

Comparative Studies on Text Extraction From Real Time Images

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Abstract- As in real life scenarios, we come across so many texts at different places which has information and need to be identified and stored for which various image text extraction. In this paper, text extraction from images and their different methods, their challenges, drawbacks and applications are discussed. Further on this, we have discussed about how to overcome such challenges and drawbacks. A survey of text extraction from images has been discussed in the form of a table in a systematic way in which different research work has been showed.

1. Introduction:

Text has always been an important part of human kind in many ways. Text are present in different form around us like in newspapers, magazines, pictures, text crafted on stones, manuscripts etc. In today's generation, text is everywhere and can be found on signal boards, hoardings, posters, pamphlet's, invitation cards, eBooks etc., and these text holds an important information which can have a meaning full information and can be important to any human who lives in this word. To gain the information which is present over different form in different languages at different places, we have to extract that data and utilize it to gain knowledge. Hence we have to use the text extraction and recognition from images to gain the knowledge. A method for the extraction of text images is provided by Chen et al. [1], followed by Jung et al. [2] in 2004 and Liang et al. [3] in 2005. But these were contributed a decade ago and recent contribution to this field are given by Zhu et al. [4] and Ye et al. [5] in 2015 where text extraction from natural scene images is done and complete method was shown. These research papers have presented the complete reviews which are required for scene text recognition.

In this paper, we will provide an outline and basic background on extraction and recognition of text from source images.

- We will give a glance on previously conducted work on extraction and recognition of text.
- We will report the current research status of text extraction and recognition.
- We will highlight several issues and key features for comparison of different text extraction techniques.

2. Background

Text extraction and its detection from images is done in many research papers. One algorithm has been developed in [6]. This algorithm efficiently detects and extracts complex form of text from images. This research claims that it can be used in application areas of segmentation of pages, identification of objects and detection of vehicle licenses. Another attempt is made to extract text from images from city scenes [7]. This research used morphological based segmentation method and later did classification using multiple SVM classifiers. A method is proposed for the extraction of text efficiently for complex images [8]. This research made use of MLP based texture classifier for improving the recall of complex images. This research claims that it provides an efficient way for the text localization. Efficient algorithm has been proposed for the extraction of complex images using Heuristic Filtering method [9]. This research claims the efficiency of algorithm with its recall rate of 99.6% and precision rate of 96.2%.

3. Scope and Application:

With the advancement in the technology, now a days people are using the high resolution camera's to capture images and there is a huge drop in utility of scanners when compared to the phone camera's and digital cameras. With the technology growth the camera based images can be further categorized into three classes which can be visual input and access application, multimedia retrieval applications and industrial automation applications are shown in Table 1

Table 1. Text Extraction Applications

Group	Applications
Visual input and access	Aid Required for Portable Travel Digital libraries for the generation of text to speech meant for visually impaired ones. Reality of Augmentation [10] Reading of license plates [11]
Industrial automation	Systems required for automatic geocoding [12] Code reader for Cargo container [13] Navigation of Robots [14]
Multimedia retrieval	Retrieval of text from videos [15–20] Recognition of Web Text [21]

4. Camera Captured Scene Text Extraction Process:

So far, we have seen how text is present on several places and how it is stored in the form of images which can be usually taken with the help of cameras. To detect the text present in the image and to recognize and translate it, is the biggest challenge. It involves a stepwise process which has four steps namely text detection, text localization, text verification and segmentation and enhancement. The process of camera captured scene -text extraction works as shown in Figure 1.

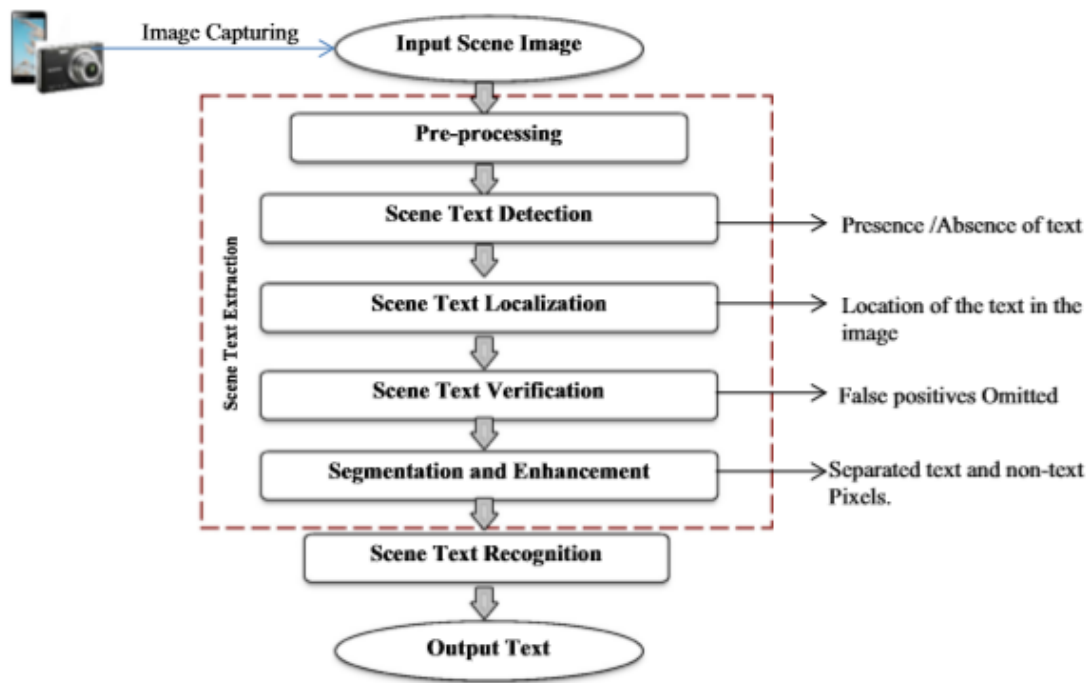


Figure 1. Text Extraction of Scene Images Process

5. Localization of Scene Text Techniques Summary

Contributors	Year	Method or Technique	Features	Challenges
Kimetal.[22]	2003	SVM and CAMSHIFT	Text detection in natural images from natural images and videos containing complex texturedbackgrounds. Insensitive to Image resolution.	Not handling efficiently in case of images with low contrast.
Chenetal.[23]	2004	AdaBoost	Fast detection of text from complex images.	Features are expensive in terms of Computational cost.
Hanifetal.[24]	2008	Ada Boost and attentional cascade	Fast detection of text from complex images.	Handling Horizontal Text only.
Zhouetal.[25]	2011	AdaBoost	Handling only multilingual texts	Handling Horizontal Text only.
Gllavatetal.[26]	2004	K Means, Wavelet transform.	Detection of text which contains different colours and sizes.	Colour Discrimination in text detection is a problem.
Saoietal.[27]	2005	K Means with Wavelets.	Handles colour differences in text efficiently.	Handling Horizontal Text only.
Jietal.[28]	2008	Correlation Analysis and SVM	Text background contrast done efficiently.	Handling Horizontal Text only.
Sanketietal.[29]	2011	Binarization is done	Efficient in detecting small and blurry text.	Handling Horizontal Text only.
Angadietal.[30]	2010	High-passfiltering,DCT domain	Efficient detection of text from images having low resolution.	Only focused on text blocks with localization of rough estimates.

6. Conclusion

In this paper, text extraction from images has been discussed in the form of a table in which different research work has been compared. Text extraction from images and their different methods, their challenges, drawbacks and applications are discussed. Further on this, we have discussed about how to overcome such challenges and drawbacks. The authors believe that this work will definitely provide an outline in terms of text extraction from images for beginners in this field.

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