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# Parallel Problem Solving from Nature – PPSN XIV

14th International Conference  
Edinburgh, UK, September 17–21, 2016  
Proceedings

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ISSN 0302-9743

Lecture Notes in Computer Science

ISBN 978-3-319-45822-9

DOI 10.1007/978-3-319-45823-6

ISSN 1611-3349 (electronic)

ISBN 978-3-319-45823-6 (eBook)

Library of Congress Control Number: 2016950392

LNCS Sublibrary: SL1 – Theoretical Computer Science and General Issues

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Printed on acid-free paper

This Springer imprint is published by Springer Nature

The registered company is Springer International Publishing AG

The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

# Preface

This LNCS volume contains the proceedings of the 14th International Conference on Parallel Problem Solving from Nature (PPSN XIV). This biennial event constitutes one of the most important and highly regarded international conferences in nature-inspired computation, ranging from evolutionary computation and robotics to artificial life and metaheuristics. Continuing with a tradition that started in Dortmund in 1990, PPSN XIV was held during September 17–21, 2016, in Edinburgh, Scotland, UK.

PPSN XIV received 224 submissions from 50 countries – an increase in both figures from the previous conference, demonstrating the continued and widening interest in the field. After an extensive peer-review process, where most papers were evaluated by at least four reviewers, the Program Committee Chairs examined all of the reports and ranked the papers. Where there was disagreement amongst the reviewers, the Chairs evaluated the papers themselves in order to ensure fair and accurate decisions. The top 93 manuscripts were finally selected for inclusion in this LNCS volume and for presentation at the conference. This represents an acceptance rate of 41.5 %, which guarantees that PPSN will continue to be one of the most respected conferences for researchers working in nature-inspired computation around the world.

PPSN XIV was enhanced by the inclusion of three distinguished keynote speakers representing facets of the field’s future and the interfaces with other disciplines: Susan Stepney (University of York, UK), Josh Bongard (University of Vermont, USA), and Katie Bentley (Harvard Medical School, USA).

The meeting began with four workshops bringing together work in specialized areas: “Intelligent Transportation Workshop” (Neil Urquhart), “Landscape-Aware Heuristic Search” (Nadarajen Veerapen and Gabriela Ochoa), “Natural Computing in Scheduling and Timetabling” (Ahmed Kheiri, Rhyd Lewis, and Ender Özcan), and “Advances in Multi-modal Optimization” (Mike Preuss, Michael G. Epitropakis, and Xiaodong Li). These workshops allowed researchers with similar interests to discuss and explore ideas in an informal and friendly setting.

PPSN XIV also included 16 free tutorials to give us all the opportunity to learn about new aspects of our field: “Gray Box Optimization in Theory” (Darrell Whitley), “Theory of evolutionary computation” (Benjamin Doerr), “Graph-Based and Cartesian Genetic Programming” (Julian Miller and Patricia Ryser-Welch), “Theory of Parallel Evolutionary Algorithms” (Dirk Sudholt), “Promoting Diversity in Evolutionary Optimization: Why and How” (Giovanni Squillero and Alberto Tonda), “Evolutionary Multiobjective Optimization” (Dimo Brockhoff), “Intelligent Systems for Smart Cities” (Enrique Alba), “Advances on Multi-modal optimization” (Mike Preuss and Michael G. Epitropakis), “Evolutionary Computation in Cryptography” (Stjepan Picek), “Evolutionary Robotics – A Practical Guide to Experimenting with Real Hardware” (Jacqueline Heinerman, Agoston E. Eiben, Evert Haasdijk, and Julien Hubert), “Evolutionary Algorithms and Hyper-heuristics” (Nelishia Pillay), “A Bridge between Optimization over Manifolds and Evolutionary Computation” (Luigi Malagò), “Implementing

Evolutionary Algorithms in the Cloud” (J.J. Merelo), “The Attainment Function Approach to Performance Evaluation in EMO” (Carlos Fonseca and Andreia Guerreiro), “Runtime Analysis of Evolutionary Algorithms: Basic Introduction” (Per Kristian Lehre and Pietro Oliveto), “Meta-model Assisted (Evolutionary) Optimization” (Boris Naujoks, Jörg Stork, Martin Zaefferer, and Thomas Bartz-Beielstein).

We wish to express our gratitude in particular to the Program Committee members and external reviewers who provided thorough evaluations of all 224 submissions. We would also express our profound thanks to all the members of the Organizing Committee and the local organizers for their outstanding efforts in preparing for and running the conference. Thanks to all the keynote, workshop, and tutorial speakers for their participation, which greatly enhanced the quality of the conference. Finally, we also express our gratitude to the sponsoring institutions, including Edinburgh Napier University, for their financial support, and the conference partners for participating in the organization of this event.

September 2016

Julia Handl  
Emma Hart  
Peter R. Lewis  
Manuel López-Ibáñez  
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PPSN XIV was organized by the School of Computing, Edinburgh Napier University, Scotland, UK.

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