Lecture Notes in Artificial Intelligence 12799

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Advances and Trends in Artificial Intelligence

From Theory to Practice

34th International Conference
on Industrial, Engineering and Other Applications
of Applied Intelligent Systems, IEA/AIE 2021
Kuala Lumpur, Malaysia, July 26–29, 2021
Proceedings, Part II

Springer

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Preface

Artificial Intelligence innovations in recent decades have entered a sophisticated stage in providing intelligent interaction between humans and machines, solving problems, and providing advice in many different infrastructures. Machines in different disciplines have become ubiquitous in all aspects of life, including education, governance, science, healthcare, warfare, and industry. Computing machinery has become smaller and faster, and the costs of data storage and communication have greatly decreased. Consequently, big data of vast dimensionality is being intelligently collected and stored in smart databases for use in decision making and prediction for applications such as security and health care, amongst others. Moreover, novel and improved computing architectures have been designed for efficient large-scale data processing, such as big data frameworks, FPGAs and GPUs. Thanks to these advancements and recent breakthroughs in artificial intelligence, researchers and practitioners have developed more complex and effective artificial intelligence-based systems. This has led to a greater interest in artificial intelligence to solve complex real-world problems, and the proposal of many innovative applications.

This volume contains the proceedings of the 34th International Conference on Industrial, Engineering and other Applications of Applied Intelligent Systems (IEA/AIE 2021), which was held online during July 26–29, 2021, in Kuala Lumpur, Malaysia. The IEA/AIE conference is an annual event that emphasizes applications of applied intelligent systems to solve real-life problems in all areas including engineering, science, industry, automation and robotics, business and finance, medicine and biomedicine, bioinformatics, cyberspace, and human-machine interactions. This year, 145 submissions were received. Each paper was evaluated by three to four reviewers from an International Program Committee consisting of 196 members from 37 countries. Based on the evaluation, 87 papers were selected as full papers and 19 as short papers, which are presented in two volumes. We are grateful to all the reviewers for the time spent writing detailed and constructive comments for the authors, and also the authors for the proposal of so many high-quality papers.

The program of IEA/AIE 2021 included eight special sessions:

- Special Session on Data Stream Mining: Algorithms and Applications (DSMAA2021)
- Special Session on Intelligent Knowledge Engineering in Decision Making Systems (IKEDS2021)
- Special Session on Knowledge Graphs in Digitalization Era (KGDE2021)
- Special Session on Spatiotemporal Big Data Analytics (SBDA2021)
- Special Session on Big Data and Intelligence Fusion Analytics (BDIFA2021)
- Special Session on AI in Healthcare (AIH2021)
- Special Session on Intelligent Systems and e-Applications (iSeA2021)
- Special Session on Collective Intelligence in Social Media (CISM2021).

Moreover, two keynote talks were given by Professor Francisco Herrera, from the University of Granada, Spain, and Director of the Andalusian Research Institute "Data Science and Computational Intelligence", and Professor Vincent S. Tseng from the Department of Computer Science, National Yang Ming Chiao Tung University, Taiwan.

We would like to thank everyone who has contributed to the success of this year's edition of IEA/AIE, that is the authors, Program Committee members, reviewers, keynote speakers, organizers and participants.

May 2021   Hamido Fujita
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