

Preface

The present special issue of the Journal Transactions on Computational Collective Intelligence (TCCI) includes extended and revised versions of a set of selected papers from the International Joint Conference on Computational Intelligence – IJCCI 2012 – and from the International Conference on Agents and Artificial Intelligence – ICAART 2013.

The interdisciplinary areas of Intelligent Agents, Artificial Intelligence, and Computational Intelligence involve a large number of researchers who devote themselves to study theoretical and practical issues related to areas such as multi-agent systems, software platforms, distributed problem solving, distributed AI in general, knowledge representation, planning, learning, scheduling, perception reactive AI systems, fuzzy systems, neural networks, evolutionary computing, and other related topics.

This special issue presents 15 research papers with novel concepts and applications in the aforementioned areas.

The first nine papers are revised and extended versions of papers presented at ICAART 2013, focusing on theoretical and practical applications of agent and multi-agent systems, including the behavior of financial trading agents (Steve Stotter et al.), multi-agent methodology applied to supply chain management (by Borja Ponte et al.), distributed evacuation route planning using mobile agents (by Alejandro Aviles et al.), and agent-based approach to accident analysis in safety critical domains (by Tibor Bosse and Nataliya M. Mogles). Some other papers focused on more theoretical aspects, namely on the importance of interdisciplinary research relating agent systems, learning models, and formal languages (by Leonor Becerra-Bonache and Dolores Jiménez-López), the contribution of unsupervised learning and regular grammatical inference to identify profiles of elderly people and their development over time in order to evaluate care needs (by Catherine Combes and Jean Azema), and computational and formal linguistics to find good mathematical and computational models to describe linguistic phenomena (by Benedek Nagy and László Kovács). Finally, we included two papers that discuss situation theory, situated information, and situated agents (by Roussanka Loukanova), and conditional preference networks support multi-issue negotiations with mediator (by Ghosh et al.).

The other six papers are revised and extended versions of papers presented at IJCCI 2012, ranging from evolutionary computing, such as hybrid schemas using the genetic algorithm and firefly algorithm (by Olympia Roeva) and a subset-based ant colony optimization with tournament path selection for high-dimensional problems (by Emmanuel Sapin and Ed Keedwell), to neural computing, including a paper on color quantization with magnitude sensitive competitive learning algorithm (by Enrique Pelayo et al.) and another on the analysis of the local optima storage capacity of Hopfield network-based fitness function models (by Kevin Swingler and Leslie Smith) and two application-oriented papers, one on the synthesis of multicomponent reuse water networks by pso approach (by Ravagnani et al.) and the other on the Alzheimer disease diagnosis: automatic spontaneous speech analysis (by Lopez-de-Ipiña et al.).

We believe that all papers presented in this special issue will serve as a reference for students, researchers, and practitioners who research on the areas of agent technology, evolutionary computing or neural networks, or whose work is related to interdisciplinary area of computational intelligence. We hope that the readers will find new inspiration for their research and may join the ICAART or IJCCI communities in the future.

We would like to thank all the authors for their contributions and to the reviewers who have helped ensuring the quality of this publication. Finally, we would also like to express our gratitude to the LNCS editorial staff of Springer, in particular to Prof. Ryszard Kowalczyk for all his patience and availability during this process.

We hope you enjoy this special issue.

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