

{tag}

{/tag}

Digital Image and Signal Processing
© 2015 by IJCA Journal

IJCA Proceedings on National conference on

DISP 2015 - Number 2

Year of Publication: 2015

Authors:

Hashem Ghaleb

P. Nagabhushan

Umapada Pal

{bibtex}disp3018.bib{/bibtex}

Abstract

Arabic script is cursive in both handwritten and printed form. Segmentation of Arabic script- especially handwritten- is a very challenging task. Many difficulties arise due to the inherent characteristics of Arabic writing such as the overlapping of Arabic sub-words wherein the sub-words share the same vertical space, and vertical ligatures wherein characters are stacked upon each other in a word. In this paper, an algorithm to resolve the overlapping of handwritten Arabic sub-words is introduced. The proposed algorithm is based on pushing strategy;

sub-words are pushed in order to obtain a clear vertical cut separating the sub-words. The proposed algorithm was tested using handwritten text selected from four different datasets and the results are quite promising.

References

- A. Cheung, M. Bennamoun, and N. W. Bergmann. An Arabic optical character recognition system using recognition-based segmentation, *Pattern Recognition*, Vol. 34, No. 2, pp. 215-233, 2001.
- N. Farah, L. Souici, and M. Sellami. Decision fusion and contextual information for Arabic word recognition for computing and informatics, *Computing and Informatics*, Vol. 24, No. 5, pp. 463-479, 2012.
- M. Elzobi, A. Al-Hamadi, Z. Al Aghbari, and L. Dings. IESK-ArDB: a database for handwritten Arabic and an optimized topological segmentation approach, *International Journal of Document Analysis and Recognition*, Vol. 16, No. 3, pp. 295-308, 2013.
- L. M. Lorigo and V. Govindaraju. Offline Arabic Handwriting Recognition: A Survey, *IEEE Transactions on Pattern Analysis and Machine Intelligence*, Vol. 28, No. 5, pp. 712-724, 2007.
- A. M. AL-Shatnawi, F. H. AL-Zawaideh, S. AL-Salaimeh, and K. Omar. Offline Arabic Text Recognition – An Overview, *World of Computer Science and Information Technology Journal*, Vol. 1, No. 5, pp. 184-192, 2011.
- M. Zand, A. N. Nilchi, and S. A. Monadjemi. Recognition-based Segmentation in Persian Character Recognition, *World Academy of Science, Engineering and Technology*, Vol. 2, pp. 183-187, 2008.
- A. Alaei, P. Nagabhushn, and U. Pal. A New Dataset of Persian Handwritten Documents and Its Segmentation, In proceedings of 7th Iranian conference on Machine Vision and Image Processing, pp. 1-5, 2011.
- S. A. Mahmoud, I. Ahmad, W. G. Al-Khatib, and M. Alshayeb. KHATT: An open Arabic offline handwritten text database, *Pattern Recognition*, Vol. 47, No. 3, pp. 1096-112, 2014.
- M. Pechwitz, S. S. Maddouri, V. Märgner, N. Ellouze, and H. Amiri. IFN/ENIT- Database of Handwritten Arabic Words, In CIFED : colloque international francophone sur l'écriture et le document, 2002.
- H. A. AlHamad and R. A. Zitar. Development of an efficient neural-based segmentation technique for Arabic handwriting recognition, *Pattern Recognition*, Vol. 43, No. 8, pp. 2773–2798, 2010.
- H. A. AlHamad. Over-Segmentation of Handwriting Arabic Scripts using an Efficient Heuristic Technique, In proceedings of the International Conference on Wavelet Analysis and Pattern Recognition, pp. 180-185, 2012.
- M. Elzobi, A. Al-Hamadi, L. Dinges, and B. Michaelis. A Structural Features Based Segmentation for Off-line Handwritten Arabic Text, In proceedings of 5th International Symposium on I/V Communication and Mobile Network, pp. 1-4, 2010.
- M. T. Parvez and S. A. Mahmoud. Arabic handwriting recognition using structural and syntactic pattern attributes, *Pattern Recognition*, Vol. 46, No. 1, pp. 141-154, 2013.
- A. Alaei, P. Nagabhushan and U. Pal. A Baseline Dependent Approach for Persian

Handwritten Character Segmentation, In proceeding of the twentieth International Conference On Pattern Recognition, pp. 1977-1980, 2010.

- S. N. Srihari, G. R. Ball and H. Srinivasan. Versatile Search of Scanned Arabic Handwriting, In Arabic and Chinese Handwritten Recognition Summit, SACH 06, pp. 57-69, 2006.

- D. Lopresti, G. Nagy, S. Seth, and X. Zhang. Multi-Character field recognition for Arabic and Chinese handwriting, In Arabic and Chinese Handwritten Recognition Summit, SACH 06, pp. 93-100, 2006.

- A. Zidouri. ORAN: a basis for an Arabic OCR system, In proceedings of International Symposium on Intelligent Media, Video, and Speech Processing, pp. 703-706, 2004.

Index Terms

Computer Science

Pattern Recognition

Keywords

Arabic Sub-words Overlapping Arabic Sub-words Resolving Overlapped Arabic Sub-words.