Special Issue of *Journal of Global Optimization* on Optimization Techniques and Applications

Preface

The 5th International Conference on Optimization: Techniques and Applications (ICOTA2001) was held in Hong Kong, December 15–17, 2001. This conference, the Fifth in the series held previously in Singapore, Chendu, and Perth, addressed the importance of the area of optimization and its applications, under the theme "Optimization for the New Millennium". As we are moving into the new millennium, we strongly believe that optimization will play a more and more important role in helping us tackle the ever increasingly complicated real-life optimization problems. These problems may arise in natural resource utilization, financial operations, optimal control of complex systems, and co-ordination of supply chains, just to name a few. ICOTA2001 provided a forum for many experts and practitioners to exchange ideas and information on their latest work in this area. Eight world-renowned scholars gave invited plenary speeches during the conference, covering a number of state-of-the-art topics in optimization and its applications. Over 250 papers were accepted for presentation in ICOTA2001, which comprised 3 mini-symposia, 21 invited sessions, and 10 contributed sessions.

This special issue is designed to solicit papers of high quality from ICOTA2001. A total of 8 papers were accepted for this special issue. The outline of these papers is as follows.

The first three papers tackle certain theoretical issues in global optimization. Huang and Yang present a necessary and sufficient condition for achieving a zero duality gap between a primal optimization problem and its generalized augmented Lagrangian dual problem. Li et al. study a class of nonconvex minimization problems – hidden convex minimization problems that can be transformed into convex minimization problems via equivalent transformations. Sufficient conditions in identifying hidden convex minimization problems that are independent of transformations are derived. Yang and Hou establish some sufficient optimality conditions for a class of generalized minimax fractional programming problems and obtain some duality results. The next three papers develop efficient solution algorithms for global optimization. Dai et al. consider conical partition algorithm for minimizing the sum of dc ratios. A reformulation approach

leads to a branch-and-bound solution algorithm. Liao et al. propose a gradient-based continuous method for large-scale optimization problems using ODE formulation. The solution trajectory of this ODE tends to the set of stationary points of the original problems. Deng et al. solve an unconstrained optimization problem by Newton-PCG like methods. They examine how efficient Newton-PCG like methods can be from theoretical point of view. The last two papers of this special issue deal with scheduling problems. Cai and Zhou consider single-machine scheduling problems with exponential processing times and general stochastic cost function and derive the properties of the optimal sequences under different conditions. Ng et al. investigate a new formulation of the completion time variance problem with compressible processing times and obtain a pseudo-polynomial time algorithm.

We would like to acknowledge the supports to the ICOTA2001 provided by The Chinese University of Hong Kong, The City University of Hong Kong, The Croucher Foundation, The Hong Kong Polytechnic University and The K.C. Wong Foundation. We appreciate very much all the contributors for their contributions to the special issue and are grateful to all the reviewers for their hard work. We are indebted to the Editor-in-Chief, Professor Panos Pardalos, who kindly approved this special issue and also provided us valuable guidance in the editorial process.

Guest Editors: Duan Li, Liqun Qi and Kok Lay Teo
December, 2004 in Hong Kong