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Text Extraction from Camera Captured Images

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***Abstract*--Extraction of content from a caught picture is a requesting assignment because of varieties in the text dimension, textual style, introduction, arrangement, different and heterogeneous foundations. The content information accessible in the scene picture holds valuable data for substance based data indexing and recovery. The framework uses Wavelet transform of the original image in its grayscale form followed by subband filtering. Then region clustering technique is applied using centroids of the regions. Further bounding box is fit to each region thus identifying the text regions. Proposed framework is removing content and separated content is changed over into PC understanding structure. Acknowledgment of the content is done utilizing OCR engine.**

***Index Terms*: heterogeneous background, DWT, Subband filtering, clustering**

I. INTRODUCTION

It's been years, many images and videos are being created by us using cameras which are digital, phone cameras. Text in image will have important information. It is helpful if we could recognize the text meaningfully, that makes a design for an automatic text detecting and recognition system.

The study on text extraction from camera captured images, introducing a system that reads the text present in natural scene in order to help the blind[1]. To find the stroke width value for each pixel of image, and how to use on the text detection task in images methods are given [2]. Identification of content in shading pictures of heterogeneous complex hued foundation is done through a productive programmed content location technique melding multi-feature. heterogeneous complex colored [3]. Intensity information method is comprising of gray value expanding and binarizing the image by an average intensity of the image [4]. An efficient method for text localization and identification in images is given in which detection method, color, texture, and OCR statistic features are clubbed in a frame to differentiate texts from nontext objects. Color is used to segregate text pixels to form candidate text . Texture as a feature which can be used to capture the ''dense intensity variance'' feature of text arrangement. Features by OCR results are utilized to identify the text[5]. Content recognition is done utilizing multiscale surface division and spatial union requirements, then cleaned up and picked up utilizing histogram-oriented binarisation algorithm [6]. A framework is proposed to detect content using shape features content intensity, and segregate parts into districts with normally utilized geometry highlights. In intensity filtering of nontext regions the cover between the color histogram of a component and color histogram of joining area is large, and components with large values it can be taken out. To deletes regions shape filter is used, whose constituent parts arrive from the same object, as most of the words made up of various characters [7].

II. PROPOSED METHOD

The strategy proposed here is, to extract writings in common camera caught pictures utilizing Haar discrete wavelet transform (Haar DWT). The identification of edge is accomplished utilizing 2-D Haar DWT and a portion of the non-content edges are pruned applying thresholding .Though the intensity component will change in a text area. The grayscale image are processed without any modifications ,starting at DWT. If its colored picture, it is converted to gray picture and then subjected to DWT.

DWT is a very efficient method for image processing. 2D discrete wavelet transform (two dimensional DWT) divides given image into 4 subbands, 1 approximation (LL) component and 3 accurate (LH, HL, HH) components as shown in the Fig. 2.1

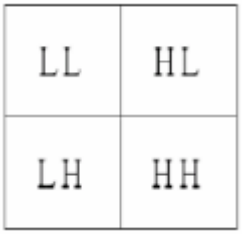

Fig: 2.1

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2-Dimensional DWT can find 3 kinds of edges at once while the other edge detection filters cannot.

Three sorts of edges are there in the exact part subbands however are unobvious. DWT channels with Haar DWT, the discovered edges turn out to be more conspicuous and the preparing time lessens. The Haar DWT is less demanding contrasted with whatever other wavelets change. Employing Haar DWT on given image, we can get several characteristics about the input image such as:

- 1.LL subband provides approximation components.
- 2. HL subband provides Vertical accurate edges.
- 3. LH subband provides Horizontal accurate edges.
- 4. HH subband provides Diagonal accurate edges.

2.1 Method To Detect Text

Operation of Morphological capacity and the legitimate AND administrators are utilized to kill the nonmessage part of the picture. In content region, vertical, flat and inclining edges are associated together and they are scattered in noncontent locales. Text regions are made up of horizontal, vertical and diagonal edges, hence such areas can be considered as text . AND operation is applied to horizontal, vertical and diagonal subbands because text edges are usually small and joined with one another in different orientation and is set to obtain the region of interest (ROI). Text area, Horizontal pixels, vertical pixels and diagonal pixels after applying AND operations to the subbands are shown in The fig 2.1.1 Sigma value in dwt determines the quantity of filtering that is the increase in the quantity of non text decreases the textured area present in image thus clipping off the non text area of the image is done.

2.1.1 Filtering Method

Figure 2.1.1 shows the four components of filtering.

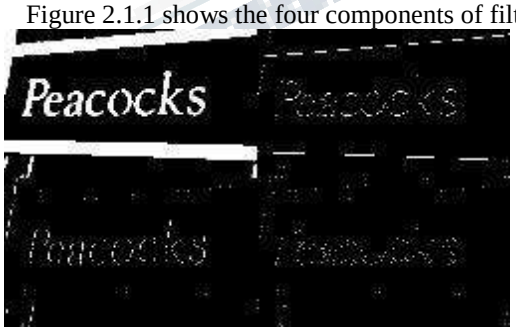

Fig: 2.1.1

Though we get text edges there are possibilities that we get some non text edges . Here scanning the image is done to store the rows having white pixel density greater than a threshold. These pixels form the component of text area after filtering

2.2 Rubber Banding Technique And Clustering

After the filtering is done the co-ordinates are sent to clustering. Using subtractive clustering to pick out cluster centroids.

The subtractive clustering technique considers each point of data is a effective center of cluster and computes a cluster center, on the basis of the density of neighboring points. The algorithm flows as follows:

- The highest potential point of data is chosen to be the 1st cluster centroid.
- Eliminates other all points of data in the neighboring of the first cluster centroid, to get the next data cluster and also its center.
- Iterations are carried out until all of the data is within the neighborhood of cluster centroid.

2.2.1 Algorithm For Clustering

Once the areas(regions) are divided into clusters, the function of rubber band technique will be employed using the cluster centroid of each area, the algorithm as follows:

RUBBER_BAND(Center_of_cluster, total_Clusters)
For every cntr € Center_of_cluster draw a 2 * 2 Grid around cntr
New_val=compute num of pixels coming undertext
%Increase=(New_Val-Old_Val)*100/ New_Val;
if %Increase< 5
plot a BoundingBox across
that region;
break;
else
Old_Val=New_Val;
End if
End for
Return;

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Fig: 2.2.1.1

2.3 Thresholding

By utilizing the bounding box set around the content territory, content region is removed from the info picture, every district is given to thresholding, and it is done utilizing Ostu's strategy for thresholding.

III. SEPARATION OF CHARACTER

After the content range is limit , the letters or must be isolated before subjecting to OCR for further acknowledgment, since there will be little hole in the middle of burns on the content region, singes are disengaged utilizing the simple and productive Connected Component (CC) calculation. Segments are thought to be 4-structuring component. CC is executed in order to get the coherence among white pixels. On the off chance that the information picture has white foundation with dark content, it turns into an issue to explain this a technique is created to check the foundation of picture which is as per the following:

Fig: 2.2.1.1

1 Draw a 3 * 3 grid at image corner.

2 Background is black ,if white pixels' density in that grid is more for black, else white.

3 If the background of the image is white, then it is converted to black and then given to CC algorithm.

4 Now every CC depicts a char which is then sent to OCR for further identification.

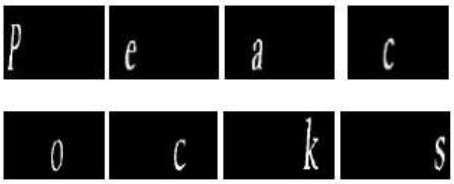

Fig: 3.1
Figure 3.1
Fig: 3.1

IV. CONCLUSION

This paper presents a groundwork to extract text region in a scene image with heterogeneous background with a rigid font style. This technique uses discrete wavelet transform to obtain the subbands. ROI is detected employing this method, which is based on the collection of texture features by applying morphological operators and logical AND operator. This method is good for images containing objects with less texture properties.

REFERENCES

[1] Nobuo Ezaki, Marius Bulacu, Lambert Schomaker, *Text Detection from Natural Scene Images: Towards a System for Visually Impaired Persons*, Proc. of 17th Int. Conf. on Pattern Recognition (ICPR 2004), IEEE Computer Society, 2004, pp. 683-686, vol. II, 23-26 August, Cambridge, UK.

[2]Boris Epshtein Eyal Ofek Yonatan Wexler Detecting Text in Natural Scenes with Stroke Width Transform

[3] Jlang Wu, Shao-Lin Qu, Qing Zhuo Wen-Yuag Wang Automatic Text Detection In Complex Color Image. Proceedings of the First International Conference on Machine Learning and Cybernetics, Beijing, **4,5** November 2002.

[4] JiSoo Kim, SangCheol Park, and SooHyung Kim Computer Science Dept., Chonnam National University, Text Locating from Natural Scene Images . Using Image Intensities. Proceedings of the 2005 Eight International Conference on Document Analysis and Recognition (ICDAR'05).

[5] Qixiang Ye *, Jianbin Jiao, Jun Huang, Hua Yu,Text detection and restoration in natural scene images.

[6]Victor Wu, Raghavan Manmatha and Edward Riseman, Text finder- An automatic system to detect and recognize text in images,IEEE transactions on Pattern analysis and machine Intelligence volume 21, No 11, Nov 1999.

[7] Zongyi Liu Sudeep SarkarRobust Outdoor Text Detection Using Text Intensity and Shape Features 2008 IEEE.