

An Approach for Association Rules Ranking

Authors : Rihab Idoudi, Karim Saheb Ettabaa, Basel Solaiman, Kamel Hamrouni

Abstract : Medical association rules induction is used to discover useful correlations between pertinent concepts from large medical databases. Nevertheless, ARs algorithms produce huge amount of delivered rules and do not guarantee the usefulness and interestingness of the generated knowledge. To overcome this drawback, we propose an ontology based interestingness measure for ARs ranking. According to domain expert, the goal of the use of ARs is to discover implicit relationships between items of different categories such as 'clinical features and disorders', 'clinical features and radiological observations', etc. That's to say, the itemsets which are composed of 'similar' items are uninteresting. Therefore, the dissimilarity between the rule's items can be used to judge the interestingness of association rules; the more different are the items, the more interesting the rule is. In this paper, we design a distinct approach for ranking semantically interesting association rules involving the use of an ontology knowledge mining approach. The basic idea is to organize the ontology's concepts into a hierarchical structure of conceptual clusters of targeted subjects, where each cluster encapsulates 'similar' concepts suggesting a specific category of the domain knowledge. The interestingness of association rules is, then, defined as the dissimilarity between corresponding clusters. That is to say, the further are the clusters of the items in the AR, the more interesting the rule is. We apply the method in our domain of interest - mammographic domain- using an existing mammographic ontology called Mammo with the goal of deriving interesting rules from past experiences, to discover implicit relationships between concepts modeling the domain.

Keywords : association rule, conceptual clusters, interestingness measures, ontology knowledge mining, ranking

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