INFORMS OPTIMIZATION SOCIETY Business Meeting - November 7, 2010

Minutes of 2010 Business Meeting

INFORMS OPTIMIZATION SOCIETY
Business Meeting - November 7, 2010

AGENDA

1) Treasurer's report (Marina Epelman)
2) Biannual OS Conferences (Nick Sahinidis)
3) OS Prizes (Nick Sahinidis)
4) Elections (Nick Sahinidis)
5) Secretary/Treasurer position (Jon Lee)
6) New business

Treasurer's report

-- 2008: Opening balance $29,516; Ending balance $34,156
-- 2009: Opening balance $34,156; Ending balance $38,830.13
-- 2010: Opening balance $38,830.13, Dues revenue $8,000.00; expenses (awards, business meeting) occur in Q3 and Q4
-- The Third OS conference broke about even
-- In each of last two years we had net revenue of about $4,500 (although in 2008 this was in part due to an error by the conference hotel, which did not charge us for the business meeting)
-- Because starting this year we will award 4 annual prizes, in the near future our balance is likely to stay constant or decrease by a small amount.

Society Conferences

-- Third OS Conference took place on February 26-28, 2010, at the University of Florida, Gainesville
-- Theme: Energy, Sustainability and Climate Change
-- Organized by Panos Pardalos
-- Plenary speakers: Timothy J. Anderson (University of Florida), C. D. Hobbs (ITF Research Group, Inc.), Jeremy Bloom (IBM)??
-- 50 talk total; presentation slides available at the conference website http://www.ise.ufl.edu/cao/escc2010/
-- Suggestions and volunteers to host the next conference in 2012 are invited and encouraged

---
OS Prizes

-- Beginning in 2010, the Society awards four annual prizes
-- The prize winners presented their work and received the plaques and prizes at a special conference session sponsored by the OS earlier in the day.
-- Below is the information on each award --- congratulations again to all the winners!

Student Paper Prize

-- 2010 Prize committee: Miguel Anjos, Alper Atamturk, Sven Leyffer (chair)
-- 2010 Prize recipient: Shiqian Ma (Columbia University) for his paper: "Fast Multiple Splitting Algorithms for Convex Optimization" co-authored with Donald Goldfarb
-- Citation:

The authors provide for the first time optimal complexity bounds for two general classes of K-splitting methods for solving convex optimization problems. They show that the the number of iterations to obtain an ϵ-optimal solution is

$\cal{O}(1/\epsilon)$ for a standard method, and $\cal{O}(1/\sqrt{\epsilon})$ for an accelerated method. The complexity results are optimal in the sense that they are the best that can be achieved for first-order methods. The authors extend the algorithms to optimization problems involving linear operators such as those that arise in variational formulations of partial differential equations and in optimal control problems. The paper concludes with some impressive computational results showing that the proposed splitting method outperforms MOSEK by an order of magnitude on instances of the Fermat-Weber problem, an important test problem arising in facility location.

The paper combines elegant theory with an effective practical implementation. It establishes new surprising complexity results for a family of classical optimization techniques. The methods and results of this paper are not only significant from a theoretical point of view, but also have tremendous potential for the development of parallel optimization algorithms for emerging multicore architectures.

Prize for Young Researchers

-- 2010 Prize committee: Nick Sahinidis (chair), Alper Yildirim, Jiawei Zhang
-- 2010 Prize recipient: Anthony Man-Cho So (The Chinese University of Hong Kong) for his paper: "Moment Inequalities for Sums of Random Matrices and Their Applications in Optimization", Mathematical Programming, DOI: 10.1007/s10107-009-0330-5
-- Citation:

The Optimization Society of INFORMS presents the 2010 Optimization Prize for Young Researchers to Anthony Man-Cho So for his paper: "Moment Inequalities for Sums of Random Matrices and Their Applications in Optimization", Mathematical Programming, DOI: 10.1007/s10107-009-0330-5, which establishes novel connections between the behavior of sums of random matrices and the theoretical properties of various optimization problems. In this paper, the author achieves a multitude of objectives simultaneously: First, by using a deep mathematical tool of non-commutative Khintchine's inequality in functional analysis, he establishes a sharper upper bound on the norm of a sum of certain random matrices, thereby resolving a recent conjecture due to Nemirovski. Second, he shows that this sharper upper bound leads to an improved approximation guarantee for an SDP-based approximation algorithm of Nemirovski for quadratic optimization problems with orthogonality constraints. Third, he obtains improved safe tractable approximations of a certain class of chance constrained linear matrix inequalities. Finally, he extends a recent result on distributionally robust stochastic programming to a much larger class of probability distributions by relaxing a key assumption. With a clear exposition, the results of this paper have the potential to find further applications in optimization.

The Farkas Prize for Mid-career Researchers

-- 2010 Prize committee: Gerard Cornuejols, Jong-Shi Pang (chair), Kees Roos, Yinyu Ye
-- 2010 Prize recipient: Zhi-Quan (Tom) Luo (University of Minnesota)
-- Citation:

Tom Luo has made fundamental contributions to optimization theory and its applications that include many topical problems in signal processing and digital communication. His work on the complementarity and equilibrium problems, error bound analysis, extensions of Frank-Wolfe theorem to quadratic constraints, interior point methods for conic programming problems, and convex relaxation for NP-hard optimization has made a profound impact to the field. Together with Paul Tseng, he proved the convergence analysis of matrix splitting algorithms for linear complementarity problems and affine variational inequalities, analyzed the convergence of the affine scaling algorithm for linear programs, developed (with Jos Sturm and Shuzhong Zhang) a superlinearly convergent primal-dual interior point algorithm for semidefinite programming without the non-degeneracy assumption, and produced a constant lower bound for the approximate S-lemma and a constant approximation ratio for random least squares over binary variables. His book (jointly with Pang and Ralph) on Mathematical Programs with Equilibrium Constraints laid a strong theoretical foundation for the subject and has inspired many to work in this area of research. In communication, he developed a Second-Order Cone program for beam-forming that admits very efficient solution via modern interior point methods, and showed (with Shuzhong Zhang) zero-duality for a broad class of dynamic spectrum management problems for single-tone and multi-tone multi-user interference channels. His recent work on quartic programming opens a new chapter for this class of nonconvex optimization problems with significant practical applications.

For all his contributions, Tom Luo is eminently deserving of the 2010 Farkas Prize awarded by the Optimization Society within the Institute for Operations Research and Management Science.

The Khachiyan Prize for Life-time Accomplishments in Optimization
---

-- 2010 Prize committee: Martin Groetschel, Arkadi Nemirovski, Panos Pardalos, Tamas Terlaky (chair)
-- 2010 Prize recipient: George L. Nemhauser (Georgia Institute of Technology)
-- Citation:

The first recipient of the INFORMS Optimization Society Khachiyan Prize, to be awarded to an individual or a team for life-time achievements in the area of optimization, is George Nemhauser, the A. Russell Chandler Chaired Professor in Industrial and Systems Engineering at the Georgia Institute of Technology, Atlanta, Georgia.

During a remarkable academic career of so far about 50 years George Nemhauser has grown into one of the world's foremost experts in discrete optimization and has become one of the most recognized members of the INFORMS community. The basis for his outstanding position as an OR scientist are his fundamental contributions to the theory and practice of integer programming and combinatorial optimization. His integer programming books have guided the field for more than thirty years, each introducing a host of new techniques for handling IP models in theory and practice. George's nearly two hundred research papers in the field are unmatched in their breadth of coverage.

George has shown a unique ability to find, solve, and present applied work in Operations Research; but first and foremost he is a superb contributor to the theory underlying optimization techniques. This is evident from his publications throughout his whole career, starting with traveling-salesman-problem work in 1962 and continuing through his recent papers on piecewise-linear optimization. Fundamental models and techniques covered by George include Lagrangian optimization, dynamic programming, capital budgeting, set partitioning, cutting planes, branch-and-price, transportation problems, graph coloring, vertex packing, submodular functions, facility location, cutting stock, stochastic programming, and so on. State-of-the-art software relies heavily on the use of cutting planes, and George Nemhauser was an early proponent of this approach. MINTO, a code he developed in collaboration with Savelsbergh and Sigismondi, was a precursor of modern branch-and-cut codes.

George Nemhauser has served ORSA as council member, president, and editor of Operations Research, and he is past chair of the Mathematical Programming Society. He is the founding editor of Operations Research Letters, and co-editor of Handbooks of Operations Research and Management Science.

George has served various governmental agencies, including the NSF, the National Institute of Standards and Technology (NIST), and the National Research Council (NRC). His honors and awards include the Kimball Medal, the Lanchester Prize (twice awarded), Morse lecturer of ORSA, and membership in the National Academy of Engineering.

Election results

-- Continuing officers:
-- Vice-chairs (through 2011): Steven Dirkse (Computational optimization/software), Oktay Gunluk (IP), Miguel Anjos (LP and Complementarity), Mauricio Resende (Networks)
-- Thanks to officers finishing their terms:
-- Nick Sahinidis (Chair, becoming Most recent past chair 2010-2012)
-- Vice-chairs: Kevin Furman (Global optimization), Uday Shanbhag (Nonlinear programming), Lewis Ntaimo (Stochastic programming)
-- Incoming officers
-- Jon Lee (Chair 2010-2012)
-- Vice chairs (2010-2012): Oleg Prokopyev (Global optimization), Frank E. Curtis (Nonlinear programming), Huseyin Topaloglu (Stochastic programming)

Secretary/Treasurer position

-- Marina Epelman's term as Secretary/Treasurer ends in November 2010
-- No nominations for the positions were received during the election; the OS Council agreed to have Marina continue serving as Secretary/Treasurer for an additional year
-- Jon Lee proposed that it would be helpful for continuity and ease of transitions between elections if the Secretary/Treasurer's term were changed to be an even number of years (2 or 4), beginning in the middle of the Chair's term. (Currently, the Secretary/Treasurer's term is 3 years long). Discussion of the proposal followed; the Council will put together a proposal and submit it for the OS membership vote later in the year.

New business

-- Suvrajeet Sen announced the upcoming INFORMS Midwest meeting, to be held in Columbus, OH. He asked the OS Council to consider co-sponsoring the conference.
-- Post-meeting followup: Jon Lee, Nick Sahinidis and Marina Epelman reviewed the current and forecasted OS budgets, and agreed that, due to upcoming changes in annual expenditures and other considerations, the OS is not currently in a position to help out conferences financially, although happy to lend the endorsement of the
OS to worthy conferences in name (similar to what the Mathematical Optimization Society does as well).

Thanks

Thanks to all of you for supporting the INFORMS Optimization Society.

Society officers welcome any questions, suggestions and ideas related to the Optimization Society activities.

See you again in Charlotte, NC in November 2011, at the 2011 INFORMS meeting!

Marina A. Epelman
Secretary/Treasurer
INFORMS Optimization Society