Lecture Notes in Artificial Intelligence 9799

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Trends in Applied Knowledge-Based Systems and Data Science

29th International Conference
on Industrial Engineering and Other Applications
of Applied Intelligent Systems, IEA/AIE 2016
Morioka, Japan, August 2–4, 2016
Proceedings

Springer

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ISSN 0302-9743 ISSN 1611-3349 (electronic)
Lecture Notes in Artificial Intelligence
ISBN 978-3-319-42006-6 ISBN 978-3-319-42007-3 (eBook)
DOI 10.1007/978-3-319-42007-3

Library of Congress Control Number: 2016943422

LNCS Sublibrary: SL7 – Artificial Intelligence

Printed on acid-free paper

This Springer imprint is published by Springer Nature
The registered company is Springer International Publishing AG Switzerland

Preface

The International Conference on Industrial, Engineering and Other Applications of Applied Intelligent Systems (IEA/AIE), sponsored by The International Society of Applied Intelligence (ISAI), has provided a thriving and outstanding series of conferences for almost three decades. This is done through its yearly worldwide activities that gather practitioners, scientists, businessmen, and students from different cultural backgrounds to meet and discuss hot topics in computational and applied intelligence fields. The IEA/AIE series is one of the distinguished active events bringing theory into practice for real problems in intelligent systems and problem solving. These prestigious conferences are held every year, and the 29th round of IEA/AIE in 2016 was held in Iwate, Japan. It was approved to be held in Japan during the IEA/AIE 2011 meeting in Syracuse (USA) just a few months after the March 11 earthquake that destroyed much of the infrastructure in the North-East of the Main Island of Japan, known as the "Tohoku" region. After five years of rebuilding, we believe that technology and computational intelligence are on the scientific frontier that has provided a substantial and sustainable lead to accelerate scientific practices toward a better estimation of risk analysis and prediction of catastrophic phenomena. The president of ISAI predicted in 2011 that IEA/AIE 2016 will see Japan as it was before, if not better. This prediction was right, and we were able to welcome everyone to the 29th event of AIE/AIE in Japan.

We received a variety of submissions related to several topics in applied intelligence, and this year there was an emphasis on applied knowledge-based systems and data sciences. Selected papers also cover classification of data science, an essential field in big data analysis and social networking used for variety of predictions, such as risk analysis among others. Because of the underlying trend of the submissions, we titled the conference proceedings: "Trends in Applied Knowledge-Based Systems and Data Science."

We received submissions from authors worldwide; each one was reviewed by three to four reviewers selected from the conference Program Committee. The selections of the 85 accepted articles presented in this book were based on the quality, relevance to the conference, and technical outcomes of the reported research and state of the art. These accepted papers were resubmitted as revised articles after incorporating the reviewers' required changes and modifications. In this book there are also papers presented at two special sessions: one on applied "Neural Networks," and the other on "Innovations in Intelligent Systems and Applications," as well as the following 13 chapters: 1, Data Science; 2, Knowledge-Based Systems; 3, Natural Language Processing and Sentiment Analysis; 4, Semantic Web and Social Networks; 5, Computer Vision; 6, Medical Analysis and Bio-Informatics; 7, Applied Neural Networks; 8, Innovations in Intelligent Systems and Applications; 9, Decision Support Systems; 10,

Adaptive Control; 11, Soft Computing and Multi-agent Systems; 12, Evolutionary Algorithms and Heuristic Search; and 13, System Integrations for Real-Life Applications.

We also had four well-known keynote speakers at the conference: Dr. Rose Alinda Alias, Deputy Vice-Chancellor (Academic & International) Universiti Teknologi Malaysia (UTM); Johor Malaysia, expert in learning systems and intelligent tutoring; Prof. Enrique Herrera-Viedma, Vice-President for Research and Knowledge Transfer, University of Granada Spain, expert in recommender systems; Dr. Jie Lu from the University of Technology Sydney Australia, expert in decision support systems; and Dr. Hiroshi Okuno from Waseda University and Emeritus Professor of Kyoto University, Japan, expert in voice sound analysis. These four speakers were selected based on their overwhelming experience in research and education as well as their advanced achievements that were shared with the conference participants and audience.

We would like to thank all the authors who participated by providing the quality work presented in these proceedings. Much appreciation goes to the conference Program Committee members, who devoted a great deal of time to review all submissions with the quality and technical feedback that assisted the authors in providing good-quality revisions of their papers for inclusion in this book. We also appreciate the financial and logistical support of the President of Iwate Prefectural University, Prof. Atsuto Suzuki, and the Foundation of Tateishi Science and Technology, as well as MITCA of Morioka City.

We also wish to express our appreciation to Microsoft Support making available the Conference Management Tool (CMT) used in managing the conference submission system.

May 2016

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