Preface

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This special issue is dedicated to the VII Brazilian Workshop on Continuous Optimization, held at the Institute of Mathematics, Statistics and Scientific Computing (IMECC) of the State University of Campinas (UNICAMP), in Campinas, SP, Brazil, between the 28th and the 31st of July, 2008. By chance, José Mario Martínez was turning sixty that year, and the participants of the Workshop took the opportunity to celebrate it. Discussed subjects involved all theoretical and practical aspects of Continuous Optimization, including implementation issues, applications, convergence, complexity and stability theory.

The Brazilian Workshop on Continuous Optimization has become a tradition of the Brazilian Optimization Community since 1998. It was previously held in Florianópolis (1998, 2001 and 2004), Goiânia (2005) and Rio de Janeiro (1999 and 2002). In those ten years, the Workshop has helped to consolidate Continuous Optimization as a widely studied field in Brazil, attracting the attention of young researchers. The Workshop, which is usually honored with wide attendance by the Brazilian Optimization community and foreign invited speakers and participants, has become a great opportunity to share recent developments and report ongoing research.

The success of the VII Brazilian Workshop on Continuous Optimization was due to the dedicated effort of the local organizing committee composed of Roberto Andreani, Maria A. Diniz-Ehrhardt, Ana Friedlander, Francisco A. M. Gomes, Márcia A. Gomes-Ruggiero, Vera L. R. Lopes, José Mario Martínez, Margarida P. Mello, Antonio C. Moretti, Lúcio T. Santos, and Sandra A. Santos. The invaluable help of many students and the collaborative spirit of the participants were also of great importance to the Workshop successful realization.

I would like to thank Bill Hager, Editor-in-Chief of Computational Optimization and Applications, for the opportunity to be the guest editor of the present special issue dedicated to the Workshop. It is a very nice and gratifying experience for me. This special issue features ten papers submitted by participants of the Workshop. The papers, which were reviewed according to the usual high standards of the journal, covered a wide range of theoretical, practical, and applied topics in optimization.

Several papers at the conference focused on the area of derivative-free optimization. J. Dennis, C. Audet and S. Le Digabel present a very interesting and useful paper concerning bound-constrained optimization. This paper also includes some industrial test problems that could be used in the future to benchmark algorithms. A.L. Custodio, H. Rocha and L. Vicente deal with derivative-free methods for unconstrained minimization. In their work, they propose to

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enhance the performance of direct search methods by exploiting quadratic interpolation steps. L. Bello, W. La Cruz and M. Raydan introduce a low-cost derivative-free algorithm for solving the positive definite generalized eigenvalue problem. The method is based on preconditioned Spectral Projected Gradients.

J.Y. Bello Cruz and A.N. Iusem introduce and analyze two projection methods for solving variational inequalities. Convergence of both methods is established under weaker assumptions than those required in previous works. M. Solodov and A.F. Izmailov describe a perturbed version of the classical Josephy-Newton method for solving generalized equations. Their convergence framework includes standard sequential quadratic programming, its stabilized version, sequential quadratically constrained quadratic programming and linearly constrained Lagrangian methods.

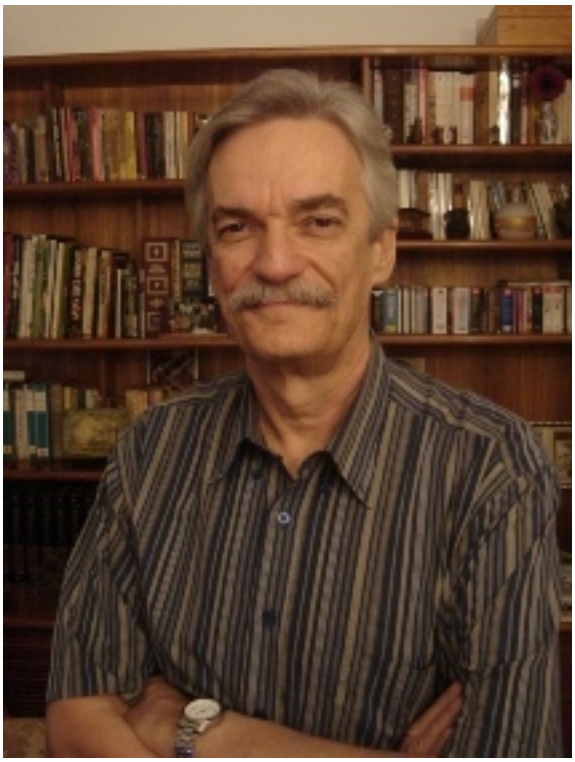
M. Kumaresan and N. Krejić present optimization-based strategies for automated trading in electronic stock exchanges. The optimal trading of atomic orders relies on the minimization of impact and volatility costs. G. Emiel and C. Sagastizábal describe an incremental bundle method that allows progress when using inexact function values for hard-to-evaluate functions. The authors introduce both a variant of the bundle method with inexact linearizations and an incremental variant of the classical bundle method. An application to an energy planning problem is described.

A. Fischer and A. Friedlander provide a new Inexact Restoration framework for nonlinear programming in which global convergence is achieved by means of a line search and a penalty function. The new method is simpler than previous methods, while preserving theoretical convergence properties. J. Eckstein and P.J.S. Silva describe an augmented Lagrangian method with a relative error criterion for solving the fully smooth subproblems based on double regularized proximal kernels. E.V. Castelani, A.L.M. Martinez, J.M. Martínez and B.F. Svaiter draw attention to an inherent phenomenon of the penalty methods that they named *greediness*. The phenomenon relates to the tendency of methods to generate very infeasible iterates at early stages of the optimization procedure; in essence more priority is given to optimality over feasibility, even when the starting point is feasible. The authors propose to deal with the greediness phenomenon by employing a regularization approach in the context of augmented Lagrangian methods.

A few words about Mario are in order. Many people may not know that Mario was born in Asturias, Spain, and spent his childhood and early life in Buenos Aires before permanently moving to Brazil. His contributions to Optimization include, but are not limited to, several theoretical and practical aspects of Quasi-Newton methods, Inexact Restoration methods, Spectral Projected Gradients, Augmented Lagrangians, Constraint Qualifications, Optimality Conditions and applications. Just as important as these contributions is the fact that he has been a dedicated advisor of many postgraduate students. In collaborations with other researchers, he has disseminated his clever and very special perception of optimization. A few things that I have learned from him are: (i) start aiming at large objectives, since reality will ensure that you obtain only a small fraction of your goals; (ii) work with subjects that you find exciting and fun; (iii) make

your co-workers your friends or, conversely, make your friends your co-workers. In either case, you will be working with friends.

Following these rules, he achieved excitement and fun in his work, while doing what he likes to do and transmitting those feelings to his co-workers, students and friends. For that reason, the atmosphere of the Workshop was warm, pleasant and full of friendship. In the end, did the Workshop celebrate Mario's 60th birthday? We invite you to find the answer by looking at the nice pictures from the Workshop at http://www.ime.usp.br/∼egbirgin/Pictures/BrazOpt2008/, while enjoying the papers of this special issue dedicated to the VII Brazilian Workshop on Continuous Optimization.



José Mario Martínez