

Preface to the Special Issue “GOW’16”

**Ana Maria A. C. Rocha · M. Fernanda P. Costa ·
Edite M. G. P. Fernandes**

Received: date / Accepted: date

Preface

This special issue of the Journal of Global Optimization consists of papers presented at the XIII Global Optimization Workshop (GOW’16), which took place on September 4th-8th, 2016, at the University of Minho, in Braga, Portugal. This workshop attracted 54 participants from 14 countries and the scientific program contained one invited talk by Professor Panos Pardalos and 47 contributed talks. These global optimization workshops have been held since 1985 and more recently every two years.

This special issue mainly focuses on deterministic methods and heuristics for global optimization. Problems with continuous as well as with integer variables are discussed. Some stochastic algorithms are also investigated.

The papers were reviewed in the usual process and eleven papers were accepted for publication in this special issue. Below we give a brief presentation of the included papers.

- Milan Hladík in his paper [1] studies the problem of checking pseudoconvexity of a twice differentiable function on an interval domain;
- The paper [2] by Marcia Fampa and Francisco Pinillos Nieto proposes extensions on ellipsoid bounds for quadratic integer programming;
- The paper [3] by Ignacio Araya and Bertrand Neveu presents a new variable selection strategy, therein denoted by Ismear, for interval branch and bound solvers;

Ana Maria A.C. Rocha
Algoritmi Research Centre,
University of Minho, Campus de Gualtar, 4710-057 Braga, Portugal
E-mail: arocha@dps.uminho.pt

M. Fernanda P. Costa
Centre of Mathematics,
University of Minho, Campus de Gualtar, 4710-057 Braga, Portugal
E-mail: mfc@math.uminho.pt

Edite M.G.P. Fernandes
Algoritmi Research Centre
E-mail: emgpf@dps.uminho.pt

- The subject of the paper [4] by Sonia Cafieri and Claudia D’Ambrosio consists of using feasibility pump heuristics for the problem of aircraft conflict avoidance arising in air traffic management;
- M. Fernanda P. Costa, Ana Maria A.C. Rocha and Edite M.G.P. Fernandes investigate in [5] the use of a filter methodology in the DIRECT method to assure convergence in nonconvex constrained global optimization problems;
- The paper [6] by Angelo Lucia, Peter A. DiMaggio and Diego Alonso-Martinez considers a new approach to metabolic network analysis using a Nash Equilibrium formulation;
- Immanuel M. Bomze, Vaithilingam Jeyakumar and Guoyin Li in their paper [7] guarantee exact copositive and Lagrangian relaxations to extended trust region problems with one or two balls;
- The paper [8] by Jan Kronqvist, Andreas Lundell and Tapio Westerlund discusses reformulations for utilizing separability when solving convex mixed-integer nonlinear programming problems;
- Two feasibility heuristics based on the integrality gap minimization for binary mixed-integer nonlinear programming are discussed in the paper [9] by Wendel Melo, Marcia Fampa and Fernanda Raupp;
- A sampling-based exact algorithm for the solution of the minimax diameter clustering problem is proposed in the paper [10] by Daniel Aloise and Claudio Contardo;
- J. J. Moreno, Gloria Ortega, Ernestas Filatovas, J. A. Martínez and E. M. Garzón in their paper [11] discuss the improvement of the performance and energy of non-dominated sorting for evolutionary multiobjective optimization on GPU/CPU platforms.

As Guest Editors, we express our gratitude to all authors of the presented papers as well as to the anonymous reviewers for their efforts, expertise and constructive comments. We would like to warmly thank the Editor-in-Chief of the Journal of Global Optimization, Professor Sergiy Butenko, for his continuous support.

We are convinced that this special issue has led to important and inspiring contributions to theory and practice of global optimization.

References

1. Hladík, M.: Testing pseudoconvexity via interval computation. *J. Glob. Optim.* doi: 10.1007/s10898-017-0537-6
2. Fampa, M. and Nieto, F.P.: Extensions on ellipsoid bounds for quadratic integer programming. *J. Glob. Optim.* doi: 10.1007/s10898-017-0557-2
3. Araya, I. and Neveu, B.: Ismear: a variable selection strategy for interval branch and bound solvers. *J. Glob. Optim.* doi: 10.1007/s10898-017-0569-y
4. Cafieri, S. and D’Ambrosio, C.: Feasibility pump for aircraft deconfliction with speed regulation. *J. Glob. Optim.* doi: 10.1007/s10898-017-0560-7
5. Costa, M.F.P., Rocha, A.M.A.C. and Fernandes, E.M.G.P.: Filter-based DIRECT method for constrained global optimization. *J. Glob. Optim.* doi: 10.1007/s10898-017-0596-8
6. Lucia, A., DiMaggio, P.A. and Alonso-Martinez, D.: Metabolic pathway analysis using a Nash equilibrium approach. *J. Glob. Optim.* doi: 10.1007/s10898-018-0605-6
7. Bomze, I.M., Jeyakumar, V. and Li, G.: Extended trust-region problems with one or two balls: exact copositive and Lagrangian relaxations. *J. Glob. Optim.* doi: 10.1007/s10898-018-0607-4
8. Kronqvist, J., Lundell, A. and Westerlund, T.: Reformulations for utilizing separability when solving convex MINLP problems. *J. Glob. Optim.* doi: 10.1007/s10898-018-0616-3
9. Melo, W., Fampa, M. and Raupp, F.: Integrality gap minimization heuristics for binary mixed integer nonlinear programming. *J. Glob. Optim.* doi: 10.1007/s10898-018-0623-4
10. Aloise, D. and Contardo, C.: A sampling-based exact algorithm for the solution of the minimax diameter clustering problem. *J. Glob. Optim.* doi: 10.1007/s10898-018-0634-1

-
11. Moreno, J.J., Ortega, G., Filatovas, E., Martínez, J.A. and Garzón E.M.: Improving the performance and energy of non-dominated sorting for evolutionary multiobjective optimization on GPU/CPU platforms. *J. Glob. Optim.* doi: 10.1007/s10898-018-0669-3