

# Preface

The large variety of heuristic algorithms for hard optimization problems raises numerous interesting and challenging issues. Practitioners are confronted with the burden of selecting the most appropriate method, in many cases through an expensive algorithm configuration and parameter tuning process, and subject to a steep learning curve. Scientists seek theoretical insights and demand a sound experimental methodology for evaluating algorithms and assessing strengths and weaknesses. A necessary prerequisite for this effort is a clear separation between the algorithm and the experimenter, who, in too many cases, is “in the loop” as a crucial intelligent learning component. Both issues are related to designing and engineering ways of “learning” about the performance of different techniques, and ways of using past experience about the algorithm behavior to improve performance in the future. This is the scope of the Learning and Intelligent Optimization (LION) conference series.

This volume contains the papers presented at LION 10: Learning and Intelligent Optimization, held during May 29 – June 1, 2016 in Ischia, Italy. This meeting, which continues the successful series of LION events (see LION 5 in Rome, Italy; LION 6 in Paris, France; LION 7 in Catania, Italy; LION 8 in Gainesville, USA; and LION 9 in Lille, France), explores the intersections and uncharted territories between machine learning, artificial intelligence, mathematical programming, and algorithms for hard optimization problems. The main purpose of the event is to bring together experts from these areas to discuss new ideas and methods, challenges, and opportunities in various application areas, general trends, and specific developments. The International Conference on Learning and Optimization is proud to be the premier conference in the area.

A total of 47 papers were submitted to LION 10: 28 submissions of long papers, 13 submissions of short papers, and six abstracts for oral presentation only. Each manuscript was independently reviewed by at least three (usually four) members of the Program Committee. The final decision was made based on a meta-reviewing phase where each manuscript’s reviews were shown to five other members of the Program Committee, who then voted to either accept or reject the manuscript. Only long papers that received four or five votes in favor were accepted as long papers. Papers that received at least three votes in favor were accepted as short papers (papers submitted as long papers had to be shortened).

In total, 14 long papers and nine short papers were accepted. The selection rate for long papers was 34%.

These proceedings also contain two papers submitted to the generalization-based contest in global optimization (GENOPT). These were reviewed independently by the GENOPT Organizing Committee.

During the conference, the keynote talk was delivered by Bistra Dilkina, on “Learning to Branch in Mixed Integer Programming.”

In addition, we were pleased to have two tutorial talks:

- “Learning Algorithms and Bioinformatics,” by Giovanni Felici and Emanuel Weitschek
- “Automatic Algorithm Configuration,” by Meinolf Sellmann

Finally, we gratefully acknowledge the support of our sponsors and partners in organizing this conference:

- IBM Research
- University of Naples Federico II, Italy
- Department of Mathematics and Applications “R. Caccioppoli”, University of Naples Federico II, Italy

We hope that these proceedings may serve you well in your endeavors in learning and intelligent optimization.

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