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Number Plate Tracking System Using OCR

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ABSTRACT

The Number plate recognition is predicated on Image processing. this is often one among the techniques utilized in AI. the synthetic intelligence is especially designed for to let the machine works a person's works without helping of humans. So, by train a machine during a proper thanks to complete their work. The car place may be a main thing, Most of the Human vehicles using this number plate. car place is additionally one among the identity of individuals. Each car place has the own details of the vehicle owner. Main process is to coach tons no of license plates in optical characteristic recognition, so Optical Characteristics Recognition (OCR) itself can understand the characters utilized in number plates. Then the info base of the users or vehicle owners can implement and sync with the amount plate via MATLAB programming. Finally, actual owner details with their matched number plates are obtained.

KEYWORDS

Matlab,License Plate Tracking System, Image Processing,Optical Characteristics Recognition.

Introduction

In this generation the numbers of vehicles are uncountable and enormous. therefore the man power is usually needed for noting the vehicle details manually. By considering those number of vehicles this process is won't add practically. If the method is got to be done manually then huge number of man power got to be success and also, it's a longer consuming process. therefore, the manual process will dominate more losses to government then the govt can't hold a knowledge of a vehicle manually.

The data stored manually isn't stable after a while; it can't readable after long time. So, to beat those limitations in manual process the thing tried to try to all things automatically.

So here developed one system which is automatically detect the amount plate and convert it into the characters and saved it into the database. OCR is doing the main appear this number plate tracking system. Because for the info base each detail in number plate is got to convert to text format. Then only it is often saved in database. The text format is merely acceptable by database. this is often also helping for proper the result compare with manual data. So, this number plate tracking process is giving more accuracy than manual data comparison. if the car is entered during a safest place then this device is automatically capturing the car place and there itself is all doing itself. The processing of image is success by software stored during a system. If the picked data is matched with already stored data then only the vehicle can allow. Example if the authorized people only must admit the organization. Then this device is kept within the gate. the info of the organization people vehicle is stored in database software. So, if only the stored vehicle data is matched with a newly entered car then only the car is allowed. therefore, the image processing is usually used for identity and security purpose. If the entered vehicle data isn't matched with already stored data then a vehicle doesn't allow to pass the gate.

OCR

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OCR is one among the most process in MATLAB. This OCR is dominating separate sector within the MATLAB. Any sort of image can convert into text in OCR. Because it's processing image by step-by-step execution. Each number plate image captured and given to OCR. and therefore, the image is in RGB form. In OCR image is cropped into Fit level then it's converted into GRAY level images. this is often called GRAY conversion. For capture and converting text the grey level images is extremely suitable and straightforward to convert into text. Because the RGB has color value 3X than GRAY. therefore, the text conversion from RGB is takes while than Text conversion using Gray. After the grey conversion the image is converting text further.

Methodology

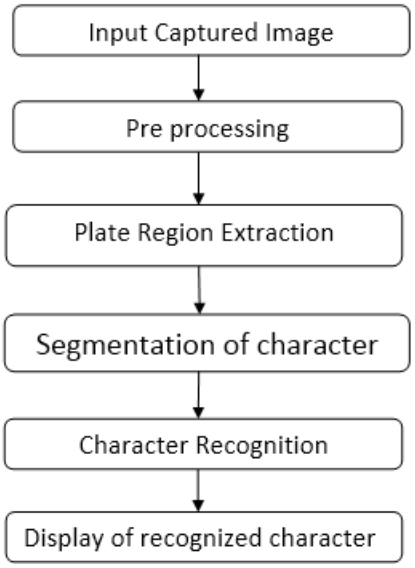

Fig. 1. Flow Diagram

Software Model: the foremost essential part during this process within the amount plate tracing is that the software model. during this model image processing is doing the most roll. The programming is developed in MATLAB. The algorithm is split into following parts: Capture image, Pre-processing, Plate region extraction, Segmentation of character within the extracted number plate, Character recognition, Comparison with database which is developed for gathering data. The flow chart for this software model in developing the MATLAB is shown within the figure 1. There are various steps during this approach and these are implementation in MATLAB.

Work Flow Process

Fig. 2. License plate

STEP 1 :
CAPTURE OF IMAGE: THE FIRST STEP IS TO PREDICT THE LICENSE PLATE AND CAPTURE THE

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IMAGE. THE IMAGE IS DETECT AND CAPTURED BY DEVICE. THEREIN DEVICE ONE CAMERA DESIGNED FOR CAPTURING. THE IMAGE CAPTURED IS STORED IN JPEG FORMAT. AFTERWARD IT'S CONVERTED IN TO GRAY SCALE IMAGE IN MATLAB.

STEP 2:

PRE-PROCESSING: THE PRE PROCESSING OF AN IMAGE COULD ALSO BE A NEXT STEP DURING THIS PROCESS. WHEN THESE KIND OF RANDOM IMAGES THAT THAT THEY HAD LOT OF DISTURBANCES AND NOISES WITH THEMSELVES. SO THIS PROCESS IS REQUIRED FOR DETECT THE NOISES AND CLEAR THE NOISES FOR FURTHER APPROACHES.

STEP 3:

GRAY PROCESSING: GENERALLY THESE IMAGES ARE WITHIN THE TYPE OF R G B.BECAUSE THESE THREE COLOURS ARE REQUIRED TO MAKE OTHER COLOUR. SO THESE COLOURS CALLED AS BASE COLOURS. APART FROM TEXT CONVERSION THE R G B IS SIMPLY TOO DIFFICULT AND TAKES WHILE. THEREFORE THE R G B IS CONVERTED INTO GRAY [0 – 255] LEVEL DURING THIS CONVERSION.

STEP 4:

MEDIAN FILTERING: THE FILTERING PROCESS IS TO URGE OBVIATE THE NOISES PRESENT WITHIN THE IMAGE. GRAY LEVEL ISN'T SUFFICIENT FOR REMOVE THE NOISES. SO TO MAKE IMAGE FREE FROM NOISE MEDIA FILTERING IS USED.

STEP 5:

PLATE REGION EXTRACTION: THE FOREMOST ESSENTIAL PART IS EXTRACTING THE CHARACTERS WITHIN THE AMOUNT PLATE. THE EXTRACTION ARE OFTEN DONE BY USING IMAGE SEGMENTATION METHOD. THERE ARE NUMEROUS IMAGE SEGMENTATION METHODS AVAILABLE IN VARIOUS LITERATURES. IMAGE BINARIZATION IS USED IN MOST EXTRACTING METHODS.

STEP 6:

CHARACTER SEGMENTATION: DURING THIS STEP GET THE RESULTS OF EXTRACTED NUMBER PLATE USING LABELING COMPONENTS, AND NEXT STEP IS SEPARATE EACH CHARACTER AND SPLIT AND EVERY CHARACTER WITHIN THE AMOUNT PLATE IMAGE BY USING SPLIT AND ALSO FIND THE LENGTH OF THE QUANTITY PLATE, THEN FIND THE CORRELATION AND DATABASE IF BOTH THE PRICE IS SAME MEANS IT'LL GENERATE THE PRICE 0-9 AND A - Z, AND EVENTUALLY CONVERT THE PRICE TO STRING AND DISPLAY IT IN EDIT BOX, AND ALSO STORE THE CHARACTER IN SOME DOCUMENT DURING THIS CODE.

Experimental Results

This section represents the results after simulating process is completed. Different images of cars having different colors and structure types are taken and stored in PC. The screenshot of the simulation and are displays below. Two original images of auto are shown.

In night time also this tracking can be done. This above image is took in a night time.By seeing this image it shows the image took at a night time.

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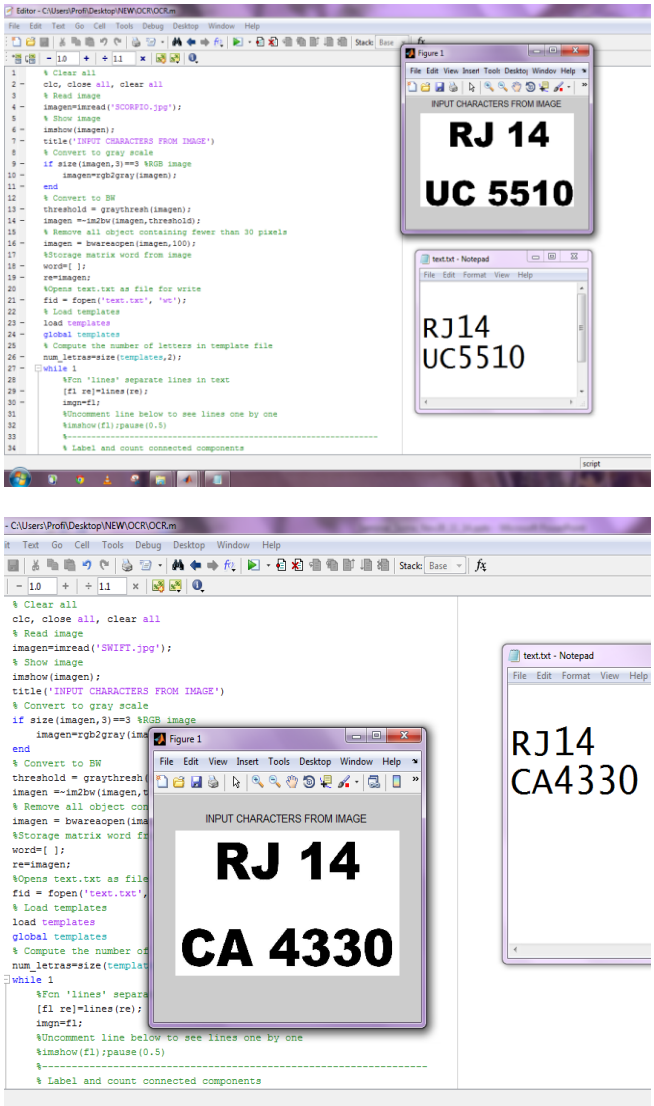
Fig. 3. Capturing Images

These above two images are which were took by electronicdevice fixed near the gate for capturing number plates. These number plates are extracted further by using the program.



Matlab Based Vehicle Number Plate Recognition

Fig. 4. MATLAB Program and output

The above images are having the Matlab program for crop the image and extract the text in the image. The output

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figure is also showed which is get the text from the number plates.

Conclusion

In this paper the number plate recognition is implemented. Our algorithm successfully detects the number plate region from the image which consists of vehicle number & then character segmentation, recognition. The algorithm is checked with many images; there the images are extracted into texts and saved in a data base. The project was designed keeping in mind the automation of the number plate detection system for security reason that could replace the current system of manual entry. This project was a success in recording the number plate of a vehicle although it has got its own limitation of image processing and other hardware requirements.

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