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Computational Collective Intelligence

10th International Conference, ICCCI 2018
Bristol, UK, September 5–7, 2018
Proceedings, Part II

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Preface

This volume contains the proceedings of the 10th International Conference on Computational Collective Intelligence (ICCCI 2018), held in Bristol, UK, September 5–7, 2018. The conference was co-organized by the University of the West of England, Bristol, UK, and the Wrocław University of Science and Technology, Poland. The conference was run under the patronage of the IEEE SMC Technical Committee on Computational Collective Intelligence.

Following the successes of the First ICCCI (2009) held in Wrocław, Poland, the Second ICCCI (2010) in Kaohsiung, Taiwan, the Third ICCCI (2011) in Gdynia, Poland, the 4th ICCCI (2012) in Ho Chi Minh City, Vietnam, the 5th ICCCI (2013) in Craiova, Romania, the 6th ICCCI (2014) in Seoul, South Korea, the 7th ICCCI (2015) in Madrid, Spain, the 8th ICCCI (2016) in Halkidiki, Greece, and the 9th ICCCI (2017) in Nicosia, Cyprus, this conference continued to provide an internationally respected forum for scientific research in the computer-based methods of collective intelligence and their applications.

Computational collective intelligence (CCI) is most often understood as a sub-field of artificial intelligence (AI) dealing with soft computing methods that facilitate group decisions or processing knowledge among autonomous units acting in distributed environments. Methodological, theoretical, and practical aspects of CCI are considered as the form of intelligence that emerges from the collaboration and competition of many individuals (artificial and/or natural). The application of multiple computational intelligence technologies such as fuzzy systems, evolutionary computation, neural systems, consensus theory, etc., can support human and other collective intelligence, and create new forms of CCI in natural and/or artificial systems. Three subfields of the application of computational intelligence technologies to support various forms of collective intelligence are of special interest but are not exclusive: the Semantic Web (as an advanced tool for increasing collective intelligence), social network analysis (as the field targeted at the emergence of new forms of CCI), and multi-agent systems (as a computational and modeling paradigm especially tailored to capture the nature of CCI emergence in populations of autonomous individuals).

The ICCCI 2018 conference featured a number of keynote talks and oral presentations, closely aligned to the theme of the conference. The conference attracted a substantial number of researchers and practitioners from all over the world, who submitted their papers for the main track and four special sessions.

The main track, covering the methodology and applications of CCI, included: knowledge engineering and Semantic Web, social network analysis, recommendation methods and recommender systems, agents and multi-agent systems, text processing and information retrieval, data mining methods and applications, decision support and control systems, sensor networks and Internet of Things, as well as computer vision techniques. The special sessions, covering some specific topics of particular interest, included: cooperative strategies for decision-making and optimization, complex

decision systems, machine learning in real-world data, as well as intelligent sustainable smart cities.

We received over 240 submissions from 39 countries all over the world. Each paper was reviewed by two to four members of the international Program Committee (PC) of either the main track or one of the special sessions. Finally, we selected 98 best papers for oral presentation and publication in two volumes of the *Lecture Notes in Artificial Intelligence* series.

We would like to express our thanks to the keynote speakers: Andrew Adamatzky from the University of the West of England, UK, Anthony Pipe from the Bristol Robotics Laboratory, UK, Tadeusz Szuba from the AGH University of Science and Technology, Poland, and Jan Treur from the Vrije Universiteit Amsterdam, The Netherlands, for their world-class plenary speeches.

Many people contributed toward the success of the conference. First, we would like to recognize the work of the PC co-chairs and special sessions organizers for taking good care of the organization of the reviewing process, an essential stage in ensuring the high quality of the accepted papers. The workshop and special session chairs deserve a special mention for the evaluation of the proposals and the organization and coordination of the work of seven special sessions. In addition, we would like to thank the PC members, of the main track and of the special sessions, for performing their reviewing work with diligence. We thank the local Organizing Committee chairs, publicity chair, Web chair, and technical support chair for their fantastic work before and during the conference. Finally, we cordially thank all the authors, presenters, and delegates for their valuable contribution to this successful event. The conference would not have been possible without their support.

Our special thanks are also due to Springer for publishing the proceedings and sponsoring awards, and to all the other sponsors for their kind support.

It is our pleasure to announce that the ICCCI conference series continues to have a close cooperation with the Springer journal *Transactions on Computational Collective Intelligence*, and the IEEE SMC Technical Committee on Transactions on Computational Collective Intelligence.

Finally, we hope that ICCCI 2018 contributed significantly to the academic excellence of the field and will lead to the even greater success of ICCCI events in the future.

September 2018

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