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Data classification with the genetic algorithm AGR (Article)**Robu, R.^a** , **Holban, S.^b**^a Department of Automation and Applied Informatics, Politehnica University of Timisoara, Bulevardul Vasile Parvan, No. 2, Timisoara, Romania^b Department of Computers, Politehnica University of Timisoara, Bulevardul Vasile Parvan, No. 2, Timisoara, Romania

Abstract

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The specific literature contains an important number of genetic algorithms which successfully classify data. The paper presents a synthesis of these algorithms. The models discovered by genetic algorithms should have an accuracy and coverage as good as possible. In order to encourage the discovery of some rules with good coverage, a factor that determines the fitness of a rule to grow proportional with its coverage could be included in the fitness function, but this will not guarantee the discovery of new rules with a satisfactory coverage. The proposed genetic algorithm was named AGR and comes with a solution to this problem. The models made of rules discovered by AGR guarantee a configurable percent of minimum coverage on the instances from the training set. The discovered rules contain the logical conditions "AND" and "OR". The algorithm can recalculate the class following the crossover, it can work only with the best rule that was discovered in each iteration. In order to ensure a maximum coverage, the algorithm can calculate a default rule. The algorithm was implemented in Weka and in a dedicated application. The analysis of the algorithm's results on medical datasets showed that it can be successfully used for data classification. © 2015 by IJAI.

Author keywords

AGR; Classification; Data mining; Genetic algorithm; Weka

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