HAND WRITTEN CHARACTER RECOGNITION USING IMAGE PROCESSING AND ARTIFICIAL NEURAL NETWORK TECHNIQUES

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N W A INDIKA THILAKASIRI

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N.W.A.I. Thilakasiri

Information Technology Center

University of Peradeniya

Peradeniya

Sri Lanka

Hand Written Character Recognition is a mechanism for converting hand written characters to computer text codes. It can be a very useful tool in any situation where direct entry of data into a computer is difficult. In this study a system was developed to process printed hand written text using image processing techniques and recognizing using Artificial Neural Network.

The recognition problem was implemented in several phases such as segmentation, skeletonization, normalization, feature extraction and classification. Segmentation was used to identify individual character images in the printed form and then the skeletons of each segmented character image were obtained using Hilditch's skeletonization algorithm. These skeletons were then normalized to a standard size using scaling. Feature extraction of normalized skeletons was performed to obtain 16 element feature vectors. These feature vectors were then classified using two neural networks trained earlier with a sample data set. The two neural network techniques used were Back Propagation Feed Forward Neural Network and Self Organizing Maps(SOM).

The results show that approximately 65% of accuracy could be achieved using both techniques. The limitation in the amount of data used for training is a major reason for the inaccuracies. Therefore it is anticipated that by increasing the amount of training data and reducing the noise in images would greatly increase the accuracy.