Abstract

The Pruned modified fuzzy hyperline segment neural network (PMFHLSNN) is pruned extension of Fuzzy hyperline segment neural network (FHLSNN) with modification in the testing phase. In this paper, a genetic algorithm based rule extractor (GA-PMFHLSNN) is proposed to extract a small set of compact and comprehensible fuzzy if-then rules with high classification accuracy from the PMFHLSNN. After pruning, open hyperline segments are generated from the remaining hyperline segments and a "don't care" approach is adopted by GA rule extractor to minimize the number of features in the extracted rules with higher classification accuracy. The performance of FHLSNN, PMFHLSNN and GA-PMFHLSNN are evaluated using
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tenfold cross-validation for five benchmark problems and handwritten character database. All the results show that the proposed approach can extract a set of compact and comprehensible rules with high classification accuracy for all the selected datasets.

References

- Kolman, E. and Margaliot, M. "Are artificial neural networks white boxes?"

Index Terms

Computer Science
Algorithms
Keywords

Pmfhlsnn  Genetic Algorithm  Confidence Factor  Fuzzy If-then Rules Extraction  Don’t Care Antecedent

Pruning

Tenfold Cross Validation

Pattern Classification.