Research on some methods for finding classification association rules on training datasets and their application in disease diagnosis

End Vongphasith

Abstract: This study investigates methods for mining class association rules from training datasets and applies them to medical diagnosis. Class association rules, a specialized form of association rules where the consequent is a class label, offer high interpretability, which is crucial in clinical decision-making. The research focuses on developing and evaluating algorithms that efficiently extract these rules from sample data while ensuring high classification accuracy. Key challenges addressed include managing rule redundancy, optimizing support and confidence thresholds, and handling imbalanced medical datasets. The proposed methods are implemented and tested on real-world diagnostic datasets, including those for chronic diseases. Experimental results demonstrate that the extracted rule sets provide competitive predictive performance compared to traditional classifiers, with the added benefit of transparent, human-readable decision logic. The findings confirm that class association rule mining is a viable approach for building interpretable diagnostic support systems, offering physicians clear, evidence-based rule patterns to aid in disease identification and treatment planning.

Keywords: Association rules, classification, disease diagnosis, data mining