Journal of Computational Mathematics
Vol.37, No.6, 2019, i–ii.
http://www.global-sci.org/jcm

Preface

Special issue on "Modern Optimization and Applications 2018"

This special issue contains eight selected papers from the International Workshop on Modern Optimization and Applications, which was held over the three days, 16-18 June 2018 at Academy of Mathematics and Systems Science, Chinese Academy of Sciences, Beijing. This conference brought together leading scientists, researchers, and practitioners from the world to exchange and shared ideas and approaches in using modern optimization techniques to model and solve real-world application problems from engineering, industry, and management. A prominent feature of this conference is the mixture of optimization theory, optimization methods, and practice of mathematical optimization. This conference provided a forum for researchers from academia to present their latest theoretical results and for practitioners from industry to describe their real-world applications, and discuss with participants the best way to construct suitable optimization models and how to find algorithms capable of solving these models.

There were in total 18 invited speakers including Professor Sergiy Butenko (Texas A & M University, US; Editor-in-chief of the Journal of Global Optimization), Professor Oleg P. Burdakov (Linköping University, Sweden; Editor-in-Chief of Optimization Methods and Software), Professor Tsung-Hui Chang (The Chinese University of Hong Kong, Shenzhen), Professor Xiaojun Chen (Hong Kong Polytechnic University, HK), Professor Neng Fan (University of Arizona, US), Professor Yuantao Gu (Tsinghua University, China), Professor Zhi-Quan Luo (The Chinese University of Hong Kong, Shenzhen), Professor Panos M. Pardalos (University of Florida, US; Book Series Editor, Optimization and Its Applications, and the journal Computational Management Science, Springer), Professor Jiming Peng (University of Houston, US), Professor Nick Sahinidis (Carnegie Mellon University, US; Editor-in-Chief of Optimization and Engineering), Professor Anthony Man-Cho So (Chinese University of Hong Kong, HK), Professor Defeng Sun (The Hong Kong Polytechnic University, HK), Professor Tamás Terlaky (Lehigh University, US; Vice President of INFORMS and Chair of the SIAM Activity group on Optimization), Professor Yanfei Wang (Institute of Geology and Geophysics, Chinese Academy of Sciences, China), Professor Zaiwen Wen (Peking University, China), Professor Hulin Wu (The University of Texas Health Science Center at Houston, US), Professor Wotao Yin (University of California, Los Angeles, US), and Professor Ya-xiang Yuan (Academy of Mathematics and Systems Science, Chinese Academy of Sciences, China). In addition to the 18 invited talks, there were two poster sessions during the workshop. More than 160 participants attended the workshop. More information about the conference can be found on the conference website: http://lsec.cc.ac.cn/~moa2018

This special issue contains eight papers from invited speakers representing a broad range of topics of modern optimization and applications.

Oleg Burdakov, Yu-Hong Dai, and Na Huang develop a stabilized Barzilai-Borwein method by some stabilization technique, which achieves fast local convergence. Liang Chen, **Defeng Sun**, Kim-Chuan Toh, and Ning Zhang present a fairly accessible generalization of several symmetric Gauss-Seidel decomposition based multi-block proximal alternating direction methods of multipliers for convex composite optimization problems. Gerald Gamrath, Ambros Gleixner, **Thorsten Koch**, and Matthias Miltenberger describe algorithmic innovations that help to ensure that the performance of a mixed-integer programming solver keeps up with the growing complexity of the large supply chain problems and tight time limits encountered in practice.

Jie Jiang, Yun Shi, Xiaozhou Wang, and **Xiaojun Chen** provide sufficient conditions for the existence of solutions of two-stage stochastic variational inequality problems, and propose a regularized sample average approximation method for solving it. Haoyang Liu, **Zaiwen Wen**, Chao Yang, and Yin Zhang investigate block methods in the subspace update step that allow a higher level of concurrency than what is reachable by Krylov subspace methods. Ernest Ryu and **Wotao Yin** present a proximal-proximal-gradient method, which is generalized the proximal-gradient method and ADMM, for minimization problems written as a sum of many differentiable and many non-differentiable convex functions. Zhouhong Wang, **Yu-Hong Dai**, and Fengmin Xu propose an efficient and robust method for computing the analytic center of the polyhedral set with ill-conditioned matrix and noise. Yuanping Zhang and **Yanfei Wang** apply a fast efficient gradient algorithm to iteratively solve the proposed gravity-magnetic joint inversion objective function.

In addition to this special issue, we would like to mention that as the posters are of high quality, there is another special issue of *the Journal of Global Optimization* (Editors: Ya-Feng Liu, Fengmin Xu, Neng Fan, and Jiming Peng) for general participants. Specifically, the two winners of the MOA 2018 Best Poster Award are **Hailun Sun** from Nanjing Normal University for the paper "Convergence analysis of sample average approximation of two-stage stochastic generalized equations" and **Cong Sun** from Beijing University of Posts and Telecommunications for the paper "New stepsizes for the gradient method."

We would like to thank all the referees very much for their contributions.

Guest Editors:
Weimin Han University of Iowa
Ge Wang Rensselaer Polytechnic Institute
Hongkai Zhao University of California, Irvine