

Preface

This book contains regular and workshop papers selected for presentation at the 2016 International Joint Conference on Rough Sets (IJCRS 2016) held at Universidad de Chile, Santiago de Chile, during October 7–11, 2016.

IJCRS 2016 merged four main areas referring to major topics of rough set conferences held so far: rough sets and data science (in relation to RSCTC series organized since 1998), rough sets and granular computing (in relation to RSFDGrC series organized since 1999), rough sets and knowledge technology (in relation to RSKT series organized since 2006), and rough sets and intelligent systems (in relation to RSEISP series organized since 2007). It followed the success of the Joint Rough Set Symposiums (currently called International Joint Conferences on Rough Sets) established in Toronto, Canada (2007) and then continued in Chengdu, China (2012), Halifax, Canada (2013), Granada and Madrid, Spain (2014), and Tianjin, China (2015), where the new acronym – IJCRS – was used for the first time. Its goal was to attract experts from academia and industry from all over the world, including those working in various fields related to theoretical foundations and practical applications of rough sets, those working in other fields, wishing to discuss their results and experiences with the rough set community, as well as those dealing with real-world problems, wishing to discuss them with others and to look for new inspirations.

IJCRS 2016 comprised a vital mix of regular presentations and plenary sessions. The conference opening anniversary talk and the special plenary memorial session were dedicated to the seminal achievements of Zdzisław I. Pawlak (1926–2006) – a Polish mathematician and computer scientist, the founder of rough sets (1982), who also contributed to the design of the first Polish computer (1950), introduced a new approach to random number generation (1953), introduced a positional numeral system with base -2, introduced a generalized class of reverse Polish notation languages, proposed a new formal model of a digital machine, created the first mathematical model of DNA (1965), and proposed a new, very well-received mathematical model of conflict analysis (1984). The conference program also included 12 other keynotes and plenary talks, two tutorials, the 4th International Workshop on Three-way Decisions, Uncertainty, and Granular Computing (TWDUG), and the annual meeting of the International Rough Set Society (IRSS) at which its newly elected officers (for the period 2016–2018) and newly appointed fellows and senior members were welcomed.

IJCRS 2016 attracted 109 submissions (not including invited and special memorial session contributions), which underwent a rigorous reviewing process. Each accepted full-length paper was evaluated by three to five experts on average. In the present volume, 47 regular and workshop submissions are published as full-length papers. Moreover, 27 papers are published in the form of extended abstracts in additional conference materials. All full-length papers were gathered into nine sections that reflect some of the main trends in rough set research and illustrate how rough sets can co-exist with other approaches. Section 1 includes full-length papers prepared by keynote

speakers, tutorial speakers, and IRSS fellows invited to deliver plenary talks at IJCRS 2016. Sections 2 and 3 contain papers showing how rough sets relate to the concepts of approximation, granulation, non-determinism, and incompleteness. Section 4 gathers full-length papers accepted to the TWDUG workshop. Section 5 contains both rough-set-related as well as not-rough-set-related papers on fuzziness and similarity in knowledge representation. Finally, Sections 6–9 correspond to the topics of machine learning and decision making, ranking and clustering, derivation and application of rule-based classifiers, as well as various rough-set-related aspects of working with feature subsets in knowledge discovery. We would like to thank all authors for contributing to the conference, as well as all Program Committee members and external reviewers for their hard work and very insightful comments.

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Víctor Flores
 Fernando Gomide
 Andrzej Janusz
 Claudio Meneses
 Duoqian Miao
 Georg Peters
 Dominik Ślęzak
 Guoyin Wang
 Richard Weber
 Yiyu Yao

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