Neuro-Classification for Handwritten Arabic Text

Ramzi A. Haraty and Catherine Ghaddar
Lebanese American University
P.O. Box 13-5053 Chouran
Beirut, Lebanon 1102 2801
Email: rharaty@lau.edu.lb

The issue of handwritten character recognition is still a big challenge to the scientific community. Several approaches to address this challenge have been attempted in the last years, mostly focusing on the English pre-printed or handwritten characters space. Thus the need to attempt a research related to Arabic handwritten text recognition.

Algorithms based on neural networks have proved to give better results than conventional methods when applied to problems where the decision rules of the classification problem are not clearly defined. Two neural networks were built to classify already segmented characters of handwritten Arabic text. The process starts by using a neuro-conventional algorithm, and a neural network for segmenting binarized connected blocks of characters; then, a heuristic algorithm extracts features from these characters and feeds them into two neural networks for classification purpose. The two neural networks correctly recognized 73% of the characters.

However, one hurdle was encountered in the above scenario, which can be summarized as follows: there are a lot of handwritten characters that can be segmented and classified into two or more different classes depending on whether they are looked at separately, or in a word, or even in a sentence. In other words, character classification, especially handwritten Arabic characters, depends largely on contextual information, not only on topographic features extracted from these characters.

Keywords
Arabic Text Classification and Artificial Neural Networks.