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Rough sets in distributed decision information systems

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Abstract

In “traditional” rough set methodologies, data are assumed to be stored in a single data repository. However, this assumption is not always true in many real-world problems, where data may be distributed across multiple locations, which is especially pertinent with the development of the Internet. To cope with this phenomenon, in this paper we extend the methodology of rough sets to distributed decision information systems. We first present a definition of rough sets in distributed decision information systems. Then we study the reducibility of distributed decision information systems at two different levels of granularity. The conditions for a decision information table or an attribute in distributed decision information systems to be reducible are presented, and an approach to compute reducts of a distributed decision information system is developed. The experimental results show that the proposed approach can be used to simplify distributed decision information systems, while retain their classification abilities.

Keywords: Rough Sets, Knowledge Reduction, Distributed Data, Distributed Decision Information Systems

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