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Editor-in-Chief
Prof. Janusz Kacprzyk
Systems Research Institute
Polish Academy of Sciences
ul. Newelska 6
01-447 Warsaw
Poland
E-mail: kacprzyk@ibspan.waw.pl

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Pawel Delimata
Mikhail Ju. Moshkov
Andrzej Skowron
Zbigniew Suraj

Inhibitory Rules in Data Analysis

A Rough Set Approach

Springer

Pawel Delimata
Chair of Computer Science
University of Rzeszów
Rejtana 16A
35-310 Rzeszów
Poland
Email: pdelimata@wp.pl

Andrzej Skowron
Institute of Mathematics
Warsaw University
Banacha 2
02-097 Warsaw
Poland
Email: skowron@mimuw.edu.pl

Mikhail Ju. Moshkov
Institute of Computer Science
University of Silesia
Będzinska 39
41-200 Sosnowiec
Poland
Email: moshkov@us.edu.pl

Zbigniew Suraj
Chair of Computer Science
University of Rzeszów
Rejtana 16A
35-310 Rzeszów
Poland
Email: zsuraj@univ.rzeszow.pl

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To our families

Preface

This monograph is devoted to theoretical and experimental study of inhibitory decision and association rules. Inhibitory rules contain on the right-hand side a relation of the kind "*attribut* $\neq$ *value*". The use of inhibitory rules instead of deterministic (standard) ones allows us to describe more completely information encoded in decision or information systems and to design classifiers of high quality.

The most important feature of this monograph is that it includes an advanced mathematical analysis of problems on inhibitory rules. We consider algorithms for construction of inhibitory rules, bounds on minimal complexity of inhibitory rules, and algorithms for construction of the set of all minimal inhibitory rules. We also discuss results of experiments with standard and lazy classifiers based on inhibitory rules. These results show that inhibitory decision and association rules can be used in data mining and knowledge discovery both for knowledge representation and for prediction. Inhibitory rules can be also used under the analysis and design of concurrent systems.

The results obtained in the monograph can be useful for researchers in such areas as machine learning, data mining and knowledge discovery, especially for those who are working in rough set theory, test theory, and logical analysis of data (LAD). The monograph can be used under the creation of courses for graduate students and for Ph.D. studies.

The authors of this book extend an expression of gratitude to Professor Janusz Kacprzyk, to Dr. Thomas Ditzinger and to the Studies in Computational Intelligence staff at Springer for their support in making this book possible.

Poland, 2008

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Contents