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
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.  &quot;Are artificial neural networks white boxes?&quot;

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.