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Kishan G. Mehrotra Chilukuri K. Mohan
Jae C. Oh Pramod K. Varshney
Moonis Ali (Eds.)

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Jae C. Oh
Pramod K. Varshney
Syracuse University, Department of Electrical Engineering and Computer Science
Syracuse, NY 13244-4100, USA
E-mail: {mehrotra, mohan, jcoh, varshney}@syr.edu

Moonis Ali
Texas State University San Marcos, Department of Computer Science
601 University Drive, San Marcos, TX 78666-4616, USA
E-mail: ma04@txstate.edu

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Preface

There has been a steady increase in demand for efficient and intelligent techniques for solving complex real-world problems. The fields of artificial intelligence and applied intelligence cover computational approaches and their applications that are often inspired by biological systems. Applied intelligence technologies are used to build machines that can solve real-world problems of significant complexity. Technologies used in applied intelligence are thus applicable to many areas including data mining, adaptive control, intelligent manufacturing, autonomous agents, bio-informatics, reasoning, computer vision, decision support systems, fuzzy logic, robotics, intelligent interfaces, Internet technology, machine learning, neural networks, evolutionary algorithms, heuristic search, intelligent design, planning, and scheduling.

The International Society of Applied Intelligence (ISAI), through its annual IEA/AIE conferences, provides a forum for international scientific and industrial communities to interact with each other to develop and advance intelligent systems that address such concerns.

The 24th International Conference on Industrial, Engineering and Other Applications of Applied Intelligence Systems (IEA/AIE-2011), held in Syracuse, NY (USA), followed the IEA/AIE tradition of providing an international scientific forum for researchers in the diverse field of applied intelligence. Invited speakers and authors addressed problems we face and presented their solutions by applying a broad spectrum of intelligent methodologies. Papers presented at IEA/AIE-2011 covered theoretical approaches as well as applications of intelligent systems in solving complex real-life problems.

We received 206 papers and selected the 92 best papers for inclusion in these proceedings. Each paper was reviewed by at least three members of the Program Committee. The papers in the proceedings cover a wide number of topics including feature extraction, discretization, clustering, classification, diagnosis, data refinement, neural networks, genetic algorithms, learning classifier systems, *Bayesian* and probabilistic methods, image processing, robotics, navigation, optimization, scheduling, routing, game theory and agents, cognition, emotion, and beliefs.

Special sessions included topics in the areas of incremental clustering and novelty detection techniques and their applications to intelligent analysis of time varying information, intelligent techniques for document processing, modeling and support of cognitive and affective human processes, cognitive computing facets in intelligent interaction, applications of intelligent systems, nature-inspired optimization – foundations and application, chemoinformatic and bioinformatic methods, algorithms and applications.

These proceedings, consisting of 92 chapters authored by participants of IEA/AIE-2011, cover both the theory and applications of applied intelligent

systems. Together, these papers highlight new trends and frontiers of applied intelligence and show how new research could lead to innovative applications of considerable practical significance. We expect that these proceedings will provide useful reference for future research.

The conference also invited three outstanding scholars to give plenary keynote speeches. They were Ajay K. Royyuru from IBM Thomas J. Watson Research Center, Henry Kauts from the University of Rochester, and Linderman from Air Force Research Laboratory.

We would like to thank Springer for their help in publishing the proceedings. We would also like to thank the Program Committee and other reviewers for their hard work in assuring the high quality of the proceedings. We would like to thank organizers of special sessions for their efforts to make this conference successful. We especially thank Syracuse University for their generous support of the conference.

We thank our main sponsor, ISAI, as well as our cooperating organizations: Association for the Advancement of Artificial Intelligence (AAAI), Association for Computing Machinery (ACM/SIGART, SIGKDD), Austrian Association for Artificial Intelligence (OeGAI), British Computer Society Specialist Group on Artificial Intelligence (BCS_SGAI), European Neural Network Society (ENNS), International Neural Network Society (INNS), Japanese Society for Artificial Intelligence (JSAI), Slovenian Artificial Intelligence Society (SLAIS), Spanish Society for Artificial Intelligence (AEPIA), Swiss Group for Artificial Intelligence and Cognitive Science (SGAICO), Taiwanese Association for Artificial Intelligence (TAAI), Taiwanese Association for Consumer Electronics (TACE), Texas State University-San Marcos.

Finally, we cordially thank the organizers, invited speakers, and authors, whose efforts were critical for the success of the conference and the publication of these proceedings. Thanks are also due to many professionals who contributed to making the conference successful.

April 2011

Kishan G. Mehrotra
Chilukuri Mohan
Jae C. Oh
Pramod K. Varshney
Moonis Ali

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