

Lecture Notes in Artificial Intelligence

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Shyi-Ming Chen (Eds.)

Computational Collective Intelligence

Semantic Web, Social Networks
and Multiagent Systems

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Preface

Computational collective intelligence (CCI) is most often understood as a subfield of artificial intelligence (AI) dealing with soft computing methods that enable group decisions to be made or knowledge to be processed among autonomous units acting in distributed environments. The needs for CCI techniques and tools have grown significantly recently as many information systems work in distributed environments and use distributed resources. Web-based systems, social networks and multi-agent systems very often need these tools for working out consistent knowledge states, resolving conflicts and making decisions. Therefore, CCI is of great importance for today's and future distributed systems.

Methodological, theoretical and practical aspects of computational collective intelligence, such as group decision making, collective action coordination, and knowledge integration, 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 in the application of computational intelligence technologies to support various forms of collective intelligence are gaining special attention but they are not the only ones: Semantic Web (as an advanced tool increasing collective intelligence), social network analysis (as the field targeted to the emergence of new forms of CCI), and multiagent systems (as a computational and modeling paradigm especially tailored to capture the nature of CCI emergence in populations of autonomous individuals).

The aim of this conference series (International Conference on Computational Collective Intelligence - ICCCI) is to provide an internationally respected forum for scientific research in the computer-based methods of collective intelligence and their applications in (but not limited to) such fields as the Semantic Web, social networks and multiagent systems.

This volume of the LNCS/LNAI series contains the proceedings of the first event in the ICCCI series (ICCCI 2009) which was held in Wroclaw, Poland, during October 5–7, 2009. The conference was organized by Wroclaw University of Technology (Poland) in cooperation with Swinburne University of Technology (Australia) and National Taiwan University of Science and Technology (Taiwan).

The conference attracted a large number of scientists and practitioners who submitted their papers for four main tracks covering the methodology and applications of computational collective intelligence and three special sessions on specific topics within the field. Each paper was reviewed by two to four members of the International Program Committee. Many of them were reviewed using the double-blind mode. From the submissions for ICCCI 2009 coming from more than 25 countries throughout the world, only 71 papers were selected to be published in the proceedings.

The Program Committee defined the following main topics as related to CCI:

- Semantic Web: semantic annotation of Web data resources; Web Services (service description, discovery, composition); ontology management (mediation and reconciliation, creation, evaluation, merging, alignment, evolution, linking); automatic metadata generation; (semi-) automatic ontology creation; Semantic Web inference schemes; reasoning in the Semantic Web; knowledge portals; information discovery and retrieval in the Semantic Web; etc.
- Social Networks: computational technologies in social networks creation and support; advanced groupware and social networks; models for social network emergence and growth; ontology development in social networks; advanced analysis for social networks dynamics; social networks and semantic communication.
- Multiagent Systems: cooperative distributed problem solving; task and resource allocation; mechanism design, auctions, and game theory; modeling other agents and self; multiagent planning; negotiation protocols; multiagent learning; conflict resolution; trust and reputation management; privacy, safety and security; scalability, robustness and dependability; social and organizational structures; verification and validation; novel computing paradigms (autonomic, grid, P2P, ubiquitous computing); brokering and matchmaking; agent-oriented software engineering, including implementation languages and frameworks; mobile agents; performance, scalability, robustness, and dependability; verification and validation; E-business agents; pervasive computing; privacy, safety, and security.

We would like to thank the invited speakers – Roman Słowiński (Poland), Pierre Lévy (Canada), and Piotr Jędrzejowicz (Poland) – for their interesting and informative talks of world-class standard.

Special thanks go to the Organizing Chair (Radosław Katarzyna) for his efforts in the organizational work. Thanks are due to the Program Committee and the board of reviewers, essential for reviewing the papers to ensure their high quality. We thank the members of the Local Organizing Committee, Publicity Chairs and Special Sessions Chairs. We acknowledge with gratitude the efforts of the Foundation for Development of Wrocław University of Technology for coordinating the organization of the conference. We extend cordial thanks to the Institute of Informatics and the Faculty of Computer Science of Wrocław University of Technology for the supports with the administration and network services. Finally, we thank the authors, presenters and delegates for their valuable contribution to this successful event.

Thanks are also due to the many other experts who contributed to making the event a success.

We hope that ICCCI 2009 has significantly contributed to the fulfillment of academic excellence and will lead to even greater successes of ICCCI events in the future.

October 2009

Ngoc Thanh Nguyen
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