Wang, Huaduo; Shakerin, Farhad; Gupta, Gopal

FOLD-RM: A scalable, efficient, and explainable inductive learning algorithm for multi-category classification of mixed data. (English) Zbl 07595332


Summary: FOLD-RM is an automated inductive learning algorithm for learning default rules for mixed (numerical and categorical) data. It generates an (explainable) answer set programming (ASP) rule set for multi-category classification tasks while maintaining efficiency and scalability. The FOLD-RM algorithm is competitive in performance with the widely used, state-of-the-art algorithms such as XGBoost and multi-layer perceptrons, however, unlike these algorithms, the FOLD-RM algorithm produces an explainable model. FOLD-RM outperforms XGBoost on some datasets, particularly large ones. FOLD-RM also provides human-friendly explanations for predictions.

MSC: 68N17 Logic programming

Keywords: explainable AI; data mining; inductive logic programming; machine learning

Software:
QuickFOIL; XGBoost; sCASP; nFOIL; UCI-ml; FOLD-R++; Aleph

Full Text: DOI arXiv

References: