An Ensemble of Enhanced Fuzzy Min Max Neural Networks for Data Classification

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Abstract
An ensemble of Enhanced Fuzzy Min Max (EFMM) neural networks for data classification is proposed in this paper. The certified belief in strength (CBS) method is used to formulate the ensemble EFMM model, with the aim to improve the performance of individual EFMM networks. The CBS method is used to measure trustworthiness of each individual EFMM network based on its reputation and strength indicators. Trust is built from strong elements associated with the EFMM network, allowing the CBS method to improve the performance of the ensemble model. An auction procedure based on the first-price sealed-bid scheme is adopted for determining the winning EFMM network in undertaking classification tasks. The effectiveness of the ensemble model is demonstrated using a number of benchmark data sets. Comparing with the existing EFMM networks, the proposed ensemble model is able to improve classification accuracy rates in the empirical study.

Keywords*: Multi-agent classifier system, fuzzy min-max neural network, trust measurement, classification accuracy*