

# **Lecture Notes in Artificial Intelligence**

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# Trends in Artificial Intelligence Theory and Applications

## Artificial Intelligence Practices

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# Preface

In recent decades, society has entered a digital era where computers have become ubiquitous in all aspects of life, including education, governance, science, healthcare, and industry. Computers have become smaller, faster and the cost of data storage and communication have greatly decreased. As a result, more and more data is being collected and stored in databases. Besides, 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 real-world complex problems, and the proposal of many innovative applications.

This volume contains the proceedings of the 33rd edition of the International Conference on Industrial, Engineering, and other Applications of Applied Intelligent Systems (IEA AIE 2020), which was held during September 22–25, 2020, in Kitakyushu, Japan. IEA AIE 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, 119 submissions were received. Each paper was evaluated using a double-blind peer review by at least three reviewers from an international Program Committee consisting of 82 members from 36 countries. Based on the evaluation, a total of 62 papers were selected as full papers and 17 as short papers, which are presented in this book. We would like to thank all the reviewers for the time spent to write detailed and constructive comments to authors, and to these latter for the proposal of many high-quality papers.

In the program of IEA AIE 2020, two special sessions were organized named Collective Intelligence in Social Media (CISM 2020) and Intelligent Knowledge Engineering in Decision Making Systems (IKEDS 2020). Moreover, three keynote talks were given by distinguished researchers, one by Prof. Tao Wu from Shanghai Jiao Tong University School of Medicine (China), one by Enrique Herrera Viedma from the University of Granada (Spain), and another by Ee-Peng Lim from Singapore Management University (Singapore). Lastly, we would like to thank everyone who contributed to the success of this year's edition of IEA AIE that is authors, Program Committee members, reviewers, keynote speakers, and organizers.

September 2020

Hamido Fujita  
Philippe Fournier-Viger  
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