Preface

This volume contains the proceedings of the School-Seminar on Optimization Problems and Their Applications (OPTA-SCL 2018), held in Omsk, Russia, July 8 – 14, 2018. It was organized by Omsk Scientific Center SB RAS, Sobolev Institute of Mathematics SB RAS, Novosibirsk State University and Dostoevsky Omsk State University.

The school-seminar OPTA-SCL 2018 covers the topics of mathematical programming and its applications; discrete optimization; optimization problems in data analysis, machine learning and pattern recognition; applications of optimization methods in economics, management, design, biology and education; metaheuristics and local search methods.

An eponymous conference OPTA 2018 was co-located with the school-seminar OPTA-SCL 2018. OPTA and OPTA-SCL are organized by the same team of researchers as the conference "Optimization Problems and Economical Applications", which was regularly held in Omsk since 1997 till 2015, chaired by professor Alexander Kolokolov. OPTA 2018 is devoted to the memory of Alexander Kolokolov. The school and the conference belong to a series of international forums on optimization and operations research in Siberian and Ural areas of Russia. The main purpose of these forums is to provide a place where scientists and young researchers can exchange ideas, identify promising directions for research and application domains, and foster new collaborations. The series also involves the International Conference on Discrete Optimization and Operations Research (DOOR), Baikal International Triennial School-Seminar Methods of Optimization and Their Applications (BITSS) and the Conference on Mathematical Programming and Applications (MPA). The list of Program Committee and the list of participants of OPTA-SCL significantly overlap with those of the above mentioned conferences.

The papers included in this volume were evaluated by the Program Committee on the basis of reports from two or more reviewers from 19 countries: Russia, France, Australia, UK, Serbia, Germany, Kazakhstan, Bulgaria, Netherlands, Mexico, Belarus, Taiwan, Italy, Australia, USA, India, Greece, Korea, and China. A total of 39 submissions were selected for inclusion in this volume. The school also featured the following eight plenary lectures:

René van Bevern *(Novosibirsk State University, Russia) Maximum-profit domination with matroid constraints: a fixed-parameter algorithm and applications;*
Edward Gimadi *(Sobolev Institute of Mathematics SB RAS, Russia) On some successful implementations of an asymptotically optimal approach for some hard discrete optimization problems;*
Mikhail Khachay *(Krasovsky Institute of Mathematics and Mechanics UB RAS, Russia) Fully convolution neural networks in application to the semantic segmentation problem;*
Oleg Khamisov *(Melentiev Institute of Energy Systems SB RAS, Russia) Branch and bound methods in global optimization problems;*
Alexander Kononov *(Sobolev Institute of Mathematics SB RAS, Russia) Query-competitive algorithms for elimination of uncertainty;*

Nenad Mladenović *(Mathematical Institute SASA, Serbia) Quality functions in recognizing communities in complex networks;*
Panos Pardalos *(University of Florida, USA) On the passage from local to global in optimization: new challenges in theory and practice;*
Alexander Strekalovsky *(Matrosov Institute for System Dynamics and Control Theory SB RAS, Russia) Modern nonconvex optimization. Theory, methods, and application.*

May, 2018
Omsk

Sergey Belim
Alexander Kononov
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