Automated Image Character Recognition Based Text Detection and Tracking System

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ABSTRACT: OCR (Optical Character Recognition) System works in the domain of Natural Language Processing and Image Processing. This is used to convert all the text information that is present in image form, to text format. Text is one of the most influential inventions of Humanity. The fertile and precise information incorporated in text is very useful in a wide range of applications that are computer-vision based, and hence text detection, Tracking and recognition in natural scenes (e.g.: traffic sign boards, license plate, Hoardings and videos etc.) have become important and active research topics in computer vision and document analysis. This survey presents a review of various state-of-the-art techniques proposed for different processes (i.e. detection, Tracking, localization, extraction, etc.) of text information processing in Images. Literature review can further serve as a good reference for researchers in the areas of scene text detection, Tracking and recognition. The aim is to introduce the researchers to the latest trends in this area and to serve as a resource for developers who wish to integrate such solutions into their own work. In this method a text which is a color image is captured from different scenario and processing it with a median filters to reduce the noise and clears the background and then OCR process the image and converts it into the black and white image and save it in the text documents.

I. INTRODUCTION

Digital media archives are increasing to colossal proportions in the world today, which includes audio, video and images An Image refers as a picture produced on an electronic display. A digital image is a numeric representation of a two-dimensional image. Digital image processing refers to processing of digital images by using digital computers. Nowadays, most of the applications prefer digitalized version, to reduce memory space. Lot of application depends on digital images. One of the important application is medical image processing. Image processing is computer imaging where application involves a human being in the visual loop. Digital imaging is the creation of digital images, such as of a physical scene or of the interior structure of an object. The term is often assumed to imply or include the processing, compression, storage, printing, and display of such images. In digital imaging, the total value of each pixel is represented in binary code. The binary digits for each pixel are called "bits," which are read by the computer to determine the analog display of the image. The number of pixels-per-inch (PPI) is a good indicator of the resolution, which is the ability to distinguish the spatial detail of the digital image.

II. EXISTING SYSTEM

It extracts text lines of any orientations based on gradient vector flow (GVF) and neighbor component grouping. The GVF of edge pixels in the Sobel edge map of the input frame is explored to identify the dominant edge pixels which represent text components. The method extracts edge components corresponding to dominant pixels in the Sobel edge map, which we call text candidates (TC) of the text lines. The first finds nearest neighbors based on geometrical properties of TC to group broken segments and neighboring characters which results in word patches. The end and junction points of skeleton of the word patches are considered to eliminate false positives, which output the candidate text components (CTC). The second is based on the direction and the size of the CTC to extract neighboring CTC and to restore missing CTC, which enables arbitrarily oriented text line detection in video frame.

Drawback:
* Edge detection based text detection output not clearly.

III. OVERVIEW OF THEPROPOSED

SYSTEM

It presents a comprehensive survey of text detection, tracking and recognition methods and systems in video, with a special focus on recent technical advancements. In contrast to the previous surveys this survey uniformly summarizes and describes detection, tracking, recognition and their relations and interactions within a generic video text extraction framework. In this method, video text Detection, Tracking and Recognition (DETR) framework Here, Detection is the task of localizing the text in each video frame with bounding boxes. Tracking is the task of maintaining the integrity of the text location and tracking text across adjacent frames. Recognition involves segmenting (if necessary) text and recognizing it using Optical Character Recognition (OCR) techniques. Obviously, Recognition is performed on text regions detected from Detection results (Detection-based-Recognition), and Tracking uses the locations identified in the Detection step to track text (Tracking Tracking with- Detection). In this method a text which is a color image is captured from different scenario and processing it with a median filters to reduce the noise and clears the background and then OCR process the image and converts it into the black and white image and save it in the text documents.
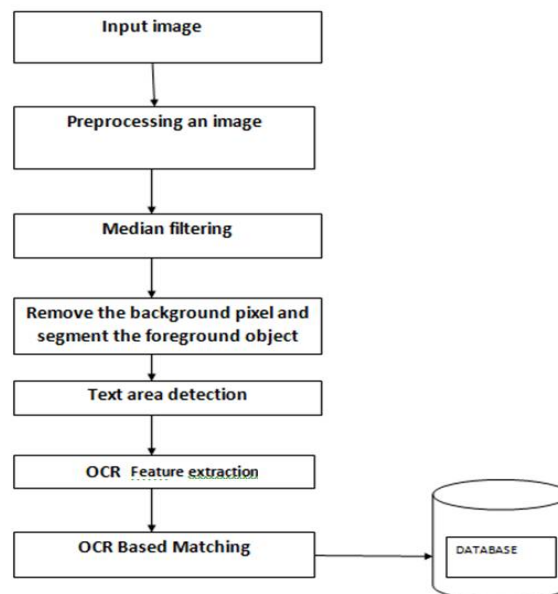

Figure: 3.1 Block diagram of proposed system

It shows the process of recognizing and verifying the image .First it convert the input image into gray scale image. Here the median filter is used to filter the grayscale image. After filtering, the background is removed and the morphological process remove the extra noise present in background. Finally it detects the text and save it as Text document. This process is used for security purpose especially for number plates checking. OCR technique is used for extracting the text from the colored image. After that a black and white image is obtained.

3.1 OPTICAL CHARACTER RECOGNITION

Optical character recognition is needed when the information should be readable both to humans and to a machine and alternative inputs cannot be predefined. In comparison with the other techniques for automatic identification, optical

character recognition is unique in that it does not require control of the process that produces the information. Optical Character Recognition deals with the problem of recognizing optically processed characters.
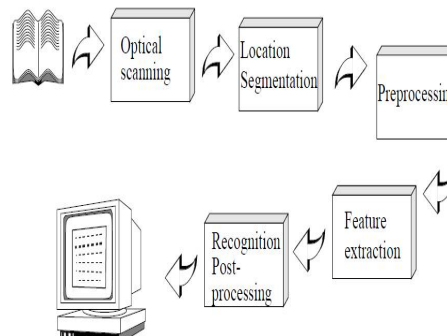

Figure: 3.2 Components of an OCR-system

IV.VIDEO TEXT DETECTION AND RECOGNITION

TEXT DETECTION

These methods for text detection can be roughly categorized into two major groups: connected component (CC) based methods and region based methods (also called sliding window based methods). CC based methods extract character candidates from images by connected component analysis followed by grouping character candidates into text, probably with additional checks to remove false positives. CC based methods usually perform well for captions that have uniform color and regular spacing; however, CCs may not preserve the full shapes of characters due to color bleeding and the low contrast of text lines. Region based methods use a binary text/non-text classifier to search for possible text regions over windows of multiple scales and aspect ratios and then group the text regions into text.

TEXT RECOGTION

Video text recognition is conventionally performed using existing OCR techniques; in other words, text regions are first segmented from video frames and then fed into a state-of- the-art OCR engine. However, the recognition performance relies heavily on text segmentation/binarization (removing the background) and may suffer from noise and distortion in complex videos. Hence, several methods have been specifically designed for video text recognition. One strategy is to design a totally new text recognition framework. For example, in a method proposed text extracted from videos is first represented as sequences of learned features with a multi-scale scanning scheme.

V.CONCLUTION

In image text recognition, the functionality of an algorithm can be measured either by character level recognition rate or by word level recognition rate. We have discussed a DETR-OCR on image text detection and recognition. In this the input image is given as the normal colored image containing the text. Other then DETR based on Maximally Stable External Regions (MSERs), and Stroke Width Transform (SWT) is outstanding. MSER/ER based methods utilize the color (intensity) uniformity of text strokes, while SWT utilizes the uniformity of the width of text strokes to detect text. In MSER detects the character in boundary process. Here the input image will be tracked and recognized by MSER and produced accurate output.

REFERENCES

1. C. L. Zitnick and P.Doll´ar, (2014) "Edge boxes: Locating object proposals from edges," 13th European Conference on Computer Vision (ECCV'14), , pp. 391–405.
2. P. Doll´ar, R. Appel, S. Belongie, and P. Perona,(2014),. "Fast feature pyramids for object detection," IEEE Trans. Pattern Anal. Mach. Intell., vol. 36, no. 8, pp. 1532–1545.

3. P. Shiva kumara, Z. Yuan, D. Zhao, T. Lu, and C. L. Tan (2015) "New gradient-spatial-structural features for video script identification," Computer Vision and Image Understanding, vol. 130, pp (35–53).
4. T. Q. Phan, P. Shiva kumara, S. Tian, and C. L. Tan,(2013) "Recognizing text with perspective distortion in natural scenes," IEEE International Conference on Computer Vision (ICCV'13), , pp. 569–576.
5. X.-C.Yin, H.-W. Hao, J. Sun, and S. Naoi, (2007) "A multi-stage strategyto perspective rectificaiton for mobile phone camera-based document images" International Conference on Document Analysis and Recognition (ICDAR'07), , pp. 574–578.