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Transactions on Rough Sets VI

Commemorating the Life and Work
of Zdzisław Pawlak, Part I

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Preface

Volume VI of the *Transactions on Rough Sets* (TRS) commemorates the life and work of Zdzisław Pawlak (1926-2006)¹. His legacy is rich and varied. Professor Pawlak's research contributions have had far-reaching implications inasmuch as his works are fundamental in establishing new perspectives for scientific research in a wide spectrum of fields.

From a very early age, Zdzisław Pawlak devoted his life to scientific research. The pioneering work by Prof. Pawlak included research on the design of computers, information retrieval, modeling conflict analysis and negotiation, genetic grammars, and molecular computing. His research led to the introduction of knowledge representation systems during the early 1970s and the discovery of rough sets during the early 1980s. Added to that was Prof. Pawlak's lifelong interest in painting, photography, and poetry. During his lifetime, he nurtured worldwide interest in approximation, approximate reasoning, and rough set theory and its applications². Evidence of the influence of Prof. Pawlak's work can be seen in the growth in the rough-set literature that now includes over 4000 publications by more than 1600 authors in the rough set database³ as well as the growth and maturity of the International Rough Set Society⁴. Numerous biographies of Zdzisław Pawlak have been published⁵.

This volume of the TRS presents papers that reflect the profound influence of a number of research initiatives by Zdzisław Pawlak. In particular, this volume introduces a number of new advances in the foundations and applications of artificial intelligence, engineering, logic, mathematics, and science. These advances have significant implications in a number of research areas such as the foundations of rough sets, approximate reasoning, bioinformatics, computational intelligence, cognitive science, data mining, information systems, intelligent systems, machine intelligence, and security. In addition, it is evident from the papers included in this volume that rough set theory and its application form a very active research area worldwide. A total of 41 researchers from 8 countries are represented in this volume, namely, Canada, India, France, Norway, Poland, P.R.

¹ Prof. Pawlak passed away on 7 April 2006.

² See, e.g., Pawlak, Z., Skowron, A.: Rudiments of rough sets, *Information Sciences* 177 (2007) 3-27; Pawlak, Z., Skowron, A.: Rough sets: Some extensions, *Information Sciences* 177 (2007) 28-40; Pawlak, Z., Skowron, A.: Rough sets and Boolean reasoning, *Information Sciences* 177 (2007) 41-73.

³ <http://rsds.wsiz.rzeszow.pl/rsds.php>

⁴ <http://roughsets.home.pl/www/>

⁵ See, e.g., Peters, J.F. and Skowron, A., Zdzisław Pawlak: Life and Work. *Transactions on Rough Sets* V, LNCS 4100 (2006) 1-24. See, also, R. Słowiński, Obituary, Prof. Zdzisław Pawlak (1926-2006), *Fuzzy Sets and Systems* 157 (2006) 2419-2422.

China, Sweden, Russia, Thailand, and the USA. Evidence of the vigor, breadth and depth of research in the theory and applications of rough sets can be found in the articles in this volume.

Most of the contributions of this commemorative volume of the TRS are on an invitational basis and every paper has been refereed in the usual way. This special issue of the TRS contains 23 papers and extended abstracts that explore a number of research streams that are either directly or indirectly related to research initiatives by Zdzisław Pawlak. These research streams are represented by papers on propositional logics (Mohua Banerjee and Md. Aquil Khan), intuitionistic rough sets for database applications (Theresa Beaubouef and Fred Petry), missing attribute value problem (Jerzy W. Grzymała-Busse and Witold J. Grzymała-Busse), Zdzisław Pawlak's contributions to the study of vagueness (Mihir Chakraborty), data mining (Alicja Wakulicz-Deja and Grzegorz Ilczuk), approximation of concepts (Anna Gomolińska), intelligent systems (Andrzej Jankowski and Andrzej Skowron), acoustics (Bożena Kostek), rule evaluation (Jiye Li, Puntip Pattaraintakorn, and Nick Cercone), rough sets in China (Qing Liu and Hui Sun), four-valued logic (Jan Małuszyński, Andrzej Szalas and Aida Vitória), crisp and fuzzy information systems (Alicja Mieszkowicz-Rolka and Leszek Rolka), artificial intelligence and rough sets (Toshiharu Munakata), topology and information systems (Piero Pagliani and Mihir K. Chakraborty), conjugate information systems (Maria Semeniuk-Polkowska), incomplete transactional databases (Grzegorz Protaziuk and Henryk Rybinski), classifiers, rule induction and rough sets (Jerzy Stefanowski), approximation spaces (Jarosław Stepaniuk), relevant attributes in high-dimensional data (Julio J. Valdés and Alan J. Barton), knowledge discovery in databases (Anita Wasilewska, Ernestina Menasalvas, Christelle Scharff), information quanta and approximation operators (Marcin Wolski), lattice theory for rough sets (Jouni Järvinen).

The editors of this volume extend their hearty thanks to reviewers of papers that have been submitted to the TRS during the past 12 months: Manuel Ojeda-Aciego, Mohua Banerjee, Jan Bazan, Mihir Chakraborty, Anna Gomolińska, Etienne Kerre, Pawan Lingras, Victor Marek, Piero Pagliani, Sheela Ramanna, Dominik Ślęzak, Jerzy Stefanowski, Jarosław Stepaniuk, Piotr Synak, Piotr Wasilewski and Yiyu Yao.

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December 2006

Ivo Düntsch
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LNCS Transactions on Rough Sets

This journal subline has as its principal aim the fostering of professional exchanges between scientists and practitioners who are interested in the foundations and applications of rough sets. Topics include foundations and applications of rough sets as well as foundations and applications of hybrid methods combining rough sets with other approaches important for the development of intelligent systems.

The journal includes high-quality research articles accepted for publication on the basis of thorough peer reviews. Dissertations and monographs up to 250 pages that include new research results can also be considered as regular papers. Extended and revised versions of selected papers from conferences can also be included in regular or special issues of the journal.

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