Extracting the Classification Rules from General Fuzzy Min-Max Neural Network

Abstract

The general fuzzy min-max neural network (GFMMN) is capable to perform the classification as well as clustering of the data. In addition to this it has the ability of learning in a very few passes with a very short training time. But like other artificial neural networks, GFMMN is also like a black box and expressed in terms of min-max values and associated class label. So the justification of classification results given by GFMMN is required to be obtained to make it more adaptive to the real world applications. This paper proposes the model to extract classification rules from trained GFMMN. These rules justify the classification decision given by GFMMN. For this GFMMN is trained for the appropriate value of\$\theta\$. The min-max values of all the hyperboxes are quantized and these are expressed in the form of rules. Each rule represent the the kind of patterns falling in that hyperbox. These rules are readable and represents the trained network. Experiments are conducted on eight different benchmark datasets obtained from UCI machine learning repository. These results prove the applicability of the proposed method.

Refer


- J. Zupan, Introduction to artificial neural network (ANN) methods: What they are and how to use them, Department of Chemistry, University Rovira Virgili, Tarragona, Spain Acta Chimica Slovenica, pp. 327-352, 1994.


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