Optical character recognition research papers examples

Literature

Optical character recognition involves the change of images of printed or typewritten text, either mechanically or electronically into machine-encoded text. This technique is used in data entry from data records on printed paper. The applications include invoices, receipts, passport documents, bank statements among other documents. Additionally, optical character recognition is used to digitize text that is in print, thereby allowing such text to be searched, electronically edited, displayed online and stored in a more compact manner. By turning print data into electronic data using optical character recognition, various other applications such as text-to-speech, machine translation, text mining and key data are enabled. This paper summarizes insights from three scholars regarding optical character recognition. The paper will consider their perspectives and take a position (Cheriet 1).

End-to-End Scene Text Recognition

Even though optical character recognitions systems have been revolutionary, there are problems with the detection of words and recognition of natural images (Wang, Babenko & Belongie 1). In the article, the authors agree that the problem that has recently been recognized by the computer vision community is more challenging compared to reading and converting texts from scanned documents. The authors argue that even though sub-components of the indentified problem such as the recognition of cropped image word and text detection have been researched singly, the contribution of recent approaches towards resolving end-to-end problems of optical character recognition is still unclear. This amounts to a gap in information, especially because of the potential applications of optical character

recognition in data management.

In order to fill this gap, the authors present a solution that involves the constriction and evaluation of two systems. One of the systems that the authors propose consists of a text detection tool that is followed by a optical character recognition engine. The second system that the authors propose is inspired by their previous research in optical character recognition. This system entails generic object recognition. Through a comparison of their results and general trends regarding optical character recognition, the authors show that their generic object recognition approach achieves superior performance. Their results further show that the application of methods of generic computer vision enables scene text recognitions in the real world (Wang, Babenko & Belongie 7). The systems proposed in the article do not just limit the use of optical character recognition to characters in print text but also broadens the application of this technology to scene characters in the real world.

Works cited

Cheriet, Mohamed, Kharma, Nawwaf., Liu, Cheng-Lin & Suen, Ching. Character Recognition Systems: A Guide for Students and Practioners. Hoboken, N. J: Wiley-Interscience, 2007. Print.

Wang, Kai, Babenko, Boris, & Belongie, Serge. End-to-end scene text recognition. 2011. Web. 14. Nov 2014

A Graph-Based Segmentation and Feature Extraction Framework for Arabic Text Recognition

Optical character recognition in English has taken off due to recent developments in generic computer vision techniques. Its development in

other languages is particularly deficient, as identified by Elfammal & Ismail (1). In their article, they identify the impediments to the use of optical character recognition in Arabic as the cursive nature in which Arabic text is presented. In this form, characters in the Arabic text are conjoined to form sub words along the base line. This has attracted many researchers who have attempted to segment Arabic texts to form different characters. This is the gist of the article where the authors present an algorithm that is based on a graph framework that is used to segment Arabic text. The design of the graph-based framework features an element that is designed to extract structural features that are independent of the font used. These features are important in the recognition of the text under this algorithm. The algorithm presented in the article takes advantage of the topological relation between the line adjacency graph and the baseline. In this approach, the Arabic text is segmented into different sub-character units. After the segmentation, the sub-character units are taken through a structure analysis procedure for the recognition of the sub-character units. In acknowledgement of the fact that Arabic text contains diacritic sings and dots, the proposed algorithm contains a different classifier for the recognition of these elements of Arabic text. So far, any recognition is done for various segments of the text. In order to recognize the final character, the algorithm uses a regular grammar to describe the composition of various characters from the sub-character units. Although this algorithm is more complex from the algorithms proposed by (Wang, Babenko & Belongie 7), it is important to note that the approaches are solutions to different problems in optic character recognition.

Works cited

Elfammal, Ahmed & Ismail, Mohamed. A graph-based segmentation and feature extraction framework for Arabic text recognition. n. d. Web. 14. Nov 2014

Wang, Kai, Babenko, Boris, & Belongie, Serge. End-to-end scene text recognition. 2011. Web. 14. Nov 2014

An Arabic optical character recognition system using recognition-based segmentation

Cheung, Bennamoun. & Bergmann (1) identifies the difficulties in the recognition of Arabic text, especially because of the cursive scripts that form its text. In their conception, optical character recognition of Arabic text suffers because of the classical segmentation problems that are attributed to the cursive scripts (Sobh 7). The authors propose an optic character recognitions system for Arabic text that employs recognition-based segmentation to overcome the problems with the cursive scripts.

This algorithm separates Arabic words or sub words that overlap horizontally. The algorithm also contains a feedback loop that controls the permutation of character units for recognition. Testing on the proposed algorithm has been done showing a recognition accuracy of 90%. These two algorithms present headway in the optical character recognition for Arabic texts. However, it is important to incorporate the computer vision mechanisms proposed by (Wang, Babenko & Belongie 1) in order to not only limit the optical character recognition in Arabic texts to only scanned material, but also recognition of texts in real life scenes (Iwamura & Faisal 150).

Works cited

Cheung, A. Bennamoun, M. & Bergmann, N. An Arabic optical character

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Iwamura, Masakazu, and Faisal Shafait. Camera-based Document Analysis and Recognition: 4th International Workshop, Cbdar 2011, Beijing, China, September 22, 2011, Revised Selected Papers. Berlin: Springer, 2012. Print.

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