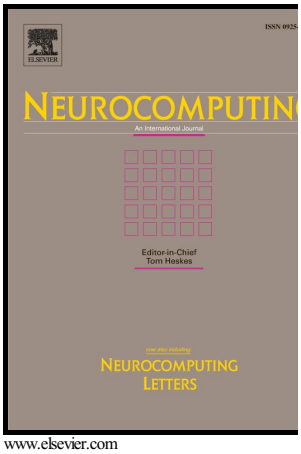

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Automatic Feature Extraction Based Structure Decomposition Method for Multi-classification

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Abstract

For years, researchers in neural network (NN) area have been carried out much productive research in improving the generalization ability of NNs. In this paper, a novel neural network design algorithm is presented for solving multi-class problems, structure decomposition based on Skeletonization (SDBSkeletonization), which is to simplify NNs further. The proposed method decomposes a complex multi-class problem into a set of two-class problems, each of which can be regarded as an individual problem. After learning all these individual problems in parallel with Skeletonization algorithm, we then integrate these results to final decision. In addition, Skeletonization solves the classification problem based on automatic feature extraction. This perspective gives a broader range of application of our method. Our experimental results on Waveform and Handwritten Digits database demonstrate that SDBSkeletonization improves the overall classification performance.