

Preface

This volume edited by R. Battiti, D.E. Kvasov, and Ya.D. Sergeyev contains peer-reviewed papers from the 11th Learning and Intelligent international Optimization conference LION-11 held in Nizhny Novgorod, Russia in June 19-21, 2017. The LION-11 conference has continued the successful series of the constantly expanding and worldwide recognized LION events (LION-1: Andalo, Italy, 2007; LION-2 and LION-3: Trento, Italy, 2008 and 2009; LION-4: Venice, Italy, 2010; LION-5: Rome, Italy, 2011; LION-6: Paris, France, 2012; LION-7: Catania, Italy, 2013; LION-8: Gainesville, USA, 2014; LION-9: Lille, France, 2015; LION-10: Ischia, Italy, 2016). This edition has been organized by the Lobachevsky University of Nizhny Novgorod, Russia, as one of the key events of the Russian Science Foundation project No.15-11-30022 “Global optimization, supercomputing computations, and applications”. As its predecessors, the LION-11 international meeting explored the advanced research developments in such interconnected fields as mathematical programming, global optimization, machine learning, and artificial intelligence. Russia has a long tradition in optimization theory, computational mathematics, and “intelligent learning techniques” (in particular, cybernetics and statistics), therefore, the location of LION-11 in Nizhny Novgorod was an excellent occasion to meet researchers and consolidate research and human links.

More than 60 participants from 15 countries (Austria, Belgium, France, Germany, Hungary, Italy, Lithuania, Portugal, Russia, Serbia, Switzerland, Taiwan, Turkey, United Kingdom, and United States) have taken part in the LION-11 conference. Four plenary lecturers have shared their current research directions with the LION-11 participants:

- Renato De Leone, Camerino, Italy: “The use of grossone in optimization: a survey and some recent results”;
- Nenad Mladenovic, Belgrade, Serbia: “Less is more approach in heuristic optimization”;
- Panos Pardalos, Gainesville, USA: “Quantification of network dissimilarities and its practical implications”;
- Julius Žilinskas, Vilnius, Lithuania: “Deterministic algorithms for black box global optimization”.

Moreover, three tutorials have also been presented during the conference:

- Adil Erzin, Novosibirsk, Russia: “Some optimization problems in the wireless sensor networks”;
- Mario Guarracino, Naples, Italy: “Laplacian-based semi supervised learning”;
- Yaroslav Sergeyev, University of Calabria, Italy, and Lobachevsky University of Nizhny Novgorod, Russia: “Numerical computations with infinities and infinitesimals”.

A total of 20 long papers and 15 short papers have been accepted for publication in this LNCS volume after their thorough peer reviewing (required up to three review rounds for some manuscripts) by the members of the LION-11 Programming Committee and independent reviewers. These papers describe advanced ideas, technologies, methods, and applications in optimization and machine learning. This volume also contains the paper of the winner (Francesco Romito, Rome, Italy) of the second edition of the GENeralization-based contest in global OPTimization (GENOPT: <http://genopt.org>).

The Editors thank all the participants for their dedication to the success of LION-11 and are grateful to the reviewers for their valuable work. The support of the Springer LNCS editorial staff is greatly appreciated.

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