NOVAL ALGORITHM TO IMPLEMENT POLLUTION CONTROL AND FINE USING NUMBER PLATE DETECTION

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Abstract: Rules are always very difficult to implement and more difficult is its fairer implementation. In our proposed thesis we have suggested an innovative approach which not only ease and speed up the process of Pollution and Vehicle Restriction process but also helps in its proper implementation. We our proposed work have used the Camera for capturing the number plate and connecting the system with the RTO simulated database and pollution control database we have suggested the system for fairer fine implementation with lesser human involvement.
Keyword: Pollution Control, Traffic Fine Implementation, Number Plate Detection, Number Plate Extraction

I. INTRODUCTION

Recent year, due to people's life and citizen's income is increasing continuously, cause general people own the automobile rate is more and more high, in addition to the government spread vigorously fallow activity, the automobile not only is a indicator of identity but also is a tools of take transportation and fallow for people. So vehicles management of parking lots, electronic toll collection management of highway, locating vehicles stolen and monitor of road and so on, all become new security demand for people with vehicles management and vehicles stolen avoid [1]. At the concentrated city of commerce activity and the new type building, all have republic parking lots or underground parking lots, but the parking space is not still enough, so how to manage the parking lots efficiently, usability the parking space efficiently, improve the efficiency of management and reduce the cost of management, become an importance question. Parking lots has a person to execute vehicle control and charge manually, but not have vehicle go in and out all the time, therefore this kind of management is very waste manual labor and time. Therefore use of automatic license plate recognition system, exactly can reach automation of parking lots to reduce the cost of management, to monitor and improve the usability of parking lots. In the traffic aspect, to prevent of traffic accident and look for of vehicles stolen, due to number of police person is not enough, if only use person to recognize the license plate number, we will could not reach the goal rapidly, therefore to set up an automatic license plate recognition system, we can not only tracking the go through vehicles but also save most of manpower to improve recognized efficiency.

1.1 Steps Involved in Number Plate Detection:
The main aim of this work is to create the modules for Automatic surveillance system. This module should receive a part of the acquired image as the input and is intended to return the number in editable form of license plate.

Generally, the system is intended to recognize all types of license plates. The variety of them is enormous. They are of different shapes and colors, letters can be arranged in more than one row. For example in Indialicense plates is white background with black letters. Now the High Security Registration Plate Scheme (HSRP) Scheme was launched in 2011, different from the old format. It has chromium-based hologram with 'IND' in blue is inscribed using hot stamping foil and a unique Permanent Consecutive Identification Number [3]. In this work only the single row plates with black letters on white background are assumed as the correct only. The vehicle number plate in India consist country code, state code, district code, type of vehicle and finally the actual registration number as shown in the figure 1.1.

Figure 1: Indian License Plate Format.

II. BACKGROUND AND RELATED WORK

Ref. No.	Solution Approach	Input/Parameter used		Results	Tool
[1]	Off-line recognition system for machine printed and handwritten historicaldocuments	Domain : Machine printed or handwritten historical documents	Database : 10 printed documents TrainSet 1 and another set of 10 handwritten documents	Recognition rate is 95.44% achieved, the text set has 1351 characters and the train set 5407 characters and system recognition rate was 94.62%.	SVM
[2]	Arabic OCR algorithm	Domain : Arabic text recogniti	Tested on : Articles from	Recognition accuracy was	

		on	Alrai newspaper on 20/11/2011 and 30/11/2012, and Alrai newspaper on Oct, 20, 2012	96.5%	
[5]	OCR System for English with Database	Domain : Offline handwritten character recognition in English	Dataset contains various documents written in English.	Better Results obtained as compared to previous systems.	
[8]	Automatic extraction Methods of container Identity Numbers and registration Plates of Cars	Domain : Numbers for car number plates	Experiments are been applied on 250 images (130 containers and 120 registed plates of cars). 229 have been correctly segmented but 26 images are not	Recognition accuracy is 93%	
[9]	Feature Based adaptive image segmentation technique	Domain : License Plate-Recognition of Indian Number Plates	Database: The 10 training set of number plates have taken.	85% for number plate localization, 95% for character segmentation and 82% for character recognition.	
[10]	Two-step approach for	Domain : License	Tested on :	87% of the	
	localization	Plate-Recognition of Indian Number Plates	20 dataset of number plates	plates were localized correctly	
[11]	RELIP approach for Recognizing Four-Digit Numbers on A License-Plate	Domain: Monitoring Moving Car Movements.	Dataset : 100 sets of scenes	97 % of correct detection rate for 100 sets of scenes	
[12]	Vertical edge detection algorithm	Domain : Vehicle License Plate Detection and Recognition	Experiments are been various number plate samples	The results show accurate edge detection performance and faster processing than Sobel by five to	
[26]	Algorithms based on information bottleneck method	Domain : Image Segmentation		Image is divided in 4 quadrants of equal size. till each quadrant or sub quadrant (possibly a single pixel) contains only one color.	
[27]	Sequential probability ratio test (SPRT) and the minimal cost criterion	Domain : Real Life Image Segmentation Tested on :	Tested on :20 dataset of number plates	0.88% on average indicates an irrelevance of the randomness of SPRT	

III. ARCHITECTURAL DESIGN OF PROPOSED WORK

3.1 Problem Statement

The problem statement of research is that now a day's traffic is increasing and thereby increasing the need to apply the traffic rules more properly. Due to the corruption and also the cheating by the people driving the vehicle also, there require the need to implement the proper system. We are proposing the system, which can be used on the barriers, on the barrier we will implant a camera, which will click the photo of the vehicle, whether 2 wheeler or 4 wheeler and extract the number of the vehicle. Now, we have the database, which is maintained by RTO for the vehicles and together with the database of the Pollution Control. And we refer our research title as "Traffic Regulation Using Number Plate Detection via Image Processing"
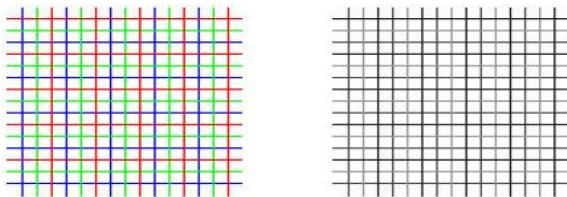
Figure 2 RGB to Gray Scale Conversion.

IV. METHODOLOGIES

The main goal of this thesis is to focus on the localization and recognition of the numbers present in license plate of a vehicle. We locate the license plate part of the vehicle from every images first, and then register them to a reference image by template matching in same precision. We use a simple templates matching to recognize the letters in the estimated trained images. Before the processing of two proposed phase for the solution, input images need to pre-process of accurate output. The following sections describe the process of these methods step by step. License plate identification technique can be used in public security law enforcement system, urban road monitoring system, intelligent management system, and many other stop and intelligent traffic related application system. In India the rapid increase of vehicles on the road forces to implement license plate recognition technology which present a huge economic value and practical significance. License plate localization is the premise of the whole license plate recognition system. This thesis, based on the image processing methods, gives the image pretreatment, for the position of license plate on the whole image of vehicle. We are MATLAB language realization, which has obtained very good location identification results. To make the car license plate recognition multiple small phases must implement such as : image acquisition, image level difference , the license plate area coarse segmentation, license plate location, license plate image binarization , plate inclination detection (such as tilt plate to tilt correction) , to determine the character boundaries , character segmentation, character identified. License Plate Recognition system has three key steps are license plate location, license plate character segmentation, license plate character recognition. For some complex images can only apply some mathematical tools to speed up the process and improve and optimize the result.
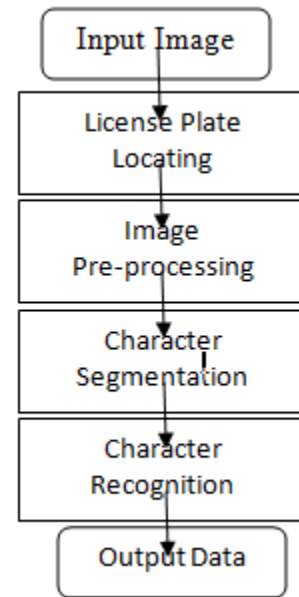
4.1 Design Specification

Figure 3 System Flow

V. EXPERIMENT RESULTS

Objectives :
- To store the information of license plate and vehicle's owner in a database.
- To capture vehicle image from Digital Camera.
- To identify the location of number plate of the captured image.
- To recognize and segment the Characters of number plate using OCR(Optical car recognition).
- To access the local Database for matching characters of number plate.
- To Retrieve Information for checking pollution control factor.

Technology Used

Matlab :

MATLAB (matrix laboratory) is a fourth-generation high-level programming language and interactive environment for numerical computation, visualization and programming. MATLAB is developed by MathWorks.

It allows matrix manipulations; plotting of functions and data; implementation of algorithms; creation of user interfaces; interfacing with programs written in other languages, including C, C++, Java, and FORTRAN; analyze data; develop algorithms; and create models and applications.

It has numerous built-in commands and math functions that help you in mathematical calculations, generating plots, and performing numerical methods.

Ms-Access 2007

Microsoft Access is a database management system (DBMS) from Microsoft that combines the relational Microsoft Jet Database Engine with a graphical user interface and software-development tools. It is a member of the Microsoft

Office suite of applications, included in the Professional and higher editions or sold separately.

Microsoft Access stores data in its own format based on the Access Jet Database Engine. It can also import or link directly to data stored in other applications and databases.

To perform Preprocessing of image by doing

Input Image

Resized Input Image

Grayscale Converted Image

Median Filtering

Wiener Filtering

Prewitt Edge Detector

Canny Edge Detector

Sobel Edge Detector

Dilated image with Structural Object Disk

Eroded Image with Structural Object Disk

Morphological Gradient

Brightened, Enhanced & Horizontal lines removed

Holes Filed

After Thinning

Final Image with High pixel Area

5.2.2 Simulation Results

Figure4:- Input image for DataSet 1

Figure5 -Resized Input Image for DataSet 1

Figure6 :Grayscale Converted Image for Dataset 1

VI. CONCLUSION

In this paper, an approach for localization of Indian number plates is presented. In this approach, number plate located at any corner of image can be localized. Given an input image, it should be able to first extract the license plate, then isolate the characters contained in the plate, and finally identify the characters in the license plate. The proposed system will search the image for high density edge regions which may contain a license plate. After that a cleaning and a verification process will be performed on the extracted regions to filter out those regions that are not containing a license plate. After that the plate will be passed to the segmentation phase where it will be divided into a number of sub-images equal to the number of the characters contained in the plate. Finally the character in the each sub-image is recognized.

Number plates having variation such as white background black script, black background white script and yellow background black script can be easily localized. Unwanted conditions such as screws and unwanted text on number plate which create problem for localization are suitably taken into consideration. As per the Indian conditions, the major sources of error were the tilt of the number plate, the non-English script, fancy stickers, and extreme variation in the dimensions of the characters ,which can be properly removed by enhancing this approach further. Thus a new framework will be generated to implement this system fully in India.

- Many proposed work shown here, had adopted many techniques only for detecting license plate but no one had worked on pollution fine control using license plate
- Imposing fine is always a difficult task and everyone try to skip from it. According to this automated process, the fining of vehicles will fare and speedy and also do not interrupt other people on the road. It will also able to reduce the manpower involved for this purpose.

In this paper, the automatic vehicle identification system using vehicle license plate is presented. The system use series of image processing techniques for identifying the vehicle from the database stored in the PC. The system is implemented in Matlab and it performance is tested on real images. The simulation results shows that the system robustly detect and recognize the vehicle using license plate against different lightening conditions and can be implemented on the entrance of a highly restricted areas.

Future Scope of our dissertation, However, this algorithm is still not satisfactory for some specific images due to bad illumination and practical situations. These problems need more information and enhancement techniques.

In this paper, we are only considering RTO approved license plates. We will deal with the others types of license plates and combine the results treatment in the future.

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