

Using Fuzzy-Rough Subset Evaluation for Feature Selection and Naive Bayes to Classify the Parkinson's Disease

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Abstract

Feature selection is one of the issues in machine learning as well as statistical pattern recognition. This is important in many fields (such as classification) because there are many features in these areas, many of which are either unused or have little information load. Not eliminating these features does not make a problem in terms of information, but it does increase the computational burden for the intended application. Besides, it causes to store of so much useless information along with useful data. A problem for machine learning research occurs when there are many possible features with few attributes of training data. One way is to first specify the best attributes for prediction and then to classify features based on a measure of their dependence. In this study, the Fuzzy- Rough subset evaluation has been used to take features in core of similar features. Fuzzy-rough set-based feature selection (FS) has been demonstrated to be extremely advantageous at reducing dataset size but has various problems that yield it unproductive for big datasets. Fuzzy- Rough subset evaluation algorithm indicates that the techniques greatly decrease dimensionality while keeping classification accuracy. This paper considers classifying attributes by using fuzzy set similarity measures as well as the dependency degree as a relatedness measure. Here we use Artificial Neural Network, Naïve Bayes as classifiers, and the performance of these techniques are compared by accuracy, precision, recall, and F-measure metrics.

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