Automatic Number Plate Recognition System

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1) Abstract:

Automatic Number Plate Recognition (ANPR) is the ability to automatically recognize the symbols contained in the number plates of a motor vehicle when read from an image provided by video surveillance cameras for the purposes of further processing by a security system. ANPR cameras read the number plate of passing vehicles and check them in a database of vehicles of interest to Government, e.g. goods vehicles, buses and coaches. Government uses ANPR to help target which vehicles to stop and check. This helps to detect offences including: unlicensed operators.We implement this concept using MATLAB.

2) Introduction:

For the standard number plates the automatic number plate recognition becomes very easy to read and recognizes the character. In India the vehicle number plates has no standard size and font so it become very difficult to read and recognize the characters of the number plate. So flexible algorithm required solve this problem. Automatic number-plate recognition can be used to store the images captured by the cameras as well as the text from the license plate, with some configurable to store a photograph of the driver. Systems commonly use infrared lighting to allow the camera to take the picture at any time of day or night.ANPR technology must take into account plate variations from place to place.

Literature Survey:

1) **Sandipan Chowdhury [15 march 2018**] proposes calculations to confine vehicle number plates from regular foundation pictures, to fragment the characters from the restricted number plates and to perceive the sectioned characters. The revealed framework is tried on a dataset of 560 specimen pictures caught with various foundations under different enlightenments. The execution exactness of the proposed framework has been computed at each stage, which is 97.1%, 95.4% and 95.72% for confinement and extraction, character division and character acknowledgment individually. The proposed strategy is likewise equipped for limiting

and perceiving numerous number plates in pictures

2) **Sahar S. Tabrizi [14 February 2015]** presents another technique for Iranian License plate acknowledgment frameworks that will expand the exactness and lessening the expenses of the acknowledgment period of these frameworks. In such manner, a mixture of the k-Nearest Neighbors calculation and the Multi-Class Support Vector Machines (KNN-SVM) model was produced in the review. K-NN was utilized as the primary characterization display as it is basic, vigorous against uproarious informational collection and powerful for a substantial informational index. The perplexity among the tag comparative characters issue was overcome by utilizing the various SVMs characterization display. The SVMs show has enhanced the execution of the K-NN in the acknowledgment of comparative characters. The present review test comes about uncovered that there is a huge change in the character acknowledgment stage rate contrasted and a comparable review.

3) **Tejendra Panchal [27 June 2017]** address License Plate limitation with the incorporated division approach. As the noteworthiness of open travel system constructs an Automatic License Plate Recognition has wound up being a basic investigation subject. ALPR outfitted with various sharp perception structures like, road movement organization, security organization, modified toll gathering system, etc. Different frameworks have been offered for tag acknowledgment, each bearing its own specific purposes of intrigue and blocks. The critical stride in ALPR framework is the exact repression of number plate, Segmentation, Recognition. Harris corner calculation is proposed in this paper which wind up being powerful in changing movement and enlightened lightning conditions.
While the exactness of License Plate confinement is nourished forward to the Segmentation organize. The Segmentation is refined by a strategy for associated segment investigation solidified with Pixel check, Aspect proportion and Height of characters. At the end, the reenacted results are appeared with conclusion and future work.

4) Tag acknowledgment framework for stolen vehicles and recovery of proprietor's subtle elements is produced by **Utkarsha Gurjar [7 May 2016]** utilized for distinguishing the stolen vehicles and is actualized at police checkpoints and toll square. Additionally, fundamental subtle elements of enlisted clients can be recovered. This framework essentially comprises of three modules: tag confinement, character division and character acknowledgment. The proposed framework first catches the picture of vehicle utilizing the camera and concentrates the tag number utilizing the ideas of advanced picture handling. At that point it approves the tag number against the database containing the subtle elements of substantial tag numbers. On the off chance that it is found in the legitimate tag database then it will check in the stolen auto database and a ready message is appeared if match is found.

5) In this paper, **Pooya Sagharichi [18 August 2015]** exhibit an Automatic License Plate Recognition System (ALPRS) to distinguish tags which is an utilization of picture preparing. The primary procedure of ALPRS is isolated into four stages: The clamor in the picture is expelled by utilizing FMH channel. A straightforward calculation is utilized for foundation subtraction. Shrewd edge identification is utilized to limit the tag area. At last, letters and digits are separated through format coordinating strategy. The proposed calculations have two

preferences: First, the technique has solid strength against commotion. Second, it can manage tags with various hues. The execution of the calculation is tried in an ongoing video stream. In view of the outcome, our calculation demonstrates the missing rate is right around 16% from 70 vehicle pictures.

4.1) Algorithm:

1) Input Image

2) Convert it to Greyscale Image

3) Use Image processing tool to separate letters .and numbers from background.

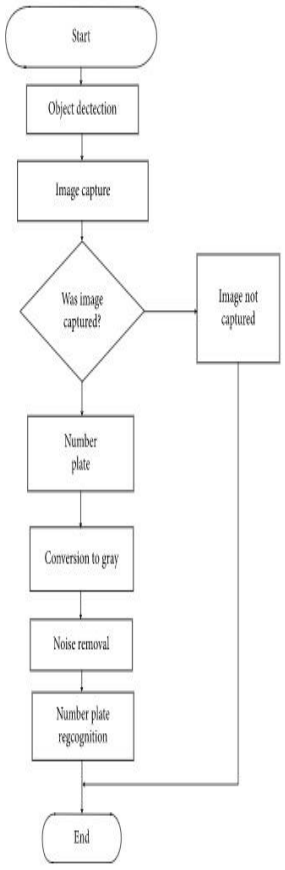
4) Match the character previous step with the training character set

5) If match found print the letters in the terminal.

4) Proposed Work:

We propose an automatic and mechanized license and number plate recognition (LNPR) system which can extract the license plate number of the vehicles passing through a given location using image processing algorithms. No additional devices such as GPS or radio frequency identification (RFID) need to be installed for implementing the proposed system. Using special cameras, the system takes pictures from each passing vehicle and forwards the image to the computer for being processed by the LPR software. Plate recognition software uses different algorithms such as localization, orientation, normalization, segmentation and finally optical character recognition (OCR). The resulting data is applied to compare with the records on a database. Experimental results reveal that the presented system successfully detects and recognizes the vehicle number plate on real images. This system can also be used for security and traffic control.

4.2) Flowchart:



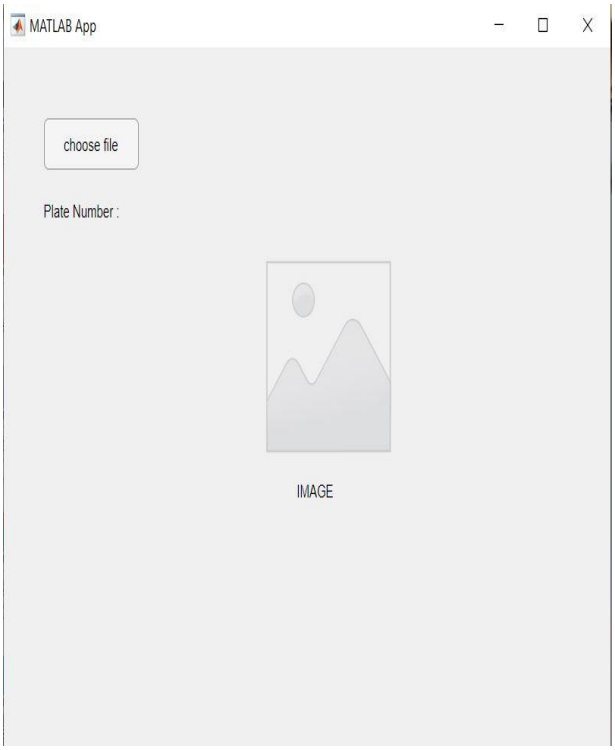
4.3)Character Recognition System:

1) Merits:

- Cheaper than paying someone to manually enter large amounts of text.
- Much faster than someone manually entering large amounts of text.
- The latest software can recreate tables and the original layout.

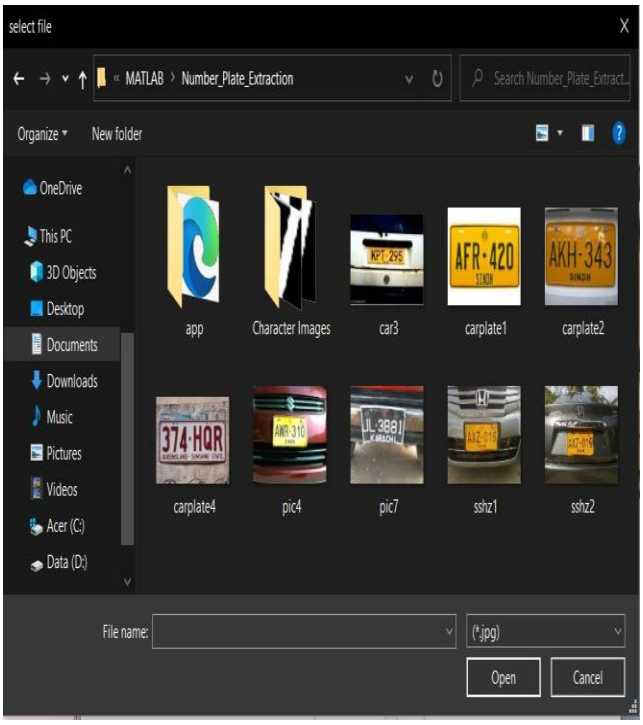
2) De-Merits:

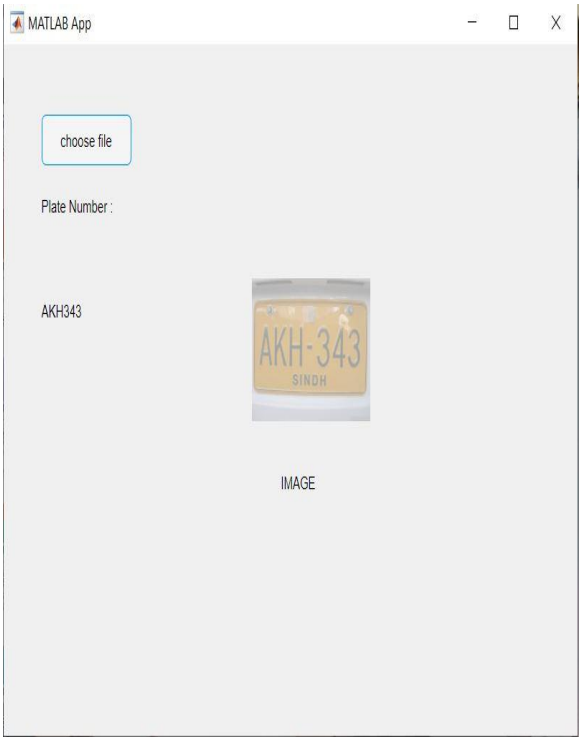
- Not 100% accurate, there are likely to be some mistakes made during the process.
- All documents need to be checked over carefully and be manually corrected.
- If the original document is of poor quality or the handwriting difficult to read, more mistakes will occur.
- Not worth doing for small amounts of text.



5) Result:

The following images are the output of the program:





6) Conclusion:

In this paper we proposed a method to recognize the vehicle number plate automatically. The dialation is used to expand the foreground. The segmentation part makes segments of characters of captured vehicle image plate. The OCR method is used to recognize the vehicle number plate characters. This experiment is tested for Indian vehicle number plates using MATLAB.

7) References:

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