

# Scene Text Recognition in Mobile Application by Character Descriptor and Structure

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**ABSTRACT:** The images which is capture by camera contain a various words and text, which provide a lot of information in various fields. Reading text from natural scene image is difficult. Because background object and fluctuation in the image. We trying to focus on the concept of reading text from natural scene image. In this we use concept related to the optical character recognition. In text recognition process we are going to use character descriptor and structure configuration to read that text. Which give most readable text from image. The text detection and recognition algorithm are using to search character text. We are trying to develop a system which is Android-based that are focuses on the effectiveness for recognition method. The text recognition system can also able to provide us some insight into algorithm design and performance improvement of scene text extraction. We are expecting the results will obtain from this system is much satisfied than other related previous system.

**Keywords:** Scene text detection, scene text recognition, mobile application, character descriptor, stroke configuration, text understanding, text retrieval, mobile application.

## I. INTRODUCTION

Now a day the mobile phones will be available to every person. The camera based text information can provide the effective tags or clues for any mobile application like as media analysis, content retrieval assessment navigation and scene understanding. In natural capture images or scene images and video, text character and string usually appear in near by sign board or objects provides the information about the surrounding environments and objects.

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Tag that are based upon text are more applicable than barcode or quick response code because text in picture contain information and required pre-installed marks. To getting the text information by the mobile device from natural scene, automatic and efficient scene text detection and recognition algorithms are useful.

To extract the text from the scene image is very challenging task due to two main factor:

1. Cluttered background with noise and non text outliers
2. Diverse text pattern such as character types, fonts and size.

The natural scene can be included the background texture such as grid window & brick even resemble text character & string and any other objects.

Its is difficult to model the structure of text character in images due the lack of discriminative pixel appearance & structure features. the text consists the different words with the different font, styles size etc. To solve these problem scene text extraction can be divide into two process:

1. Text Detection
2. Text Recognition.

Text detection is to localize image regions contenting text character & string. It is useful to remove the most non text background outliers. Text recognition is to transform pixel based text into readable form.

Its main aim is to divide different text characters & properly compose text words. In the paper will only focuses on text recognition method. It involving the 62 identify categories of text character including the 10 digit [0-9] 26 English latter uppercase [A-Z] and lower case [a-z]. In the text recognition process we propose effective algorithm for detect text regions in scene images. In text recognition process we designing the two schemes of scene text recognizer to predict the category of character in an images patch. The second one is training a binary character. Classifier for each class of character to predict the existence of this category in an image patch. The text understanding & text retrieval are text understanding application related to scene text. Text understanding means acquiring the text information into the natural scene to understanding the environment and objects. Text retrieval is used to verify whether a piece of text information which is exists in natural scene mobile phones or device.

In this application can be mostly used in smart mobile phones or device. In this paper we proposed two recognition schemes. In character descriptor used for extract representative & different fractures from character

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patches. It combines the different features like as Harris corner, maximal stable external regions & dense sampling and histograms of oriented gradients descriptors and secondly generate a binary classifiers for each character class in text retrieval. By using the character recognizer text understanding is applicable for providing surrounding text information for mobile application, for the each class of character text retrieval is helpful for searching the expert object from environment.

As compared to other method, our method combines the low level feature descriptor with stroke configuration to model text character structure. In previous work rarely represents the scene text extraction then transplant our method into an android based platform.

### II. RELATED WORK

In the text detection aims to localize text regions in images by filtering out non text and background. In the text recognition the text of image is detected with in the regions and covered into readable text codes. scene text recognition is still an open topic to be addressed. In the ICDAR (robust reading competition of international conference on document analysis and recognition) the best word recognition rate for scene images was only about 42%. In scene text characters are composed of cross cutting stroke components in uniform colours & multiple orientations but they are usually influenced by some font distortion and background outliers. the OCR system that means optical character recognizer can achieve the almost perfect recognition rate on printed text in scanned documents but it can not accurately recognize the word are text information directly from camera captured images & videos and are usually sensitive to font scale changes & background interference which widely exist in scene text. OCR system have poor performance or much lower than the recognition for scanned documents many algorithms' are proposed for improving scene image based text character recognition.

The weinman combined the global based appearance model alpha language model related to simultaneously frequency & letter case, similarly model & lexicon model to perform the character structure by defining a dictionary of basic shape codes to perform character & word retrieval without OCR on scanned documents. In extracted local features of character patches from an unsupervised learning method associate with a variant of k means clustering & pooled them by cascading sub patch features. A dictionary of words to be spot is built to improve the accuracy of detection and recognition.

### III. EXISTING SYSTEM

In part based tree structure detect and recognize text from image done at same time. Also in Optical character recognition process it uses the scan document to extract text. In that it uses a binarization process which makes complication in development. Also lose of data in done in that process. The natural image is different from the scan document. So it is difficult to extract text from image.

#### A. Drawbacks Of Existing System:

- 1) In existing system the text from image is localized only. It can not capable for extracting that text.
- 2) Existing system propose for gray scale images it can useful color images.
- 3) These systems cannot distinguish the uppercase and lowercase characters.
- 4) Word recognition data-sets that ignore words with less than two characters or with non-alphanumeric characters.
- 5) Calculate cost function.

## IV. PROPOSED WORK

In this system we are trying to use the scene text extraction in Android-Mobile platforms. Here we combine scene text detection and text recognition algorithm. It can able to detect regions of text strings from cluttered background, and recognize characters in the text regions.

Comparing with a PC platform, the mobile platform is portable and more convenient to use. Scene text extraction will be more widely used in mobile applications on mobile platform. However, two main challenges should be overcome in developing the scene text extraction application in mobile platform. This method can be used on Android platform is based on Java engine. Due to the limitations of computing speed and memory allocation in mobile device, we trying attempt to make our implementations efficient enough for real applications. To improve the efficiency, we can skip layout analysis of color decomposition in text detection, but directly apply the canny edge map for layout analysis of horizontal alignment. It lowers the accuracy of text detection, but is still reliable for text extraction from nearby object in enough resolutions. In addition, code optimization is performed.

In this system each frame spends about 1 second in completing the whole process of scene text extraction. Where this system runs on any Android operating system. It will capture natural scene by the phone camera, and extract text information from the captured scene images, which are frame-by-frame processed.

## V. SYSTEM DESIGN & IMPLEMENTATION

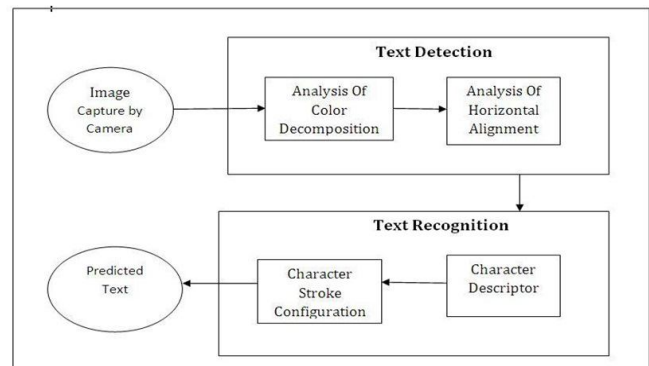


Fig: System Architecture

Our system is mainly divided into two part text detection and text recognition. The capture image is apply

as input to text detection phase. Text detection perform the colour decomposition and horizontal alignment. In colour decomposition text colour and background colour are check and background are eliminated from text. In horizontal alignment the same alignment text or character are grouped. The output of text detection are given as input to text recognition phase. Text recognition is divided into character descriptor and character stroke configuration.

In character descriptor using different detector we find keypoint to locate text in the image which is captured by camera. Character descriptor is used to check the font , colour pixels and much more characteristics of the character. The final output of the descriptor is recognized and that is matched with the character sets of the synthesized characters of the software and if it is matched then that synthesized characters only displayed on the output screen as the final output of the main system.

## VI. EXPECTED RESULT

Here we are conducting the various experiments for analysis of input and output specially this is for testing purpose in project.

*A.Expected output:* The original image which is captured by camera is identify. The image contain text which is not easily understand. By using this system we retrieve that text from image.

*B. Analysis:* In this section we will conduct the experiment with the android based smart-phone. In which we capture image and detect text regions from that image. From detected text region we extract text and display that text.

*C. Final analysis:* In this we conclude that the image that contain text that is not understand easily is retrieve by using character descriptor and structure configuration.

## VIII. CONCLUSION

From our study we have concluded that we trying to retrieve text from natural scene image. It will be implementable. The images content different object, component, movable, immovable object which confuses to understand the text or character. Here we try to retrieve text from the natural scene images.

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