

Minutes of the 2013 Business Meeting

INFORMS OPTIMIZATION SOCIETY
Business Meeting - October 6, 2013

AGENDA

- 1) Optimization Society Conference (Ilya Hicks)
- 2) Secretary/Treasurer's report (Jim Luedtke)
- 3) OS Prizes (Sanjay Mehrotra)
- 4) Election results (Sanjay Mehrotra)
- 5) Optimization Society Special Interest Group Name Changes (Sanjay Mehrotra)
- 6) Possible New Optimization Society Sponsored Journal (Sanjay Mehrotra)

Optimization Society Conference

2014 OS Conference will be held March 6-8, 2014; Rice University, Houston, TX

- Theme: "Theory and Practice: Dealing with Big Data and Other Challenges"
- Website: <http://www.caam.rice.edu/~ios2014>
- General Chair: Ilya Hicks
- Organizing Committee: Matthias Heinkenschloss, Ilya Hicks, Wotao Yin
- Plenary Speakers: Dorit Hochbaum (UC Berkeley), Anatoli Juditsky (University Joseph Fourier), Jorge Nocedal (Northwestern), Ben Recht (UC Berkeley)
- Banquet Speaker: Bob Bixby (Rice University and Gurobi)
- Early registration deadline: December 20, 2013
- Abstract/poster submissions deadline: January 6, 2014
- Sponsors: PROS, AMPL, Gurobi

Secretary/Treasurer's report

Financials:

- 2008: Opening balance \$29,516; Ending balance \$34,156.
- 2009: Opening balance \$34,156; Ending balance \$38,830.
- 2010: Opening balance \$38,830; Ending balance \$50,165.
- 2011: Opening balance \$50,165; Ending balance \$51,685.

- 2012: Opening balance \$51,685; Ending balance \$62,102.
- 2013: Opening balance \$62,102; Projected ending balance, \$62,000.
- Balance is not projected to increase or decrease in 2012. Excluding conference revenues, this is consistent with previous years. We need to continue to monitor expenses to be sure balance does not start declining.
- Business meeting expenses have been increasing. The consensus appears that this is a worthwhile expense.

Membership as of Oct. 1, 2013:

- Total members: 1055 (down 27 from 2012)
- Full members: 637 (up 85 from 2012)
- Student members: 381 (down 118 from 2012)
- Retirees: 25 (up 3 from 2012)
- Other: 12 (up 3 from 2012)
- While OS membership declined slightly overall, the decline was primarily due to a significant decline in student members, which tends to fluctuate a lot. (Last year, there was a 200 member increase in students.) It is encouraging that the full members increased significantly.

 OS Prizes

- The Society awards four annual prizes.
- Webpage <http://www.informs.org/Community/Optimization-Society/Prizes> contains information on winners and nomination deadlines for future prizes.
- The prize winners presented their work and received the plaques and prizes at a special conference session sponsored by the OS on Monday, October 7, 2013.
- Below is the information on each award --- congratulations again to all the winners, and many thanks to all the prize committee members!

 2013 Student Paper Prize

- Committee: Santanu S. Dey, Simge Küçükyavuz (Chair), Guanghui Lan.
- Winner: for his paper "Computation of Sparse Low Degree Interpolating Polynomials and their Application to Derivative-Free Optimization", *Mathematical Programming*, 134 (2012) 223-257, with Katya Scheinberg and Luis Nunes Vicente.
- Citation:

The novelty of this paper is in the application of sparse signal recovery to the construction of polynomial interpolation models of functions with sparse Hessians. In general, constructing an accurate second-order

interpolation model of a smooth function requires $O(n^2)$ samples. Bandeira et al. show that if the Hessian contains only s nonzeros, then using sparse recovery via l_1 minimization, one can construct an accurate second-order model using only $O(s \log^4(n))$ samples. When applied to derivative-free optimization, the techniques developed significantly reduce the number of evaluations necessary for function approximation via sampling, and thus accelerate the optimization of complex systems such as those whose objective functions are calculated by a costly black-box simulation.

2013 Prize for Young Researchers

-- Committee: Alper Atamtürk (Chair), Samuel Burer, Andrzej Ruszczyński, Nikolaos Sahinidis.

-- Winner: James Luedtke (University of Wisconsin-Madison) for his paper "A Branch-and-Cut Decomposition Algorithm for Solving Chance-Constrained Mathematical Programs with Finite Support," *Mathematical Programming* (2013), DOI 10.1007/s10107-013-0684-6.

-- Citation:

Although chance (probabilistic) constraints are very useful in modeling uncertainty, they often lead to notoriously difficult non-convex optimization problems. The cited paper proposes an exact and surprisingly effective algorithm for optimization over chance constraints. In his PhD thesis Jim Luedtke gave an effective cutting plane approach to solve chance-constrained optimization problems with right-hand-side uncertainty. In the current paper, the author shows a clever way of integrating cutting plane and decomposition methods to handle the much more difficult matrix uncertainty case with surprising effectiveness. Numerical implementation demonstrates the proposed approach to be of orders of magnitude faster than standard modeling and decomposition approaches for optimization with chance constraints. The cited paper has the potential to make a very significant impact in the numerical solution of a broad class of stochastic optimization problems.

The 2013 Farkas Prize for Mid-career Researchers

-- Committee: Dimitris Bertsimas (Chair), George Nemhauser, Yurii Nesterov, Yinyu Ye.

-- Winner: Pablo Parrilo (MIT)

-- Citation:

The 2013 Farkas prize is awarded to Pablo Parrilo for his significant and

fundamental contributions to the field of optimization. His work builds new bridges between semidefinite optimization and real algebraic geometry, and expands the impact and applications of optimization to new areas of engineering, control theory, and recently machine learning. Parrilo's contributions span areas as diverse as game theory and quantum computation.

In his PhD thesis, building on prior fundamental work by N.Z. Shor and Y. Nesterov, Parrilo showed that semidefinite optimization can be combined with Positivstellensatz results (in reference to the seminal work of Hilbert around 1900) of real algebraic geometry to solve polynomial optimization problems with arbitrary accuracy. Parrilo has continued to produce a large number of high quality scientific papers at the interface of algorithmic algebra and optimization: an approach for using invariant theory for exploiting symmetry in algebraic problems (with Gatermann); proof of the Lax conjecture (posed in 1958) about determinantal representations of hyperbolic polynomials in three variables (with Lewis and Ramana); a polynomial time approximation scheme for minimizing forms on the simplex (with de Klerk and Laurent); extending Lovasz's theta body of the stable set polytope to convex hulls of arbitrary algebraic varieties (with Gouveia and Thomas); and a complete characterization of the gap between convexity and SOS-convexity, analogous to Hilbert's seminal result for positive polynomials (with Ahmadi).

The 2013 Khachiyan Prize for Life-time Accomplishments in Optimization

- Committee: Jorge Nocedal (Chair), Michael Todd, Jean-Philippe Vial, Laurence Wolsey.
- Winners: Donald Goldfarb (Columbia University) and Alexander Shapiro (Georgia Tech).
- Citations:

Donald Goldfarb has made fundamental contributions to the field of continuous optimization through the design and analysis of innovative algorithms, including the celebrated BFGS quasi-Newton method for nonlinear optimization and the steepest edge simplex method for linear programming.

Alexander Shapiro has been one of the most prolific scholars in the field of Operations Research, contributing significantly to nonlinear analysis (specifically sensitivity and optimality), and to stochastic programming, where his work on complexity analysis and risk-averse decision making has been highly influential.

Election results

-- Continuing officers:

- Chair: Sanjay Mehrotra (Chair 2012-2014; Most-recent past Chair 2014-2015)
- Secretary/Treasurer: Jim Luedtke (Re-elected for 2013-2015)
- Editors: Shabbir Ahmed (newsletter), Pietro Belotti (website)
- Vice chairs (2012-2014): Leo Liberti (Global optimization), Andreas Waechter (Nonlinear programming), Andrew Schaefer (Stochastic programming)

-- Thanks to the officers finishing their terms:

- Most-recent past chair: Jon Lee (Chair 2010-2012, Most-recent past chair 2012-2013)
- Vice chairs (2011-2013): Brian Borchers (Computational optimization/software), Santanu Dey (IP), Mohammad Oskoorouchi (LP and Complementarity), Baski Balasundaram (Networks)

-- Incoming officers

- Chair-elect: Suvrajeet Sen (Chair-elect 2013-2014: Chair 2014-2016)
- Vice chairs (2013-2015): Imre Polik (Computational optimization/software), Juan Pablo Vielma (IP), John Mitchell (LP and Complementarity), Vladimir Boginski (Networks)

Optimization Society Special Interest Group Name Changes

-- Possible new names for the Optimization Society Special Interest Groups were discussed

-- Sample proposals (these are not the final proposals!):

- Networks -> Network Optimization
- Nonlinear programming -> Nonlinear Optimization
- Stochastic programming -> Stochastic Optimization
- Integer programming --> Integer Optimization
- Linear Programming and Complementarity --> Linear and Complementarity Optimization

-- Other suggestions provided:

- Stochastic programming --> Optimization under uncertainty (this could also include robust optimization)
- Stochastic programming --> Stochastic and dynamic optimization

-- Plan forward:

- More discussion will be held on the Optimization Society Google+ discussion forum (<https://plus.google.com/communities/107312695190276384334> or just do a search!)

-- Officers will put together a proposal based on this feedback and members will be asked to vote online.

Possible New Optimization Society Sponsored Journal

Sanjay Mehrotra led a discussion of a possible new journal to be sponsored by the Optimization Society

-- All other INFORMS societies, and many sections have an affiliated journal

-- Possible Names: "INFORMS Journal on Optimization Science", "INFORMS Journal on Optimization"

-- Startup cost: \$55K. Annual operating cost: \$45K

-- Officers will develop a concrete plan, including funding and access model, and bring to members for a vote.

-- Perhaps have open access to IOS members, and increase OS membership dues accordingly

-- Other possible funding sources: Institutional subscriptions (so, not a completely open access journal), sponsorships

-- Members are encouraged to join the discussion thread on this topic on Google+, or directly give ideas/feedback to the officers.

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 at the the next INFORMS Annual Meeting in San Francisco, CA in November 2014!

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Secretary/Treasurer
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