

## Chain coding and pre processing stages of handwritten character image file

### ABSTRACT

In this paper detailed descriptions of the algorithms used in the pre-processing and feature extraction phases of an offline handwritten character are discussed. In classifying handwritten characters, the stages prior to the classification phase play a role as major as the classification itself. There are many pre-processing functions and methods that can be used and different research works will use different methods. This paper discusses in detail some of the algorithms used in the pre-processing stages of an offline handwritten character image file. This paper serves as part of the whole research work that aims at recognizing handwritten characters. The whole research presents a hybrid approach of HMM and Fuzzy Logic in the field of handwritten character recognition. Fuzzy Logic is used in the classification phase while HMM is used in the process of extracting features for the preparation of linguistic variables of the fuzzy rules. However, only the preprocessing stages as employed by the research are described here. The pre-processing phase starts from reading in the input file, the process of binarization, reference line estimation and thinning of the character image for further use in the next stage of the feature extraction and recognition process. Each of the pre-processing stages and the chain coding process will be described in detail giving improvised algorithms, and examples of the processes on existing samples from the database shown. Where comparing experiments with other methods is done, the experimental results are given.

**Keyword:** Pre-processing; Feature extraction; Chain-coding; Binarization; Thinning; Handwritten character