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Rough Sets, Fuzzy Sets, Data Mining, and Granular Computing

10th International Conference, RSFDGrC 2005
Regina, Canada, August/September 2005
Proceedings, Part I

1 Part I

Springer

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Lecture Notes in Artificial Intelligence 3641

Edited by J. G. Carbonell and J. Siekmann

Subseries of Lecture Notes in Computer Science

Preface

This volume contains the papers selected for presentation at the 10th International Conference on Rough Sets, Fuzzy Sets, Data Mining, and Granular Computing, RSFDGrC 2005, organized at the University of Regina, August 31st–September 3rd, 2005. This conference followed in the footsteps of international events devoted to the subject of rough sets, held so far in Canada, China, Japan, Poland, Sweden, and the USA. RSFDGrC achieved the status of biennial international conference, starting from 2003 in Chongqing, China.

The theory of rough sets, proposed by Zdzisław Pawlak in 1982, is a model of approximate reasoning. The main idea is based on indiscernibility relations that describe indistinguishability of objects. Concepts are represented by approximations. In applications, rough set methodology focuses on approximate representation of knowledge derivable from data. It leads to significant results in many areas such as finance, industry, multimedia, and medicine.

The RSFDGrC conferences put an emphasis on connections between rough sets and fuzzy sets, granular computing, and knowledge discovery and data mining, both at the level of theoretical foundations and real-life applications. In the case of this event, additional effort was made to establish a linkage towards a broader range of applications. We achieved it by including in the conference program the workshops on bioinformatics, security engineering, and embedded systems, as well as tutorials and sessions related to other application areas.

Revision Process

There were 277 submissions, excluding the invited, workshop, and special session papers. Every paper was examined by at least three reviewers. Out of the papers initially selected, some were approved subject to major revision and then additionally evaluated by the Advisory Board and Program Committee members; 119 papers were finally accepted, this gives an acceptance ratio equal to 43.0%.

In the case of workshops, 22 out of 130 submissions were finally approved to be published in the proceedings; this gives an acceptance ratio equal to 16.9%.

The reviewing process for the special session included in the proceedings was conducted independently by its organizers; 5 papers were finally accepted.

Final versions of all invited, regular, workshop, and special session papers were thoroughly revised by the editors, often with several iterations of corrections.

Layout of Proceedings

The regular, invited, workshop, and special session papers are published within 30 chapters, grouped with respect to their topics. The conference materials are split into two volumes (LNAI 3641 and 3642), both consisting of 15 chapters.

This volume contains 75 papers. Three invited papers are gathered in Chap. 1. The remaining 72 regular papers are gathered in Chaps. 2–15, related to rough

set approximations, rough-algebraic foundations, feature selection and reduction, reasoning in information tables, rough-probabilistic approaches, rough-fuzzy hybridization, fuzzy methods in data analysis, evolutionary computing, machine learning, approximate and uncertain reasoning, probabilistic network models, spatial and temporal reasoning, non-standard logics, and granular computing.

Acknowledgements

We wish to thank Zdzisław Pawlak and Lotfi A. Zadeh for acting as honorary chairs of the conference. We are also very grateful to the scientists who kindly agreed to give the keynote, plenary, and tutorial lectures: Vladimir Vapnik and Ronald Yager; Salvatore Greco, Hung Son Nguyen, Witold Pedrycz, Dimiter Vakarelov, Julio Valdés, and Ning Zhong; and Andrzej Czyżewski, Stéphane Demri, Igor Jurisica, Bożena Kostek, Ewa Orłowska, and Piotr Wasilewski.

Our special thanks go to Andrzej Skowron for presenting the keynote lecture on behalf of Zdzisław Pawlak, James F. Peters and René V. Mayorga for organizing the special session, and Jiman Hong, Tai-hoon Kim, and Sung Y. Shin for organizing three workshops at RSFDGrC 2005.

We are grateful for support given by the University of Regina, Faculty of Science, and Department of Computer Science. We would like to express our gratitude to all the people who helped in the organization of the conference in Regina: Brien Maguire and Lois Adams for coordinating all the arrangements, as well as Donalda Kozlowski, Connie Novitski, and Janice Savoie for support at various stages of conference preparations; Cory Butz for serving as a publicity chair; Robert Cowles and Peng Yao for administrating and improving the conference software systems; Hong Yao for launching the conference homepage, and Shan Hua for its updating and taking care of email correspondence; all other students of Computer Science who helped during the conference preparations.

We would like to thank the authors who contributed to this volume. We are very grateful to the chairs, Advisory Board, and Program Committee members who helped in the revision process. We also acknowledge all the reviewers not listed in the conference committee. Their names are listed on a separate page, including also those who evaluated the workshop paper submissions.

Last but not least, we are grateful to Alfred Hofmann and Anna Kramer at Springer for support and cooperation during preparation of this volume.

June 2005

Dominik Ślęzak
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