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LNAI 13343

# Advances and Trends in Artificial Intelligence

Theory and Practices in Artificial Intelligence

35th International Conference  
on Industrial, Engineering and Other Applications  
of Applied Intelligent Systems, IEA/AIE 2022  
Kitakyushu, Japan, July 19–22, 2022  
Proceedings

 Springer

# Lecture Notes in Artificial Intelligence

13343

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ISSN 0302-9743                      ISSN 1611-3349 (electronic)  
Lecture Notes in Artificial Intelligence  
ISBN 978-3-031-08529-1              ISBN 978-3-031-08530-7 (eBook)  
<https://doi.org/10.1007/978-3-031-08530-7>

LNCS Sublibrary: SL7 – Artificial Intelligence

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# Preface

In the last few decades, there have been major societal transformations due to the ever-increasing usage of computing devices. Impacts can be observed in all fields including science, governance, healthcare, industry, and the lives of individuals. Computers can calculate faster, store more data, and are smaller, while also being cheaper. Improved and specialized computing architectures have also been developed such as GPUs and FPGAs. Besides, distributed computing and storage platforms have become common to process very large databases. Thanks to technological advances and also several theoretical breakthroughs, researchers and practitioners have pushed back the limits of artificial intelligence to build more effective intelligent systems to solve real-world complex problems. Moreover, innovative applications of artificial intelligence are continuously being proposed.

This volume contains the proceedings of the 35th edition of the International Conference on Industrial, Engineering, and other Applications of Applied Intelligent Systems (IEA AIE 2022), which was during July 19–22, 2022, in Kitakyushu, Japan. IEA AIE is a yearly conference that focuses on applications of applied intelligent systems to solve real-life problems in all areas including business and finance, science, engineering, industry, cyberspace, bioinformatics, automation, robotics, medicine and biomedicine, and human-machine interactions. IEA AIE 2022 was organized in cooperation with the ACM Special Interest Group on Artificial Intelligence (SIGAI). This year, 127 submissions were received. Each paper was evaluated using double-blind peer review by at least three reviewers from an international Program Committee consisting of 74 members from 23 countries. Based on the evaluation, a total of 67 papers were selected as full papers and 11 as short papers, which are presented in this book. We would like to thank all the reviewers for the time spent on writing detailed and constructive comments for the authors, and to the latter for the proposal of many high-quality papers.

In the program of IEA AIE 2022, five special sessions were organized: Collective Intelligence in Social Media (CISM 2022), Intelligent Knowledge Engineering in Decision Making Systems (IKEDS 2022), Intelligent Systems and e-Applications (ISeA 2022), Multi-Agent Systems and Metaheuristics for Complex Problems (MASMCP 2022), and Spatiotemporal Big Data Analytics (SBDA 2022). In addition, two keynote talks were given by two distinguished researchers, one by Sebastian Ventura from the University of Cordoba (Spain) and the other by Tao Wu from the Shanghai University of Medicine and Health Sciences (China). We would like to thank everyone who has

contributed to the success of this year's edition of IEA AIE, that is the authors, reviewers, keynote speakers, Program Committee members, and organizers.

May 2021

Hamido Fujita  
Philippe Fournier-Viger  
Moonis Ali  
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