

Preface

This volume contains the proceedings of the 9th International Conference on Computational Collective Intelligence (ICCCI 2017), held in Nicosia, Cyprus, September 27–29, 2017. The conference was co-organized by the University of Cyprus, Cyprus 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 1st ICCCI (2009), held in Wrocław, Poland, the 2nd ICCCI (2010), in Kaohsiung, Taiwan, the 3rd 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, and the 8th ICCCI (2016), in Halkidiki, Greece, 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 enable making group decisions or processing knowledge among autonomous units acting in distributed environments. Methodological, theoretical, and practical aspects of computational collective intelligence 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: semantic web (as an advanced tool for increasing collective intelligence), social network analysis (as the field targeted to 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 2017 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 seven special sessions.

The main track, covering the methodology and applications of computational collective intelligence, included: multi-agent systems, knowledge engineering and semantic web, social networks and recommender systems, text processing and information retrieval, data mining methods and applications, sensor networks and internet of things, decision support and control systems, and computer vision techniques. The special sessions, covering some specific topics of particular interest, included cooperative strategies for decision making and optimization, computational swarm

intelligence, machine learning in medicine and biometrics, cyber physical systems in automotive area, internet of things - its relations and consequences, low resource language processing, and intelligent processing of multimedia in web systems.

We received in total over 240 submissions from 39 countries all over the world. Each paper was reviewed by 2–4 members of the International Program Committee of either the main track or one of the special sessions. We selected the 114 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: Yannis Manolopoulos from the Aristotle University of Thessaloniki, Greece; Andreas Nürnberger from the Otto-von-Guericke University Magdeburg, Germany; Constantinos S. Pattichis from the University of Cyprus, Cyprus; and Sławomir Zadrozny from the Systems Research Institute of the Polish Academy of Sciences, Poland, for their world-class plenary speeches.

Many people contributed towards the success of the conference. First, we would like to recognize the work of the Program Committee 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 chairs of the workshops and special sessions 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, the publicity chair, the web chair, and the 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.

It is our pleasure to announce that the conferences of the ICCCI series continue 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 and intend that ICCCI 2017 will significantly contribute to the academic excellence of the field and lead to the even greater success of ICCCI events in the future.

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