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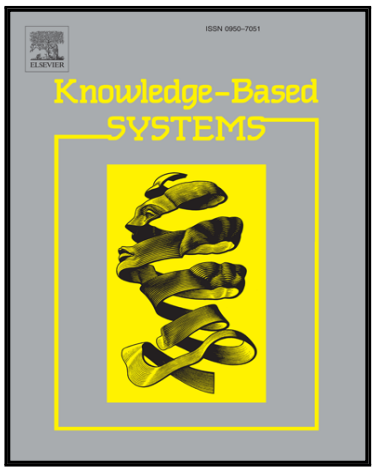

Generalization effect of quantifiers in a classification based on Relational Concept Analysis

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Generalization effect of quantifiers in a classification based on Relational Concept Analysis

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Abstract

Relational Concept Analysis (RCA) has been designed to classify sets of objects described by attributes and relations between these objects. This is achieved by iterating on Formal Concept Analysis (FCA). It can be used to discover knowledge patterns and implication rules in multi-relational datasets. The classification output by RCA is a family of lattices whose graphical representation facilitates the analysis by an expert. However, RCA comes with specific complexity issues. It iterates on the building of interconnected concept lattices, so that each concept in a lattice might be the cause of generating other concepts in other lattices. In complex analyses, it relies on the successive choice of scaling operators which affects the size and the understandability of the results. These operators are based on a set of quantifiers which are studied in this paper: we indeed focus on the comparison of scaling quantifiers and highlight a generality relation between them. Our theoretical proposition is complemented by an experimental evaluation of the exploration space size, based on a real dataset upon watercourses. This work is intended for data analysts, to provide them with an overview on the different strategies offered by RCA.

Keywords: Relational Data Exploration, Relational Concept Analysis,

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