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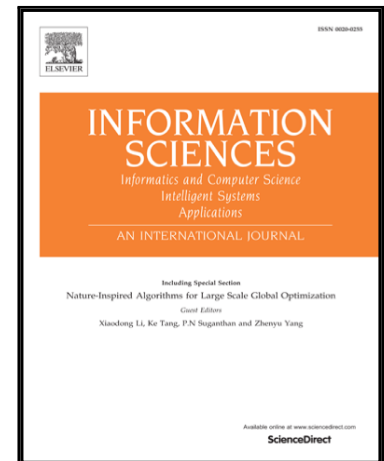
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Characterizing reducts in multi-adjoint concept lattices[☆]

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Abstract

The construction of reducts, that is, minimal sets of attributes containing the main information of a database, is a fundamental task in different frameworks, such as in Formal Concept Analysis (FCA) and Rough Set Theory (RST). This paper will be focused on a general fuzzy extension of FCA, called multi-adjoint concept lattice, and we present a study about the attributes generating meet-irreducible elements and on the reducts in this framework. From this study, we introduce interesting results on the cardinality of reducts and the consequences in the classical case.

Keywords: formal concept analysis; reducts, attribute reduction

1. Introduction

Nowadays, collected databases generally contain a large amount of data which makes their treatment a really difficult task. In addition, these data usually include redundant information that only serves to increase the complexity to handle the information. The reduction of data, preserving the main information in the considered database, is a key step in many areas that consider databases, for example, software engineering [52], information retrieval [22, 33], data mining [46, 47], knowledge discovery [25, 35, 42], machine learning [37, 55], fuzzy rough sets theory [20, 21, 30, 39], among others.

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