Preface: Special issue Europt 2018

Eligius M. T. Hendrix^{1,2} · Leocadio G. Casado³

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1 Preface

Europt is a European association that intends to promote the scientific interaction among researchers in the field of continuous optimization, i.e. Linear, Nonlinear and Global Optimization. Every year, the association organizes a workshop where researchers can discuss their questions in an informal way with a few parallel tracks. The location of the meeting is associated with the larger EURO conference related to the Association of European Operational Research Societies.

In 2018, our research group “Supercomputing Algorithms” at the University of Almería including researchers from Málaga University had the honor to organize the two day meeting. Basically, we organized a bus to transport participants from the EURO conference in Valencia. The social program was heavily loaded with a welcome reception, a gala diner, a city center tour and a flamenco show.

The scientific program was set by the Program Committee lead by Emilio Carrizosa, who was also the president of the Spanish OR association. In an integer selection process with blind voting, the plenary speakers were selected: Coralia Cartis, Angelika Wiegele and Frederic Messine were the invited speakers. Moreover, Europt selects a so-called Europt fellow every year to give a special presentation. In our workshop this was Marco Locatelli, who also has many contributions to Global Optimization during his career.

After the workshop, the participants were challenged to elaborate relevant research questions on Global Optimization further and send in a contribution for the Journal of Global Optimization. In total 20 papers were submitted. The papers were reviewed in the usual process and finally ten manuscripts were accepted for publication of which one already appeared in another issue and 9 papers appear in this special issue.

As usual, papers have a varying nature aiming more at theoretical achievements, algorithm development or specific applications. Two papers are dealing with multi-objective questions.

✉ Eligius M. T. Hendrix
eligius.hendrix@wur.nl

Leocadio G. Casado
leo@ual.es

¹ Computer Architecture, Universidad de Málaga, Málaga, Spain

² Operations Research and Logistics, Wageningen University, Wageningen, The Netherlands

³ Informatics, Universidad de Almería, Agrifood Campus of International Excellence (ceiA3), Almería, Spain

Julia Niebling and coauthors share their findings for multi-objective problems where the realization of the decision variable is considered uncertain, trying to enclose the sets by outer approximation. Manuel Arana-Jiménez and co-authors aim at finding the set of nondominated solutions when dealing with LP type of problems with fuzzy parameters.

Several contributions deal with the idea of applying decomposition when problems are getting large. Simone Sagratella and coauthors aim at a way to solve convex sub-problems in a parallel way using the concept of augmented Lagrangean. The idea is not to solve sub-problems exactly, but still guaranteeing convergence. Following a similar global idea, Pavlo Muts and coauthors aim at solving convex Mixed Integer NLPs using a master problem based on outer approximation proving convergence. Laura Palagi and Ruggiero Seccia share with us the intriguing world of the complex optimization landscape in learning in Neural Networks showing several ways to apply decomposition ideas to create progress in tuning weights.

More theoretical results are shared by Annamaria Barbagallo and coworkers on properties of stability of tensor variational inequalities such that they can be applied to economic equilibria. Rossana Riccardi and coauthors discuss Karush–Kuhn–Tucker like optimality conditions for convex functions over the intersection of potentially nonconvex sets presenting new theoretical insights.

The application area is dealt with by two contributions on more geometrical questions. Julius Žilinskas and coworkers deal with design of grillage-type foundations. The problem has been analyzed before from a black-box perspective and is dealt with by genetic algorithms on a novel computational platform. Ignacio Castillo and coauthors deal with the geometric problem of Packing Ovals in Optimized Regular Polygons. Applying nonlinear optimization approaches based on embedded Lagrange multipliers, new results are achieved.

We wish the readers of this special issue join us in the fruitful learning process caught by the magic of the EUROPT Workshop on Advances in Continuous Optimization 2018. We are convinced that the workshop planned for 2020 in Toulouse will provide ample opportunities to discuss new challenging GO problems and deterministic and stochastic algorithms.

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