Text Detection In Image Based On The Morphology Method

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***Abstract* - Text in the images are important for understanding image contents, additionally the data that the content pass on is significantly more compact than comparing audio or video. To understand the content of image we should know the language and the information itself does not should be held in the content information. Content streams contain rich semantic data. In this paper, based upon the morphology method for detection of text in images is considered. In this paper text are detected accurate by the following pre-processing the image, apply dilation and erosion method finally text verification of image.**

***keywords* - Text detection, Morphology, Segmentation.**

I INTRODUCTION

Semantic substance in pictures contains rich and essential data which can be extremely helpful in numerous areas of software engineering, similar to content based image recovery, databases ordering and arrangement purposes. This substance can be objects, shading, surface or shape and additionally the connections between them. Textual data inside a picture is extremely intersecting, in light of the fact that content can be utilized to describe the substance of picture, and can be removed and compared with other semantic substance. For retrieval of text in image, there are two tasks: recognition of text and detection of text. The first task is localization and process of detecting regions in pictures, which carries text, the second task is identifying of character in regions detected using Optical character recognition. Text in the images is in the form of two types namely artificially texts and scene texts. Artificially text is artificially added text in an image and Scene text is text captured by the camera in a scene [2].

II RELATED WORK

In [1], picture inpainting is the way toward re-establishing the lost or harmed locales or altering the picture substance subtly. It refers to the way toward filling-in missing information in an assigned locale of the visual info. In this paper, the method introduced is for recognition and expulsion of content from pictures. The framework recognizes content utilizing morphological tasks, associated segment marking and a lot of determination criteria which filter through non content areas. In this way, the resultant picture is the picture with just messages. Content Inpainting is done in two stages. The initial step recognizes the content district naturally, without client connection and in the second step; the content is expelled from the picture utilizing model based algorithm. Model based Inpainting system is utilized for inpainting of content locales, which takes structure synthesis and surface union together. The inpainting is done in such a way, that it fills the harmed locale or gaps in a picture, with encompassing shading and surface. We have connected our algorithm on numerous pictures and found that it effectively identify the content locale.

In [2], content in video gives brief and critical substance data that are useful to video scene understanding, comment and seeking. The proposed strategy is hearty to various character estimate, position, difference, and shading. Content district update between frames is likewise utilized to decrease the handling time. The proposed strategy is exceptionally helpful for real application. Our future work is to recognize and extricate the content with various introductions to expand the algorithm for further developed and intelligent applications.

In [3], this paper exhibits a survey of different best in class procedures proposed towards various stages like recognition, restriction, extraction, and so on. Of content data preparing in pictures and video outlines. This paper gave a far reaching review of content data extraction in pictures and video. Accordingly a text image- examination is expected to empower a content data extraction framework to be utilized for a picture, including examined report pictures, genuine scene pictures through a camcorder, subtitle content pictures and video pictures.

In [4], this paper, they present a generally straightforward and powerful algorithm for content identification and extraction. This new content extraction algorithm naturally distinguishes and separates content from complex pictures by applying DWT to the pictures. This algorithm is vigorous as for various text dimension, style, languages, introduction, shading and arrangement of content and can be utilized in expansive assortment of utilization fields for example, vehicle tag identification to distinguish number plate of vehicle, portable robot route to distinguish content based land marks, object recognizable proof and so on. The vast majority of the past strategies fall flat when the characters are not adjusted well or when the characters are excessively little. They likewise result in some missing characters when the characters have exceptionally poor appear differently in relation to regard to the background.

In [5], the proposed approach depends on the utilization of a shading decrease procedure, edge location system, the restriction and acknowledgment of the content. The perceived content is then changed over to discourse. The content contains essential and helpful data which is installed in different kinds of records and common scene. The content is identified and is extricated along these lines that it is intelligible by someone else with no trouble. This additionally causes outwardly tested to know the literary data on the pictures. We have shown a content recognition approach that recognizes content that recognizes message in ordinary pictures. This methodology sets up nonspecific PC vision systems on end-to-end content affirmation in the image. The character division must be finished cautiously to avoid over division. This can prompt recombination of little strokes to frame a character.

In [6], this paper, phases of content location and acknowledgment and different strategies utilized for that have been introduced. This procedure is additionally partitioned into content identification and restriction, grouping, division and content acknowledgment. These stages are displayed in this paper alongside examination of methodologies used to experience the previously mentioned stages. Investigation of favourable circumstances, weaknesses and uses of various methodologies has likewise been performed here.

In [7], this paper, a powerful method dependent on discrete wavelet change, edge identification, and morphology activity for scene content discovery is proposed. There are a few phases in the proposed strategy. In the main stage, a solitary wavelet decay LH, HL furthermore, HH subbands are connected for distinguishing edges in unique scene content picture. The projection strategy is connected in the second stage to fundamental recognize content and non-content pixels. In third stage, 4-associated parts are connected, and after that region geometric highlight is utilized as limit to evacuate non-content district. Finally organize, morphological activities are connected to interface segregated content segments and to evacuate non-content districts. The proposed technique is connected on a different pictures, for example, pictures of low difference, complex foundation pictures and pictures of various textual styles and size of content.

In [8], this paper a powerful technique for content extraction pictures and video outlines utilizing Gabor channel is proposed. The methodology is finished by Gabor Filter, morphological and Heuristic separating process strategies is utilized to limit the content area better. The strategy is finished by content obtained using Gabor channel strategy which is used for content ID inside complex pictures also, video frame.

In [9], this paper another segmentation system is proposed utilizing morphological activities. In initial step edge is recognized utilizing Fuzzy Canny strategy which can give better outcomes contrasted with traditional strategies of edge recognition and in second stage, after edge identified, essential morphological administrators are connected which are widening and disintegration and furthermore surge fill is utilized to section the picture. It has been inferred that Segmentation utilizing morphological essential administrators can likewise section the picture. It is more straightforward and simple strategy than various segmentation strategies.

In [10], this paper Opening and shutting forms are those that control the disintegration and expansion procedures to enhance the picture. The two procedures rely upon the attributes of the organizing component to process the picture so as to pick up a superior picture. The opening and shutting process were performed on the paired picture. Accordingly, the opening procedure evacuated the closer view structures that were littler than the organizing component, while the end procedure expelled foundation structures that were littler than the organizing component. At that point, utilizing distinctive qualities of the organizing component were found to influence the tasks, and furthermore numerical morphological-picture handling.

III METHODOLOGY

The methodology is morphology-based, which depends on the way that content areas show the special kind of highlights that makes them not quite the same as other image regions. It comprises of three steps: Initially, a preprocessing of the images is carried out create a morphological binary map. At that point, candidate regions inside the binary map are associated by utilizing two essential morphological tasks. At long last, content region confirmation is important to dispose of non-content regions. Figure 3.1 demonstrates the flowchart of the proposed

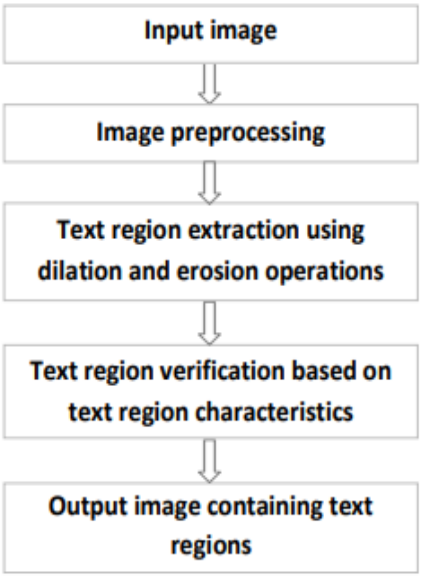


Fig 3.1 Stages of the proposed method

3.1 Preprocessing of images

Image preprocessing is used to convert color image to gray scale image .It also removes unwanted data in image by using filtering methods. The subsequent gray scale picture has just radiance/brightness elements which make easy to work on it.

3.2 Region extraction for candidate region

Morphological tasks are utilized to the morphological binary map, for joining candidate regions and noise removal .Dilation is a procedure for extracting the interested region by using structural mask of required size. Erosion is followed by dilated image is used to remove false spots in pictures. The difference between binary image and gray scale input image will provide the region extraction from image.

3.3 Text region verification

A few principles are utilized to filter through the false recognitions (i.e. noise regions and non-text regions).The standards depend on normal for content areas. After decomposing the picture into a lot of areas, a check of the separated regions dependent on normal for content districts is performed to eliminate out non content areas. In this stage, a portion of these highlights are utilized to evacuate the false location. The principal include is the size of area, if a region is excessively little, it is discarded. The second element utilized in, is the Aspect proportion of the region. In the event that the esteem is excessively huge or excessively little, the region is disposed of. Long bar-formed areas and too thin region can be evacuated by this standard. These highlights are utilized to smother the non-content region which has unpredictable shape however has solid surface reaction.

IV DISCUSSION ON RESULT

The trial of anticipated project is to detect the text region from image using morphological method. Each tested images had different font style, font size, orientation, colors and images with the background. Manual examination is carried out to detect the text region from the images. The proposed work is to detect text region from image with complex background by using erosion and dilation methods.

In Figure 4.1, 4.3 and 4.5 shows the experimental input images which contain text along with complex background. These images are called as scene text images.

In figure 4.2, 4.4 and 4.6 show output images where text are extraction from image using erosion and dilation method. Erosion is used to remove the noise, complex background, and colors then dilation used for text extraction. For each text in output images is surrounded by red color rectangle box which indicates text detected from images.

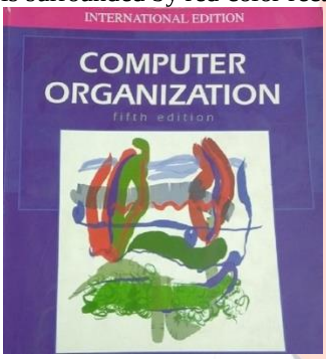
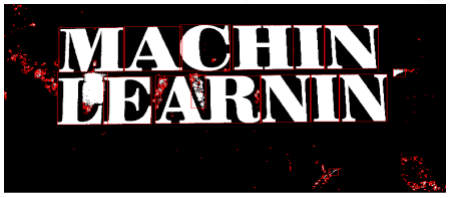
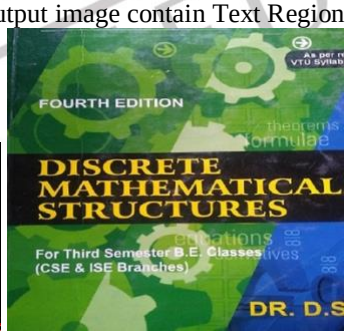


Fig 4.1 Experimental Input image Fig 4.2 Output image contain Text Region Fig 4.3 Experimental Input Image





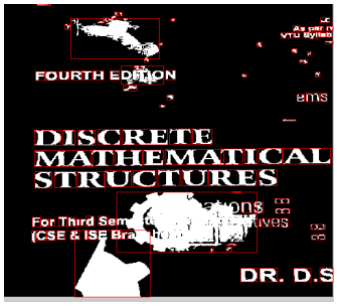
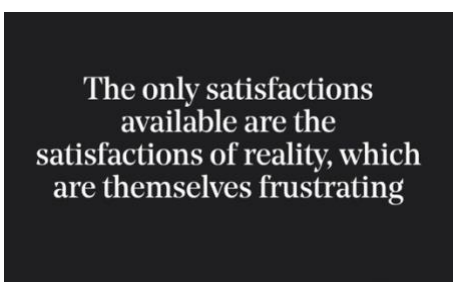


Fig. 4.4 Output Image Fig 4.5 Experimental Input Image Fig 4.6 Output Image

In figure 4.7 and 4.8 shows the artificial input image andoutput image.



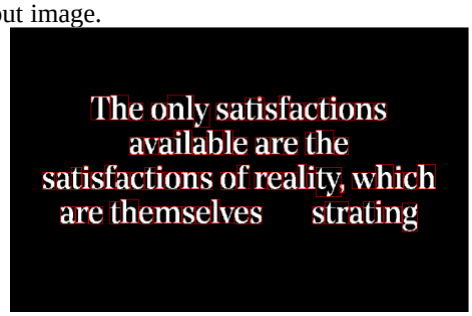


Fig 4.7 Input Image with text Fig 4.4 Output Image

The implemented project works well with scene and artificial images. The total 100 images are tested. The technique accomplishes a general identification rate for both the scene and artificial image is 75% and 85%. The purpose behind false

dismissal rate for both images is 20% and 15.5% with complex background and some text are not detected whose rate is for both is 15%.

V CONCLUSIONS

This paper is more effective work with morphology technology to detect the text from the image. Text are detected accurate by the following pre-processing the image, apply dilation and erosion method finally text verification of image. The text are extracted from complex background such as various text, various style etc. The future work, reduces false dismissal rate of scene text images with complex background and accurate detection of smaller text size in the images.

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