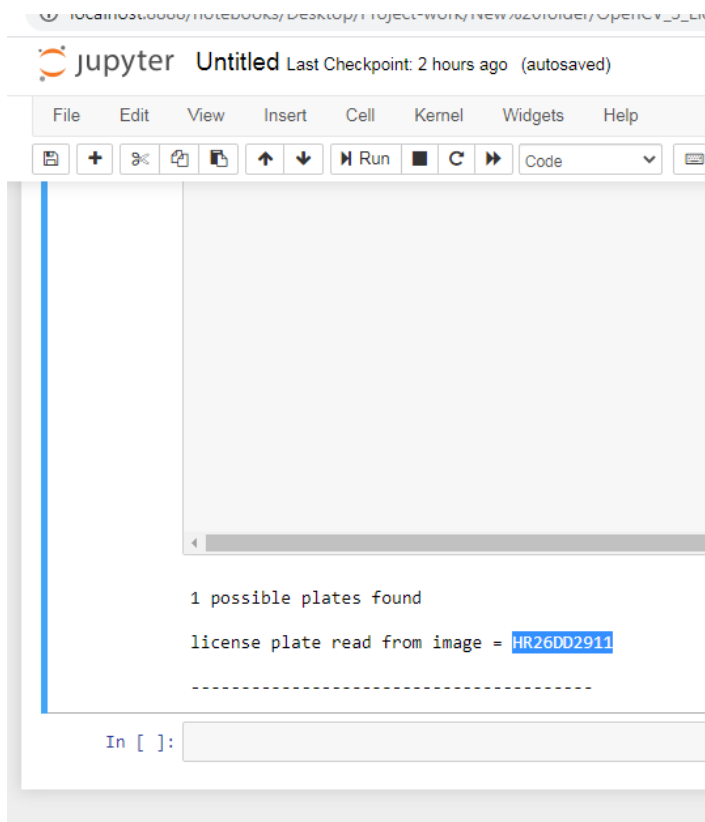ology (IJETT) –Volume16Number8–Oct2014