Destructive Algorithm for Rule Extraction based on a Trained Neural Network

Abstract

The present paper introduces a new destructive algorithm for rule extraction based on a trained neural network. The degree of complexity of neural network increases exponentially as a factor of the numbers of input and hidden nodes. Therefore, the dimensionality of the trained neural network is reduced by using a proposed destructive algorithm to extract only the most effective values of the input attributes which have higher impact on the output result for each class. Thus, the searching efficiency is highly increased and the computation is dramatically reduced for extracting rules. The generated rules from the proposed model are fired through two levels for each class. As for the first level, it deals with each individual effective input value, and the second level is concerned with each possible conjunction of the effective input values. Moreover, the proposed model extracts the strongest rules which represent a large number of instances from the database by adjusting the similarity measure threshold value. Finally, the proposed model is evaluated on different public-domain datasets and compared with standard learning models from WEKA, then the results assert that the set of rules extraction from the proposed method is more accurate and concise compared with those obtained by the other models.

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**Index Terms**

Computer Science  
Artificial Intelligence

**Keywords**

Rule Extraction  Supervised Learning  Neural Network  Destructive Technique  Performance Measures.