Editorial

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Biographical notes: Lars Braubach is currently working as a Professor for Complex Software Systems in the Department of Electrical Engineering and Computer Science at City University of Applied Sciences Bremen. His research interests focus on novel software development approaches for concurrent and distributed systems including and combining service, component and agent orientation. Research results are often implemented and evaluated in context of grid and cloud computing with the Jadex agent platform, which he has co-initiated and is developing with colleagues since 2003. He has authored numerous articles in international peer-reviewed journals, conferences and workshops.

Costin Bădică is currently working as a Professor in the Department of Software Engineering, Faculty of Automatics, Computers and Electronics of the University of Craiova, Romania. During 2001 and 2002, he was a Postdoctoral Fellow with the Department of Computer Science, King's College London, UK. His research interests are at the intersection of artificial intelligence, distributed systems and software engineering. He co-initiated and he is co-organising the intelligent distributed computing – IDC series of international conferences that is being held yearly.

Distributed systems are currently facing new challenges of adapting and reusing research results in the area of intelligent systems. Intelligent systems are using methods and technology derived from knowledge-based and computational intelligence. Distributed computing develops methods and technology to build systems that are composed of collaborating components. This special issue focuses on all the aspects covering the roles of knowledge and intelligence in distributed systems, ranging from concepts and theoretical developments to advanced technologies and innovative applications.

The selection process for this issue was two-fold: authors of the best papers presented at the 8th International Symposium on Intelligent Distributed Computing (IDC 2014) held in Madrid, Spain from September 3–5 were invited to submit extended versions of their papers for presentation in this special issue. Next to these invited papers, an open call was also issued. All submitted papers were rigorously peer-reviewed and only the best ones were selected for this issue. From 24 submitted journal articles only eight have been selected for publication. Selected papers cover some relevant topics related to the scope of IDC conference.

The papers selected and included in this special issue are in the following areas: bio-inspired optimisation algorithms, agent-based collaboration, constraint-satisfaction, and big data analysis. All of them are covering topics that show how knowledge and/or intelligence can be applied to enhance and/or improve certain types of distributed systems.

The contribution by Christian Hinrichs and Michael Sonnenschein entitled 'A distributed combinatorial optimisation heuristic for the scheduling of energy resources represented by self-interested agents' presents insights into energy resource scheduling by using decentralised optimisation techniques with agents.

Marco Scialdone, Luca Tasquier, Rocco Aversa and Salvatore Venticinque show in 'Communication overlay for communities of collaborative agents in smart grid domains' how agents can be used in smart grid domains to negotiate energy resources between local producers and consumers instead of using energy providers in order to save network fees.

Eduardo Lalla-Ruiz, Jesica de Armas, Christopher Expósito-Izquierdo, Belén Melián-Batista and J. Marcos Moreno-Vega, show in their contribution 'Multi-leader migrating birds optimisation: a novel nature-inspired metaheuristic for combinatorial problems' how optimisation

problems can be tackled employing a novel swarm-based algorithm inspired by bird flocks.

Noorazliza Sulaiman, Junita Mohamad-Saleh and Abdul Ghani Abro also deal with optimisation and propose in 'Robust variant of artificial bee colony (JA-ABC4b) algorithm' an improved version of a bee colony algorithm.

Esther Villar-Rodriguez, Javier Del Ser, Sergio Gil-Lopez, Miren Nekane Bilbao and Sancho Salcedo-Sanz propose in their work entitled 'A meta-heuristic learning approach for the non-intrusive detection of impersonation attacks in social network' a machine learning approach for detecting identity theft attacks. The novel algorithm relies only on connection time information and facilitates understanding and detecting impersonation attacks without compromising the user privacy.

Vincenza Carchiolo, Alessandro Longheu, Michele Malgeri and Giuseppe Mangioni describe in their work 'Network size and topology impact on trust-based ranking' how trust-based ranking mechanisms depend on important measures like topology size.

In the article 'Extending the SACOC algorithm through the Nyström method for dense manifold data analysis', Héctor D. Menéndez, Fernando E.B. Otero and David Camacho show how big data analysis can be improved using an improved ant colony clustering technique called SACOC.

Finally, Antonio Gonzalez-Pardo, Javier Del Ser and David Camacho show in 'Solving strategy board games using a CSP-based ACO approach' a comparative study of the performance of a novel ACO model for CSP-based board games.

Overall, selected contributions cover the current state-of-the-art in the area of intelligent and often distributed systems. We appreciate the effort of the authors of the papers for preparing extended versions of their conference papers and we thank the reviewers for their careful analysis of the submissions that assures the high quality of the final articles included in this special issue.