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Study of Name Plate Detection using Blob analysis Method

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***Abstract*—** Name Plate detection is the most interesting and challenging research topic from past few years. It is known that the size of a Name Plate is changing day by day. Some name plate is small in size and also in big size that's create a problem in character recognition of Name and then separated individual character using Region prop algorithm. So we need an approach which is able to detect a particular Name Plate. In this paper we will discuss on Name Plate detection technique.

An automated system is developed using morphological recognition algorithm in MATLAB R2013a. In which image is captured from camera and converted into gray scale image for pre-processing. After conversion, image complemented, binary conversion is applied on image. After conversion canny edge detection method has done and passed this detection to the dilation process. After filtration and dilation, area is selected where number of name plates is maximum and name plates are recognized from the image in the form of bounding box. Blob analysis is used for each name plate separately to detect name plate.

Keywords- *Digital Image, application, object detection, Name Plate detection.*

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I. INTRODUCTION

Image processing is processes which transform an input image file into digital form and perform some operations on it, in order to get an increase image property or to extract some useful information from it. An image can be easily repaired using various image processing techniques and algorithms. Image processing a type of signal disbursement in which input is image, like video frame or photograph and output may be image or characteristics correlate with that image. Usually image processing system working like two dimensional signals and apply the set signal processing methods to them. Image processing is widely used and rapidly growing technologies today, with its applications in various aspects of a business. Image Processing forms core research area within computer science, telecommunication, information technology and engineering and disciplines too [1].

During the last three to four decades a number of techniques have been introduced and developed in image processing. Most of the techniques are developed for enhancing images achieve from unmanned, space probes, spacecrafts and military reconnaissance flights. Image Processing systems are becoming popular due to easy availability of powerful personnel computers, graphics software, large size memory devices etc [2].

II. EXPERIMENTAL RESULT AND ANALYSIS

Name Plate detectio is a type of the object recognition system. This system is the most interesting and challenging research topic from past few years. We know that the size of Name Plate is increasing day by day in the developing and developed countries. I used simple morphological recognition method for Name Plate detection using image processing technique in Matlab.

Figure 1: Name Plate

III. METHODOLOGY

An automated system is developed using morphological recognition algorithm in MATLAB R2013a. In which image is captured from name plate and converted into gray scale image for pre-processing. After conversion, image complemented, binary conversion is applied on image. After conversion canny edge detection method has done and passed this detection to the dilation process. After filtration and dilation, area is selected where number of name plates is maximum and name plates are recognized from the image in the form of bounding box. Blob analysis is used for each name plate separately to detect name plate. Here we are using reference image 1.

This block diagram include following steps:

1) **Image Acquisition System:**
   a) Read Name plate image
   b) Resize Image
2) **Preprocessing Operations**
   a. RGB to Gray Scale conversion
   b. Image complemented
3) **Image Segmentation Process**
   c. Binary conversion

d. Edge Detection

4) **Image Enhancement**
   e. Filling Holes on images
   f. Creating Holes Edge Detected Images
   g. Filteration of image using Bewareopen command using High pass filter
5) **Object recognition**
   h. Crop of selected area
   i. Blob Analysis
   j. Name Plate Detection using Region prop

IV. PROCESS TO NAME PLATE DETECTION

Process to name plate detection include many steps. Descriptions of these steps are as following:

1) **Image Acquired**

Image acquisition is the first stage of any vision system.
We can obtain the image and after that, various methods of processing can be practiced to the image to perform the many different vision tasks required today [3].

Fig 2. Name Plate

However, if the image has not been acquired properly then the expected tasks may not be achievable, even with the aid of some form of image enhancement.

2) **Image Resize**

Here image is resized in desired size to save the memory. Here we used 400x600 image resolution.

3) **RGB to Gray Scale Conversion**

In this paper the algorithm described is not depend on the type of colours in image and confide mainly on the gray level of an image for processing and extracting the required information. Colour components like Red, Green and Blue value are not used throughout this algorithm. So, if the input image is a colored image represented by 3-dimensional array in MATLAB, it is converted [4].

Fig. 3 Gray Scale conversion

Image Complemented

As it is known that in the complement of a binary image, zeros become ones and ones become zeros; so in image complementation black and white are reversed. In the complement of an intensity or RGB image, each pixel value is subtracted from the maximum pixel value supported by the class (or 1.0 for double-precision images) and the difference is used as the pixel value in the output image. In the output image, dark areas become lighter and light areas become darker [5].

Fig. 4 Gray Scale conversion

4) **Binary Conversion**

In a binary image, each pixel assumes only one of the two discrete values: 1 or 0. A binary image is stored as a logical array. An image consists of numeric values between 0 - 255. The numerical value of the picture is reduced to two values with binary level. Thus, an 8 - bit image is converted into 2 - bit format. The threshold value must be determined for this conversion. If the pixel value in the image is greater than threshold value, then the pixel value is shown as "0"; and if the image pixel' value is less than threshold value, the pixel value is shown as "1". In this way the image is converted to the binary level [6].

Image is converted into binary image from gray scale. Intensity change value is calculated easily as compared to gray scale and color image.

Fig. 5 Binary Image

5) **Canny Edge Detection**

Edge detection, especially step edge detection has been mostly applied in various different computer vision systems,

which is an important technique to extract useful structural information from various vision objects and fiercely reduce the amount of data to be processed. It has found that, the requirements for the application of edge detection on diverse vision systems are relatively the same. Thus, a development of edge detection solution to Name Plate these requirements can be implemented in a wide range of situations [7].

Fig: 6 Canny Edge Detection

6) **Filling Holes**

Here we will fill the holes which were created on the canny edge detection to detect the name plates. This is the major step of name plate detection. This is the main part of the Morphological operations.

7) **Filteration using HighPass Filter**

A high pass filter is the basis for most sharpening methods. An image is sharpened when contrast is enhanced between adjoining areas with little variation in brightness or darkness. Here we got those pixels which are greater than the value of 20. Those pixels whose values are lesser than the 20 pixels are suppressed [8].

8) **Blob Analysis**

Blob Analysis is a common technique of machine vision which is based on analysis of logical image regions. As such it is a tool of choice for applications in which the objects being checked are clearly appreciable from the background. [8] Diverse set of Blob Analysis methods allows creating tailored solutions for a wide range of visual inspection problems. Using blob analysis we have detected characters which is shown in given below fig 7.

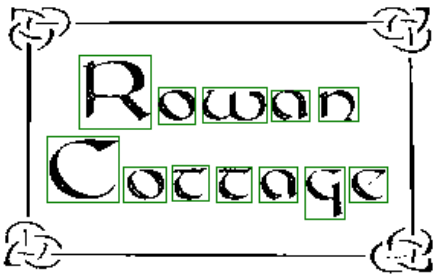

Fig. 7 Characters detected by Blob analysis

9) **Segmentation of Characters using Region props.**

When the blob analysis has been done the detected output of the Name Plate will be in segmented form.

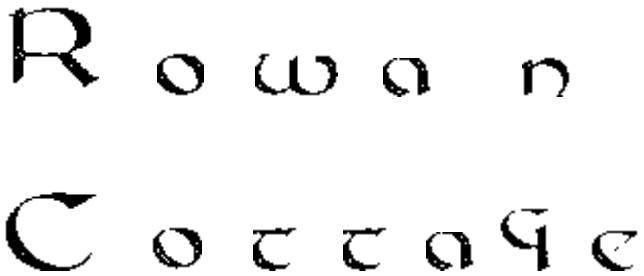

Fig: 8 Segmented Each character separately using Region Props

V. CONCLUSION

Name Plate detection is the most interesting and challenging research topic from past few years. It is known that the size of a Name Plate is changing day by day. Some name plate is small in size and also in big size that's create a problem in character recognition of Name plate. Individual character separated using Region prop algorithm. So we need an approach which is able to detect a particular Name Plate.

In this proposed approach an automated system is developed in MATLAB R2013a. For using the different technique from previous work this paper used canny edge detection method for detecting the Name Plates using blob analysis. We have successfully detected Name Plate with above given method.

VI. REFERENCES:

[1] http://www.engineersgarage.com/articles/image-processing-tutorial-applications.
[2] K.M.M. Rao, Deputy Director, NRSA, Overview of Image Processing
[3] Sangeeta Lalwani, Piyush Saxena, Amarpal Singh, "Threshold Approach to Handwriting Extraction in Degraded Historical Document Images", International Journal of Computer Applications (0975 – 8887) Volume 71– No.13, May 2013.
[4] G.P.S.Manideep, Prof.G. K. Rajini, A.Sharmila, "Analysis of Spatial domain and Frequency domain Techniques for Car plate detection", ijraset, Volume 2 Issue IX, September 2014.
[5] http://in.mathworks.com/help/images/ref/imcomplement.html.
[6] Divyang Goswami, Mrs. Rama Gaur, "Automatic License Plate Recognition System using Histogram Graph Algorithm", ijritcc, Vol. 2, Issue 11, page no. 3521-3527.
[7] http://en.wikipedia.org/wiki/Canny_edge_detector.
[8] http://docs.adaptive-vision.com/current/studio/machine_vision_guide/BlobAnalysis.html.