Smart Innovation, Systems and Technologies 4

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Advances in Intelligent Decision Technologies

Proceedings of the Second KES International Symposium IDT 2010

Springer

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ISBN 978-3-642-14615-2 e-ISBN 978-3-642-14616-9

DOI 10.1007/978-3-642-14616-9

Smart Innovation, Systems and Technologies ISSN 2190-3018

Library of Congress Control Number: 2010930917

Typesetting: Scientific Publishing Services Pvt. Ltd., Chennai, India.

Printed on acid-free paper

9 8 7 6 5 4 3 2 1

springer.com

Foreword

KES International (KES) is a worldwide organisation that provides a professional community and association for researchers, originally in the discipline of Knowledge Based and Intelligent Engineering Systems, but now extending into other related areas. Through this, KES provides its members with opportunities for publication and beneficial interaction.

The focus of KES is research and technology transfer in the area of Intelligent Systems, i.e. computer-based software systems that operate in a manner analogous to the human brain, in order to perform advanced tasks. Recently KES has started to extend its area of interest to encompass the contribution that intelligent systems can make to sustainability and renewable energy, and also the knowledge transfer, innovation and enterprise agenda.

Involving several thousand researchers, managers and engineers drawn from universities and companies world-wide, KES is in an excellent position to facilitate international research co-operation and generate synergy in the area of artificial intelligence applied to real-world 'Smart' systems and the underlying related theory.

The KES annual conference covers a broad spectrum of intelligent systems topics and attracts several hundred delegates from a range of countries round the world. KES also organises symposia on specific technical topics, for example, Agent and Multi Agent Systems, Intelligent Decision Technologies, Intelligent Interactive Multimedia Systems and Services, Sustainability in Energy and Buildings and Innovations through Knowledge Transfer. KES is responsible for two peer-reviewed journals, the International Journal of Knowledge based and Intelligent Engineering Systems, and Intelligent Decision Technologies: an International Journal.

KES supports a number of book series in partnership with major scientific publishers.

Published by Springer, 'Smart Innovative Systems and Technologies' is the KES flagship book series. The aim of the series is to make available a platform for the publication of books (in both hard copy and electronic form) on all aspects of single and multi-disciplinary research involving smart innovative systems and technologies, in order to make the latest results available in a readily-accessible form.

The series covers systems that employ knowledge and intelligence in a broad sense. Its focus is systems having embedded knowledge and intelligence, which may be applied to the solution of world industrial, economic and environmental problems and the knowledge-transfer methodologies employed to make this happen effectively. The combination of intelligent systems tools and a broad range of applications introduces a need for a synergy of scientific and technological disciplines.

Examples of applicable areas to be covered by the series include intelligent decision support, smart robotics and mechatronics, knowledge engineering, intelligent multi-media, intelligent product design, intelligent medical systems, smart industrial products, smart alternative energy systems, and underpinning areas such as smart systems theory and practice, knowledge transfer, innovation and enterprise.

The series includes conference proceedings, edited collections, monographs, handbooks, reference books, and other relevant types of book in areas of science and technology where smart systems and technologies can offer innovative solutions.

High quality is an essential feature for all book proposals accepted for the series. It is expected that editors of all accepted volumes take responsibility for ensuring that contributions are subjected to an appropriate level of reviewing process and adhere to KES quality principles.

Professor Robert J. Howlett
Executive Chair, KES International
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Preface

Intelligent Decision Technologies (IDT) seeks an interchange of research on intelligent systems and intelligent technologies which enhance or improve decision making in industry, government and academia. The focus is interdisciplinary in nature, and includes research on all aspects of intelligent decision technologies, from fundamental development to the applied system.

The field of intelligent systems is expanding rapidly. Advances in artificial intelligence (AI) and connectivity have delivered exciting new applications. Networks have integrated the Internet and wireless technologies to enable communication and coordination between dispersed systems. Intelligent decision making now means that technology assists the human decision maker in everyday tasks and complex environments. The field of intelligent decision systems is interdisciplinary in nature, bridging computer science with its development of artificial intelligence, information systems with its development of decision support systems, and engineering with its development of technology.

It is therefore an honor to publish the research of scholars from the Second KES International Symposium on Intelligent Decision Technologies (KES IDT'10), hosted and organized by the Sellinger School of Business and Management, Loyola University Maryland, USA, in conjunction with KES International. The book contains chapters based on papers selected from a large number of submissions for consideration for the symposium from the international community. Each paper was peer reviewed by at least two independent referees. The best papers were accepted based on recommendations of the reviewers and after required revisions had been undertaken by the authors. The final publication represents the current leading thought in intelligent decision technologies.

We wish to express our sincere gratitude to the plenary speakers, invited session chairs, delegates from all over the world, the authors of various chapters and reviewers for their outstanding contributions. We express our sincere thanks to Dr. Karyl Leggio, Dean of the Sellinger School, and to Loyola University Maryland for their sponsorship and support of the symposium. We would like to thank Peter Cushion of KES International for his help with organizational issues. We thank the editorial team of Springer-Verlag and Heather King for their support in production of this volume. We sincerely thank Jean Anne Walsh, Katlyn Good, Jessica Ross, Brian Hatcher, Pat Donohue and students (Nathan Hill, Mary Kiernan, Pat Moran, JT Laue) at Loyola University Maryland for their assistance.

We hope and believe that this volume will contribute to ideas for novel research and advancement in intelligent decision technologies for researchers, practitioners, professors and research students who are interested in knowledge-based and intelligent engineering systems. We invite you to join us at a future symposium.

Baltimore, Maryland, USA
July 28-30, 2010

Gloria Philips-Wren
Kazumi Nakamatsu
Lakhmi C. Jain
Robert J. Howlett

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