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# Learning and Intelligent Optimization

Second International Conference, LION 2007 II  
Trento, Italy, December 8-12, 2007  
Selected Papers



Springer

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## Preface

This volume collects the accepted papers presented at the Learning and Intelligent OptimizationN conference (LION 2007 II) held December 8–12, 2007, in Trento, Italy.

The motivation for the meeting is related to the current explosion in the number and variety of heuristic algorithms for hard optimization problems, which 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 memory about algorithm behavior in the past to improve performance in the future. Intelligent learning schemes for mining the knowledge obtained from different runs or during a single run can improve the algorithm development and design process and simplify the applications of high-performance optimization methods. Combinations of algorithms can further improve the robustness and performance of the individual components provided that sufficient knowledge of the relationship between problem instance characteristics and algorithm performance is obtained.

This meeting aimed at exploring the boundaries and uncharted territories between machine learning, artificial intelligence, mathematical programming and algorithms for hard optimization problems. The main purpose of the event was 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.

This second edition of LION received 48 submitted papers, with an approximate 50% acceptance rate, and 50 participants from 18 different countries. Eighteen papers were selected for inclusion in the conference proceedings following a rigorous review process.

The Conference Chair, Steering Committee and Local Chair, and the Technical Program Committee Chair wish to thank all the colleagues involved in the organization for their precious and professional contribution, including the Technical Program Committee listed here, the Steering Committee members Holger Hoos and Mauro Brunato, the Tutorial Chair David Woodruff, the IEEE Computational Intelligence Society Liaison Andrea Bonarini, the Publicity Chair Kenneth Sorensen, the local organization team Alessandro Villani, Roberto Cascella, Elisa Cilia, Paolo Campigotto, the Web Chair Franco Mascia and, last but not least, the Publication Liaison Thomas Stützle.

Technical Co-sponsorship was granted by the IEEE Computational Intelligence Society (local chapter) and by Associazione Italiana per l'Intelligenza Artificiale.

Financial support for this event was provided by our industrial sponsors, Eurotech Group S.p.A., which generously sponsored the two best papers awards, ESTECO, and Ars Logica IT Laboratories.

Vittorio Maniezzo  
Roberto Battiti  
Jean-Paul Watson

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