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Character Segmentation And Template Matching Based Vehicle Identification For Missing , Vehicle Even Odd And Fine Management

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Abstract : Programmed Number Plate Recognition is an image getting ready development and a huge field of assessment that recognizes vehicles by their number plates in which the number plate information is taken out from vehicle's image or from progression of pictures without direct human intervention. The principle approach is to extricate characters from number plate utilizing MATLAB based on the Fourier examination. The framework will naturally bring the record of the PUC and the Vehicle Registration and will limit the flawed vehicles, just as follow the missing vehicles with the redirection of sends to the police headquarters, distinguishing proof of the protection broken vehicles, and Similar Vehicle Detection.

IndexTerms **– Number Plate , Fine Management , Even Odd Vehicles.**

I. INTRODUCTION

Image Processing is a technique to change over an image into modernized outline and perform tries on it, with an authoritative objective to get a refreshed picture or to kill some consistent information from it. It is an especially standard perception wherein input is picture, like video packaging or photograph and yield may be picture or characteristics related with that image. Regularly Image Processing structure joins considering pictures to be two dimensional signs while applying truly set banner dealing with systems to them. [1]

Fig 1 Image Processing

Picture preparing in a general sense entwines the going with three phases:

- Importing the image with optical scanner or by state of the art photography.
- Analyzing and controlling the image which wires data weight and picture improvement and spotting plans that are not to customary eyes like satellite photographs.
- Output is the last stage where result can be changed picture or report that relies on picture appraisal.

1.1 Purpose of Image Processing

The defense picture taking care of is separated into following parties:

- Visualization - Observe the things that are not detectable.
- Image sharpening and recovery - To make a prevalent picture.
- Image recuperation - Seek for the image of interest.
- Measurement of model – Measures different things in an image.
- Image Recognition – Distinguish the articles in an image

1.2 License Plate Detection

Advancing year, because of individuals' life and nearby's remuneration is broadening persistently, cause general individuals have the vehicle rate is dynamically high, notwithstanding the association spread predominantly run down improvement, the vehicle not exclusively is a pointer of character yet in addition is a devices of take transportation and ignored for individuals. Thusly, vehicles association of leaving zones, electronic expense gathering association of highway, finding vehicles taken and screen of street, all wind up being new security excitement for individuals with vehicles association..

II. LITERATURE SURVEY

[A. Menon and B. Omman, 2018] Tag affirmation is the most useful and financially savvy framework utilized for vehicle obvious affirmation purposes. Creators fantastically base on the spot and affirmation of different vehicles tag from a solitary bundling. Proposed framework includes two stages: plate number disclosure and affirmation. In plate revelation part we apply both Spanish and Indian tag. In our assessment we will be working with number plates from Spain. Three obvious labels which vary from each other in their size and shape.

[N. O. Yaseen, et. Al 2019] The dataset wires three classes of pictures: turned, scaled and unraveled pictures. The destinations of pictures are 4288 x 2848 and 5184 x 3456. Furthermore, several photos made for dreadful climate conditions, for example, crisp, dusty and low lighting. Some shabby plate pictures in like way viewed as in the dataset. The motivation driving acclimating this dataset is with give and produce a reasonable dataset for ANPD and comparably concerning ANPR frameworks.

[F. Fajas, et. al 2012] Programmed Number Plate Recognition or ANPR is a mass perception framework that uses optical individual confirmation on pictures to examine the number plates on vehicles. This plan is coordinated with a neural framework which is set up to see all of the characters that can be found in an Indian Standard High Security Number Plate and is executed using MATLAB.

[B. Pechiammal and J. A. Renjith 2017] Auto Recognition of License Plate is such an image managing progression for seeing the number plate data from pictures or accounts. The watched plate pictures are regularly in low destinations and continue on through certifiable loss of edge information, which cast, shocking test to existing vehicle number plate region and affirmation plans. The methodology of Auto affirmation of License plate requires an imperative level of accuracy, when there are different vehicles going in a short reach and number plate contemplating is a number is a badly arranged undertaking, from an overall perspective thinking about number strategy, and effect of natural work.

This development impacts the precision of character division and confirmation structure. This paper presents a figuring for Auto affirmation of label structure using different strategies. Auto affirmation of label system incorporates three regions: Character division, Optical person affirmation and organization sorting out. The proposed structure presents the customized vehicle number plate perceiving proof framework using a vehicle number plate extraction. Another technique using Gabor filtering for character affirmation in decrease scale picture is proposed in this paper.

[NimaFarajian, et-al, 2014] has assessed particular frameworks of label acknowledgment for auto images and pondered them. From this audit maker sorted out that every framework has its own hindrances, every strategy gives best results under some particular conditions for example a couple of techniques works incredible in faint light, some for splendid light, etc and besides observed every framework has its own special boundaries to recognize tag.

Maker assumed that there is no ideal expertise which can be sensible for all conditions yet there are certain methodology which works commonly incredible under different circumstances like in edge area "careful" strategies uses basically a large part of the time, so for this at first perceive the situation and pick system as demonstrated by that situation or circumstance.

[Mukesh Thakur, et-al, 2015] proposed one more framework for acknowledgment of label number. The proposed framework on a very basic level involves 3 standard undertakings, for instance, Detection of number plate's domain, Segmentation of plate characters and Recognition of each character in number plate.

III. PROPOSED WORK

3.1 Proposed Algorithm for Barcode Generation

Step 1: Input the Vehicle Number.

Step 2: Input the Engine Chassis Number.

Step 3: Extract the Digits from Vehicle Number starting from the fifth position till the end and Extract digits of the Chassis number starting from the fourth position till the end.

Step 4: If Vehicle Details Exists then

Print "Vehicle Details already in Barcode Database"

Else:

a. Generate Barcode

b. Show Barcode Image

c. Store details in Barcodedata table.

[End of If structure]

Step 5: Stop

3.2 Proposed Algorithm for Validation of Number Plate

The proposed algorithm will work in the following steps :

Step 1: Read the Card Image containing the vehicle Number Plate.

Step 2: For the quality analysis of the image convert the image to the gray scale.

Step 3: Perform the noise removal using the Median Filtering.

Step 4: Resize the image so that it will be best adjustable for the analysis purpose.

Step 5: Perform the Edge Detection.

Step 6: Perform Morphological Gradient analysis.

Step 7: Then Brightened, Enhanced & Horizontal Line Removal.

Step 8: Perform the Trimming of the image.

Step 9: Perform the template matching and with the character recognition.

Step 10: Get the Vehicle Registration Extracted from Image and Input Barcode

Step 11: Search for the Vehicle Number in Vehicle Registration Table.

Step 12: If Found then Goto Step 13 Else Goto 20.

Step 13: Display the Vehicle Owner Information fetched from the database.

Step 14: Fetch Current Date and perform the number analysis for the Even/Odd Vehicle Entry.

Step 15: Set Vehicle Allowed or Not Allowed depending upon the data analysis.

Step 16: Perform the Vehicle search in Missing Vehicle Database.

Step 17: If found then Send Email and other details to the concern police station.

Step 18: Perform Pollution Check Data Analysis using the Pollution Database.

Step 19: If Pollution data is valid for vehicle then no fine Else Fine Details Mailed to Email Id.

Step 20: Stop.

IV. Implementation and Result Analysis

The implementation is done in MATLAB and its database is implemented in MSACESS.

Fig 2 MATALB Implementation

Table 1 Indian Number Plate Samples

Number Identified	Image of Number Plate	Result
RJ14CU5794		Success
RJ14CJ5252		Success

RJ14CK8175		Success
UP14CB7145		Success

The table2 shows the samples of the some foreign number plates,

Table 2 Foreign Number Plate Samples

Number Identified	Image of Number Plate	Result
AKH-343		Success

AFR-420		Success

Case I: When Number Plate is Right but Bar Code Wrong

In this case, we have generated the bar code for the vehicle number RJ14CK8175 as shown in fig 4.14.

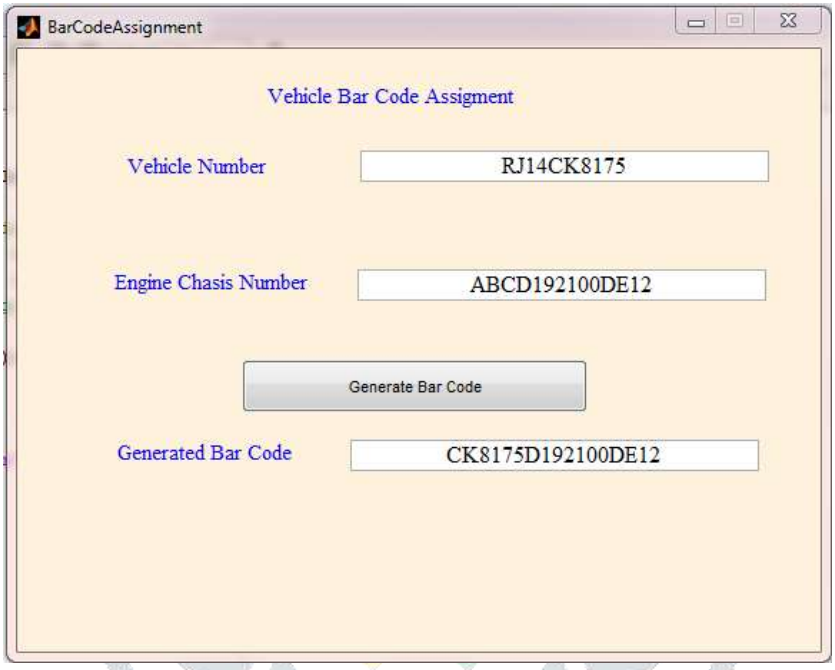

Fig 3Barcode Generation for RJ14CK8175

Now, when validating the details for the vehicle using NumberPlate Number and Barcode , as shown in fig 4 the number plate which is examined and result in fig 4.17.

Fig 4 Input Image Case I

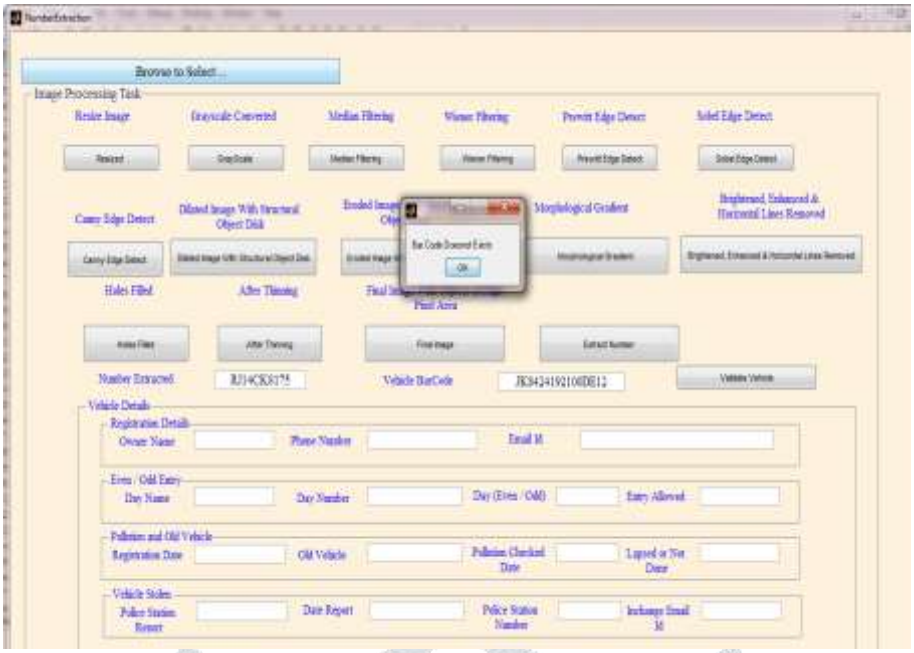

Fig 5 Result of Testing for Input Image Case I

As, the bar code doesn't match , the vehicle is restricted.

Case II: When Number Plate is Different for allotted Bar Code

Fig 6 Input Image Case II

Fig 7 Result of Testing for Input Image Case I

As, the bar code doesn't match with the assigned number plate, the vehicle is restricted.

V. CONCLUSION

The framework will naturally bring the record of the PUC and the Vehicle Registration and will confine the defective vehicles, just as follow the missing vehicles with the redirection of sends to the police headquarters, recognizable proof of the protection broken vehicles, AND Similar Vehicle Detection. Along with that , we have additionally utilized the idea of the standardized identification for the further approval of the vehicle, the scanner tag is produced utilizing the vehicle enlistment number and the body number, and this standardized tag is extraordinary for every vehicle , so this will additionally helps in following the vehicles and for the better execution of the laws.

Utilizing the number separated from the number plate, we will interface the data set of the vehicles for the accompanying purposes,

1. Pollution Control

The number from the contamination data set is removed to track down the record of the PUC , and the invalid subtleties will be gotten up and programmed fine is sent to the enrolled email id got from the reenacted vahan information base for the enlisted vehicles.

2. Similar Vehicle Detection

The issue which is emerging in India is that the comparable number plates or phony number plates utilized for making the wrongdoing ,so the apparatus data set can be gotten to for following the record of such vehicles , with the data of the kind of vehicle passed and can be coordinated with the model and make of the enlisted vehicle, to track down the comparability.

3. Missing Vehicle Finding

The record of the every one of the missing vehicles can be proposed to go on the web and will get to all device stall and the passing vehicle can be followed for the its area and the apparatus can straightforwardly mail the area of the vehicle , with the time and different subtleties, to the close by police headquarters.

4. Insurance Faulty Vehicles

One of the significant issues is that the vehicles which are not safeguarded are as yet running on streets which is a criminal offense , the protection data set can be connected and time-to-time the programmed mail is produced with the fine for the vehicles which surpassed the protection date.

The proposed work will be gainful for the detection of the crimes as it will be hard for the hoodlums to get the two subtleties of the number plate and standardized identification right on the vehicle, this will just the conceivable assuming the vehicle is taken and the taken vehicle can be effectively followed utilizing the idea proposed in the framework..

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