A Novel Neuro-Fuzzy Classifier Based on Weightless Neural Network

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Abstract

A single layer weightless neural network is used as a feature extraction stage of a new neuro-fuzzy classifier. The extracted feature vector measures the similarity of an input pattern to the different classification groups. A fuzzy inference system uses the feature vectors of the training set to generate a set of rules required to classify unknown patterns. The resultant architecture is called Fuzzy Single Layer Weightless Neural Network (F-SLWNN). The performance of the F-SLWNN is contrasted with the performance of the original Winner-Takes-All Single Layer Weightless Neural Network (WTA-SLWNN). Comparative experimental results highlight the superior properties of F-SLWNN classifier.