An Enhanced Rough Set Based Technique For Elucidating

This book constitutes the refereed proceedings of the International Workshop on Pattern Recognition in Bioinformatics, PRIB 2007, held in Singapore in October 2007. The 38 revised full papers presented were carefully reviewed and selected from 125 submissions. The papers discuss the applications of pattern recognition methods in the field of bioinformatics to solve problems in life sciences.

This volume contains the papers selected for presentation at the 9th International Conference on Rough Sets, Fuzzy Sets, Data Mining and Granular Computing (RSFDGrC 2003) held at Chongqing University of Posts and Telecommunications, Chongqing, P.R. China, May 26–29, 2003. There were 245 submissions for RSFDGrC 2003 excluding for 2 invited keynote papers and 11 invited plenary papers. Apart from the 13 invited papers, 114 papers were accepted for RSFDGrC 2003 and were included in this volume. The acceptance rate was only 46.5%. These papers were divided into 39 regular oral presentation papers (each allotted 8 pages), 47 short oral presentation papers (each allotted 4 pages) and 28 poster presentation papers (each allotted 4 pages) on the basis of reviewer evaluations. Each paper was reviewed by three referees. The conference is a continuation and expansion of the International Workshops on Rough Set Theory and Applications. In particular, this was the ninth meeting in the series and the first international conference. The aim of RSFDGrC2003 was to bring together researchers from diverse fields of expertise in order to facilitate mutual understanding and cooperation and to help in cooperative work aimed at new hybrid paradigms. It is our great pleasure to dedicate this volume to Prof. Zdzislaw Pawlak, who first introduced the basic ideas and definitions of rough sets theory over 20 years ago.

This volume contains the papers selected for presentation at the Third Inter- tional Conference on Rough Sets and Current Trends in Computing (RSCTC 2002) held at Penn State Great Valley, Malvern, Pennsylvania, U.S.A., 14–16 October 2002. Rough set theoryand its applications constitute a branch of soft computing that has exhibited a signi?cant growth rate during recent years. RSCTC 2002 provided a forum for exchanging ideas among manyresearchers in the rough set communityand in various areas of soft computing and served as a stimulus for mutual understanding and cooperation. In recent years, there have been a number of advances in rough set theoryand applications. Hence, we have witnessed a growing number of international workshops on rough sets and their applications. In addition, it should be observed that one of the beauties of rough sets and the rough set philosophyis that it tends to complement and reinforce research in manytraditional research areas and applications. This is the main reason that manyinternational conferences are now including rough sets into the list of topics.

ICSSCCET 2015 will be the most comprehensive conference focused on the various aspects of advances in Systems, Science, Management, Medical Sciences, Communication, Engineering, Technology, Interdisciplinary Research Theory and Technology. This Conference provides a chance for academic and industry professionals to discuss recent progress in the area of Interdisciplinary Research Theory and Technology. Furthermore, we expect that the conference and its publications will be a trigger for further related research and technology improvements in this important subject. The goal of this conference is to bring together the researchers from academia and industry as well as practitioners to share ideas, problems and solutions relating to the multifaceted aspects of Interdisciplinary Research Theory and Technology.

Decision modeling is a key area in the developing field of AI, and this timely work connects researchers and professionals with the very latest research. It constitutes the refereed proceedings of the 4th International Conference on Modeling Decisions for Artificial Intelligence, held in Kitakyushu, Japan, in August 2007. The 42 revised full papers presented together with 4 invited lectures are devoted to theory and tools, as well as applications.

The LNCS journal Transactions on Rough Sets is devoted to the entire spectrum of rough sets related issues, from logical and mathematical foundations, through all aspects of rough set theory and its applications, such as data mining, knowledge discovery, and intelligent information processing, to relations between rough sets and other approaches to uncertainty, vagueness, and incompleteness, such as fuzzy sets and theory of evidence.This fifth volume of the Transactions on Rough Sets is dedicated to the monumental life, work and creative genius of Zdzis{l}aw Pawlak, the originator of rough sets, who passed away in April 2006. It opens with a commemorative article that gives a brief coverage of Pawlak's works in rough set theory, molecular computing, philosophy, painting and poetry. Fifteen papers explore the theory of rough sets in various domains as well as new applications of rough sets. In addition, this volume of the TRS includes a complete monograph on rough sets and approximate Boolean reasoning systems that includes both the foundations as well as applications of data mining.

This book is dedicated to the memory of Professor Zdzis{\l}aw Pawlak who passed away almost six year ago. He is the founder of the Polish school of Artificial Intelligence and one of the pioneers in Computer Engineering and Computer Science with worldwide influence. He was a truly great scientist, researcher, teacher and a human being. This book prepared in two volumes contains more than 50 chapters. This demonstrates that the scientific approaches discovered by of Professor Zdzis{\l}aw Pawlak, especially the rough set approach as a tool for dealing with imperfect knowledge, are vivid and intensively explored by many researchers in many places throughout the world. The submitted papers prove that interest in rough set research is growing and is possible to see many new excellent results both on theoretical foundations and applications of rough sets alone or in combination with other approaches. We are proud to offer the readers this book.

This volume contains the papers selected for presentation at the 10th Int- national 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 inter- tional events devoted to the subject of rough sets, held so far in Canada, China, Japan,Poland,Sweden, and the USA. RSFDGrC achievedthe status of biennial international conference, starting from 2003 in Chongqing, China. The theory of rough sets, proposed by Zdzis law 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 - proximations. In applications, rough set methodology focuses on approximate representation of knowledge derivable from data. It leads to signi?cant results in many areas such as ?nance, industry, multimedia, and medicine. The RSFDGrC conferences put an emphasis on connections between rough sets and fuzzy sets, granularcomputing, and knowledge discoveryand data m- ing, both at the level of theoretical foundations and real-life applications. In the case of this event, additional e?ort 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.

This volume includes the best papers of the IEEE/ACIS International Conference on Computer and Information Science, ICIS 2009, held on June 2009 in Shanghai, China.

Biotechnology can be defined as the manipulation of biological process, systems, and organisms in the production of various products. With applications in a number of fields such as biomedical, chemical, mechanical, and civil engineering, research on the development of biologically inspired materials is essential to further advancement. Biotechnology: Concepts, Methodologies, Tools, and Applications is a vital reference source for the latest research findings on the application of biotechnology in medicine, engineering, agriculture, food production, and other areas. It also examines the economic impacts of biotechnology use. Highlighting a range of topics such as pharmacogenomics, biomedical engineering, and bioinformatics, this multi-volume book is ideally designed for engineers, pharmacists, medical professionals, practitioners, academicians, and researchers interested in the applications of biotechnology.

This book constitutes the refereed proceedings of the 6th International Conference on Rough Sets and Knowledge Technology, RSKT 2011, held in Banff, Canada, in September 2011. The 89 revised full papers presented together with 3 keynote lectures and 1 invited tutorial session were carefully reviewed and selected from 229 submissions. The papers are organized in topical sections on attribute reduction and feature selection, generalized rough set models, machine learning with rough and hybrid techniques, knowledge technology and intelligent systems and applications.

Together with volume VI of the Transactions on Rough Sets series, this book commemorates the life and work of Zdzislaw Pawlak (1926-2006). It presents papers that reflect the profound influence of a number of research initiatives by Professor Pawlak, introducing a number of advances in the foundations and applications of AI, engineering, logic, mathematics, and science, which have had significant implications in a number of research areas.

This book constitutes the refereed proceedings of the First International Conference on Rough Sets and Knowledge Technology, RSKT 2006, held in Chongqing, China in July 2006. The volume presents 43 revised full papers and 58 revised short papers, together with 15 commemorative and invited papers. Topics include rough computing, evolutionary computing, fuzzy sets, granular computing, neural computing, machine learning and KDD, logics and reasoning, multiagent systems and Web intelligence, and more.

Rough set approach to reasoning under uncertainty is based on inducing knowledge representation from data under constraints expressed by discernibility or, more generally, similarity of objects. Knowledge derived by this approach consists of reducts, decision or association rules, dependencies, templates, or classifiers. This monograph presents the state of the art of this area. The reader will find here a deep theoretical discussion of relevant notions and ideas as well as rich inventory of algorithmic and heuristic tools for knowledge discovery by rough set methods. An extensive bibliography will help the reader to get an acquaintance with this rapidly growing area of research.

This book constitutes the refereed proceedings of the 5th International Conference on Rough Sets and Current Trends in Computing, RSCTC 2006, held in Kobe, Japan in November 2006. The 91 revised full papers presented together with five invited papers and two commemorative papers were carefully reviewed and selected from 332 submissions.

Covering rough set is a classical generalization of rough set. As covering rough set is a mathematical tool to deal with incomplete and incomplete data, it has been widely used in various fields. The aim of this paper is to extend the covering rough sets to interval neutrosophic sets, which can make multi-attribute decision making problem more tractable. Interval neutrosophic covering rough sets can be viewed as the bridge connecting Interval neutrosophic sets and covering rough sets. Firstly, the paper introduces the definition of interval neutrosophic sets and covering rough sets, where the covering rough set is defined by neighborhood. Secondly, Some basic properties and operation rules of interval neutrosophic sets and covering rough sets are discussed. Thirdly, the definition of interval neutrosophic covering rough sets are proposed. Then, some theorems are put forward and their proofs of interval neutrosophic covering rough sets also be gived. Lastly, this paper gives a numerical example to apply the interval neutrosophic covering rough sets.

This volume of the Transactions on Rough Sets commemorates the life and work of Zdzislaw Pawlak (1926-2006), whose legacy is rich and varied. It presents papers that reflect the profound influence of a number of research initiatives by Professor Pawlak, introducing a number of new advances in the foundations and applications of artificial intelligence, engineering, logic, mathematics, and science.

The papers on rough set theory and its applications placed in this volume present a wide spectrum of problems representative to the present. stage of this theory. Researchers from many countries reveal their rec.ent results on various aspects of rough sets. The papers are not confined only to mathematical theory but also include algorithmic aspects, applications and information about software designed for data analysis based on this theory. The volume contains also list of selected publications on rough sets which can be very useful to every one engaged in research or applications in this domain and sometimes perhaps unaware of results of other authors. The book shows that rough set theory is a vivid and vigorous domain with serious results to its credit and bright perspective for future developments. It lays on the crossroads of fuzzy sets, theory of evidence, neural networks, Petri nets and many other branches of AI, logic and mathematics. These diverse connec tions seem to be a very fertile feature of rough set theory and have essentially contributed to its wide and rapid expansion. It is worth mentioning that its philosophical roots stretch down from Leibniz, Frege and Russell up to Popper. Therefore many concepts dwelled on in rough set theory are not entirely new, nevertheless the theory can be viewed as an independent discipline on its own rights. Rough set theory has found many interesting real life applications in medicine, banking, industry and others.

This book constitutes the thoroughly refereed conference proceedings of the 14th International Conference on Rough Sets, Fuzzy Sets, Data Mining and Granular Computing, RSFDGrC 2013, held in Halifax, Canada in October 2013 as one of the co-located conference of the 2013 Joint Rough Set Symposium, JRS 2013. The 69 papers (including 44 regular and 25 short papers) included in the JRS proceedings (LNCS 8170 and LNCS 8171) were carefully reviewed and selected from 106 submissions. The papers in this volume cover topics such as inconsistency, incompleteness, non-determinism; fuzzy and rough hybridization; granular computing and covering-based rough sets; soft clustering; image and medical data analysis.

This book is dedicated to Prof. Sadaaki Miyamoto and presents cutting-edge papers in some of the areas in which he contributed. Bringing together contributions by leading researchers in the field, it concretely addresses clustering, multisets, rough sets and fuzzy sets, as well as their applications in areas such as decision-making. The book is divided in four parts, the first of which focuses on clustering and classification. The second part puts the spotlight on multisets, bags, fuzzy bags and other fuzzy extensions, while the third deals with rough sets. Rounding out the coverage, the last part explores fuzzy sets and decision-making.

This book constitutes the refereed proceedings of the International Conference on Rough Sets and Emerging Intelligent Systems Paradigms, RSEISP 2007, held in Warsaw, Poland in June 2007 - dedicated to the memory of Professor Zdzislaw Pawlak. The 73 revised full papers papers presented together with 2 keynote lectures and 11 invited papers were carefully reviewed and selected from numerous submissions. The papers are organized in topical sections on foundations of rough sets, foundations and applications of fuzzy sets, granular computing, algorithmic aspects of rough sets, rough set applications, rough/fuzzy approach, information systems and rough sets, data and text mining, machine learning, hybrid methods and applications, multiagent systems, applications in bioinformatics and medicine, multimedia applications, as well as web reasoning and human problem solving.

The LNCS journal Transactions on Rough Sets is devoted to the entire spectrum of rough sets related issues, from logical and mathematical foundations, through all aspects of rough set theory and its applications, such as data mining, knowledge discovery and intelligent information processing, to relations between rough sets and other approaches to uncertainty, vagueness, and incompleteness, such as fuzzy sets and theory of evidence. Volume XVII is a continuation of a number of research streams which have grown out of the seminal work by Zdzislaw Pawlak during the first decade of the 21st century. The research streams represented in the papers cover both theory and applications of rough, fuzzy and near sets as well as their combinations.

Fuzzy classifiers are important tools in exploratory data analysis, which is a vital set of methods used in various engineering, scientific and business applications. Fuzzy classifiers use fuzzy rules and do not require assumptions common to statistical classification. Rough set theory is useful when data sets are incomplete. It defines a formal approximation of crisp sets by providing the lower and the upper approximation of the original set. Systems based on rough sets have natural ability to work on such data and incomplete vectors do not have to be preprocessed before classification. To achieve better performance than existing machine learning systems, fuzzy classifiers and rough sets can be combined in ensembles. Such ensembles consist of a finite set of learning models, usually weak learners. The present book discusses the three aforementioned fields – fuzzy systems, rough sets and ensemble techniques. As the trained ensemble should represent a single hypothesis, a lot of attention is placed on the possibility to combine fuzzy rules from fuzzy systems being members of classification ensemble. Furthermore, an emphasis is placed on ensembles that can work on incomplete data, thanks to rough set theory. .

This volume constitutes the proceedings of the 8th International Conference on Hybrid Artificial Intelligent Systems, HAIS 2013, held in Salamanca, Spain, in September 2013. The 68 papers published in this volume were carefully reviewed and selected from 218 submissions. They are organized in topical sessions on Agents and Multi Agents Systems; HAIS Applications; Classification and Cluster Analysis; Data Mining and Knowledge Discovery; Video and Image Analysis; Bio-inspired Models and Evolutionary Computation; Learning Algorithms; Systems, MAN, and Cybernetics; Hybrid Intelligent Systems for Data Mining and Applications; Metaheuristics for Combinatorial Optimization and Modelling Complex Systems.

The single-valued neutrosophic set (SVNS) can not only depict imperfect information in the real decision system but also handle undetermined and inconformity information flexibly and effectively. Three-way decisions (3WDs) are often used as an effective method to deal with uncertainties, but the conditional probability is given by the decision maker subjectively, which makes the decision result too subjective. This paper proposes a novel model based on 3WDs to settle the multiattribute decision-making (MADM) problems, where the attribute values are described by SVNS, and the attribute weights are entirely unknown.

Volume IV of the Transactions on Rough Sets (TRS) introduces a number of new advances in the theory and application of rough sets. Rough sets and - proximationspaceswereintroducedmorethan30yearsagobyZdzis lawPawlak. These advances have profound implications in a number of research areas such as the foundations of rough sets, approximate reasoning, arti?cial intelligence, bioinformatics,computationalintelligence, cognitivescience, intelligentsystems, datamining,machineintelligence,andsecurity. Inaddition,itisevidentfromthe papers included in this volume that the foundations and applications of rough sets is a very active research area worldwide. A total of 16 researchers from 7 countries are represented in this volume, namely, Canada, India, Norway, S- den, Poland, Russia and the United States of America. Evidence of the vigor, breadth and depth of research in the theory and applications of rough sets can be found in the 10 articles in this volume. Prof. Pawlak has contributed a treatise on the philosophical underpinnings of rough sets. In this treatise, observations are made about the Cantor notion of a set, antinomies arising from Cantor sets, the problem of vagueness (es- cially, vague (imprecise) concepts), fuzzy sets, rough sets, fuzzy vs. rough sets as well as logic and rough sets. Among the many vistas and research directions suggested by Prof. Pawlak, one of the most fruitful concerns the model for a rough membership function, which was incarnated in many di?erent forms since its introduction by Pawlakand Skowronin 1994. Recall, here, that Prof.

Learn how to apply rough-fuzzy computing techniques to solve problems in bioinformatics and medical image processing Emphasizing applications in bioinformatics and medical image processing, this text offers a clear framework that enables readers to take advantage of the latest rough-fuzzy computing techniques to build working pattern recognition models. The authors explain step by step how to integrate rough sets with fuzzy sets in order to best manage the uncertainties in mining large data sets. Chapters are logically organized according to the major phases of pattern recognition systems development, making it easier to master such tasks as classification, clustering, and feature selection. Rough-Fuzzy Pattern Recognition examines the important underlying theory as well as algorithms and applications, helping readers see the connections between theory and practice. The first chapter provides an introduction to pattern recognition and data mining, including the key challenges of working with high-dimensional, real-life data sets. Next, the authors explore such topics and issues as: Soft computing in pattern recognition and data mining A mathematical framework for generalized rough sets, incorporating the concept of fuzziness in defining the granules as well as the set Selection of non-redundant and relevant features of real-valued data sets Selection of the minimum set of basis strings with maximum information for amino acid sequence analysis Segmentation of brain MR images for visualization of human tissues Numerous examples and case studies help readers better understand how pattern recognition models are developed and used in practice. This text—covering the latest findings as well as directions for future research—is recommended for both students and practitioners working in systems design, pattern recognition, image analysis, data mining, bioinformatics, soft computing, and computational intelligence.

The volume LNAI 12179 constitutes the proceedings of the International Joint Conference on Rough Sets, IJCRS 2020,

which was due to be held in Havana, Cuba, in June 2020. The conference was held virtually due to the COVID-19 pandemic. The 37 full papers accepted were carefully reviewed and selected from 50 submissions. The papers are grouped in the following topical sections: general rough sets; three-way decision theory; attribute reduction; granular computing; formal concept analysis; data summarization; community detection; fuzzy cognitive maps; tutorials.
The book will provide: 1) In depth explanation of rough set theory along with examples of the concepts. 2) Detailed discussion on idea of feature selection. 3) Details of various representative and state of the art feature selection techniques along with algorithmic explanations. 4) Critical review of state of the art rough set based feature selection methods covering strength and weaknesses of each. 5) In depth investigation of various application areas using rough set based feature selection. 6) Complete Library of Rough Set APIs along with complexity analysis and detailed manual of using APIs 7) Program files of various representative Feature Selection algorithms along with explanation of each. The book will be a complete and self-sufficient source both for primary and secondary audience. Starting from basic concepts to state-of-the art implementation, it will be a constant source of help both for practitioners and researchers. Book will provide in-depth explanation of concepts supplemented with working examples to help in practical implementation. As far as practical implementation is concerned, the researcher/practitioner can fully concentrate on his/her own work without any concern towards implementation of basic RST functionality. Providing complexity analysis along with full working programs will further simplify analysis and comparison of algorithms.
This book constitutes the refereed proceedings of the Third International Conference on Advanced Data Mining and Applications, ADMA 2007, held in Harbin, China in August 2007. The papers focus on advancements in data mining and peculiarities and challenges of real world applications using data mining.
This book aims to examine innovation in the fields of computer engineering and networking. The book covers important emerging topics in computer engineering and networking, and it will help researchers and engineers improve their knowledge of state-of-art in related areas. The book presents papers from the 4th International Conference on Computer Engineering and Networks (CENet2014) held July 19-20, 2014 in Shanghai, China.
Information management is a common paradigm in modern decision-making. A wide range of decision-making techniques have been proposed in the literature to model complex business and engineering processes. In this Special Issue, 16 selected and peer-reviewed original research articles contribute to business information management in various current real-world problems by proposing crisp or uncertain multiple-criteria decision-making (MCDM) models and techniques, mostly including multi-attribute decision-making (MADM) approaches, in addition to a single paper proposing an interactive multi-objective decision-making (MODM) approach. Particular attention is devoted to information aggregation operators—65% of papers dealt with this item. The topics of this Special Issue gained attention in Europe and Asia. A total of 48 authors from seven countries contributed to this Issue. The papers are mainly concentrated in three application areas: supplier selection and rational order allocation, the evaluation and selection of goods or facilities, and personnel selection/partner selection. A number of new approaches are proposed that are expected to attract great interest from the research community.
This book constitutes the refereed proceedings of the Advanced Workshop on Content Computing, AWCC 2004, held in Zhen Jiang, Jiang Su, China in November 2004.The 26 revised full papers and 36 revised short papers presented were carefully reviewed and selected from 194 submissions. The papers are organized in topical sections on mobile code and agent technology, content sharing and consistency management, networking infrastructure and performance, content aware security, multimedia content, content mining and knowledge extraction, Web services and content applications, content retrieval and management, and ontologies and knowledge conceptualization.
Brings mathematics to bear on your real-world, scientific problems Mathematical Methods in Interdisciplinary Sciences provides a practical and usable framework for bringing a mathematical approach to modelling real-life scientific and technological problems. The collection of chapters Dr. Snehashish Chakraverty has provided describe in detail how to bring mathematics, statistics, and computational methods to the fore to solve even the most stubborn problems involving the intersection of multiple fields of study. Graduate students, postgraduate students, researchers, and professors will all benefit significantly from the author's clear approach to applied mathematics. The book covers a wide range of interdisciplinary topics in which mathematics can be brought to bear on challenging problems requiring creative solutions. Subjects include: Structural static and vibration problems Heat conduction and diffusion problems Fluid dynamics problems The book also covers topics as diverse as soft computing and machine intelligence. It concludes with examinations of various fields of application, like infectious diseases, autonomous car and monotone inclusion problems.
Part 1 of this book deals with theoretical contributions of rough set theory, and parts 2 and 3 focus on several real world data mining applications. The book thoroughly explores recent results in rough set research.
· This book is an updated version of a well-received book previously published in Chinese by Science Press of China (the first edition in 2006 and the second in 2013). It offers a systematic and practical overview of spatial data mining, which combines computer science and geo-spatial information science, allowing each field to profit from the knowledge and techniques of the other. To address the spatiotemporal specialties of spatial data, the authors introduce the key concepts and algorithms of the data field, cloud model, mining view, and Deren Li methods. The data field method captures the interactions between spatial objects by diffusing the data contribution from a universe of samples to a universe of population, thereby bridging the gap between the data model and the recognition model. The cloud model is a qualitative method that utilizes quantitative numerical characters to bridge the gap between pure data and linguistic concepts. The mining view method discriminates the different requirements by using scale, hierarchy, and granularity in order to uncover the anisotropy of spatial data mining. The Deren Li method performs data preprocessing to prepare it for further knowledge discovery by selecting a weight for iteration in order to clean the observed spatial data as much as possible. In addition to the essential algorithms and techniques, the book provides application examples of spatial data mining in geographic information science and remote sensing. The practical projects include spatiotemporal video data mining for protecting public security, serial image mining on nighttime lights for assessing the severity of the Syrian Crisis, and the applications in the government project ‘the Belt and Road Initiatives’.
"Foundations of Intelligent Systems" presents selected papers from the 2013 International Conference on Intelligent Systems and Knowledge Engineering (ISKE2013). The aim of this conference is to bring together experts from different expertise areas to discuss the state-of-the-art in Intelligent Systems and Knowledge Engineering, and to present new research results and perspectives on future development. The topics in this volume include, but not limited to: Artificial Intelligence Theories, Pattern Recognition, Intelligent System Models, Speech Recognition, Computer Vision, Multi-Agent Systems, Machine Learning, Soft Computing and Fuzzy Systems, Biological Inspired Computation, Game

Theory, Cognitive Systems and Information Processing, Computational Intelligence, etc. The proceedings are benefit for both researchers and practitioners who want to utilize intelligent methods in their specific research fields. Dr. Zhenkun Wen is a Professor at the College of Computer and Software Engineering, Shenzhen University, China. Dr. Tianrui Li is a Professor at the School of Information Science and Technology, Southwest Jiaotong University, Xi'an, China.

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.

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