

Transactions on Computational Collective Intelligence XXIV

Preface

The present special issue of *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 2013 and IJCCI 2015.

The purpose of IJCCI is to bring together researchers, engineers, and practitioners interested in several areas of computational intelligence, including theory and applications of evolutionary computing, fuzzy systems, and neural networks.

After a strict reviewing process, three papers from IJCCI 2013 and six papers from IJCCI 2015 were selected for this volume of TCCI, encompassing relevant topics of current research on computational intelligence.

Particle swarms continue to attract research efforts, as exemplified by two of the selected papers: “Dynamic Topologies for Particle Swarms” authored by Carlos M. Fernandes, J.L.J. Laredo, J.J. Merelo, C. Cotta, and A.C. Rosa, and “Evaluative Study of PSO/Snake Hybrid Algorithm and Gradient Path Labeling for Calculating Solar Differential Rotation” authored by Ehsan Shahamatnia, André Mora, Ivan Dorotovič, Rita A. Ribeiro, and José M. Fonseca.

We selected three papers that presented relevant research work on evolutionary optimization and genetic programming, namely, “The Uncertainty Quandary: A Study in the Context of the Evolutionary Optimization in Games and Other Uncertain Environments” authored by Juan J. Merelo et al., “Hybrid Single Node Genetic Programming for Symbolic Regression” authored by Jiri Kubalik, Eduard Alibekov, Jan Zegklitz, and Robert Babuska, and a paper about Lindenmayer systems (L-systems) entitled “L2 Designer: A Tool for Genetic L-system Programming in Context of Generative Art,” authored by Tomáš Konrády, Kamila Štekerová, and Barbora Tesařová.

The field of machine learning is another hot topic that deserves plenty of attention from the research community on computational intelligence and we selected three papers that present different applications of machine learning, including a paper on developmental robotics using humanoid robots, entitled “Manifold Learning Approach Toward Constructing State Representation for Robot Motion Generation,” authored by Yuichi Kobayashi and Ryosuke Matsui, a paper describing applied research to functional magnetic resonance imaging (fMRI) entitled “The Existence of Two Variant Processes in Human Declarative Memory: Evidence Using Machine Learning Classification Techniques in Retrieval Tasks,” by Alex Frid, Hananel Hazan, Ester Koilis, Larry M. Manevitz, Maayan Merhav, and Gal Star, and also a paper involving time series forecasting, entitled “Divide

and Conquer Ensemble Method for Time Series Forecasting,” authored by Jan Kostrzewa, Giovanni Mazzocco, and Dariusz Plewczynski.

Finally, we concluded our selection with a paper that presents a survey of a new research area, ephemeral computing, related to bioinspired optimization, evolutionary computation, complex systems, and autonomic computing. This paper, entitled “Application Areas of Ephemeral Computing: A Survey,” was authored by Carlos Cotta et al. and is another good example of the application focus of this conference, without forgetting the importance of theoretical aspects because, as Ludwig Boltzmann taught us, “there is nothing more practical than a good theory.”

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

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Joaquim Filipe

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