

# Samuel Burer

George Daly Professor  
Department of Management Sciences  
Henry B. Tippie College of Business  
University of Iowa

Iowa City, IA 52242-1994  
+1 (319) 335-0931  
samuel-burer@uiowa.edu  
tippie.uiowa.edu/sburer

## EXPERIENCE

- 2016-07 – present** **George Daly Professor**, Department of Management Sciences, University of Iowa  
Faculty Director, Business Analytics Graduate Program (2014–present)  
Faculty, Applied Mathematical and Computational Sciences (2004–present)
- 2012-07 – 2016-07** **Professor**, Department of Management Sciences, University of Iowa  
Henry B. Tippie Research Fellow (2012–2016)
- 2007-07 – 2012-06** **Associate Professor**, Department of Management Sciences, University of Iowa  
Martha and Dennis Hesse Faculty Fellow (2004–12)
- 2009-04 – 2009-05** **Visiting Associate Professor**, Department of CS and Systems, Sapienza Università di Roma
- 2007-01 – 2007-05** **Visiting Assistant Professor**, Tepper School of Business, Carnegie Mellon University
- 2001-08 – 2007-06** **Assistant Professor**, Department of Management Sciences, University of Iowa

## EDUCATION

### Georgia Institute of Technology

- Ph.D., Algorithms, Combinatorics, and Optimization, August 2001
- *New Algorithmic Approaches for Semidefinite Programming with Applications to Combinatorial Optimization*, advised by R.D.C. Monteiro

### University of Georgia

- B.S., Mathematics, June 1997
- First Honor Graduate, *Summa Cum Laude*, With Highest Honors

## RESEARCH AND TEACHING INTERESTS

- Analytics, operations research, management sciences
- Discrete and continuous optimization
- Convex, copositive, semidefinite, and nonlinear optimization
- Decision making and optimization under uncertainty

## GRANTS

- National Science Foundation Grant for *CAREER: Computation, Theory, and Applications for Nonconvex Quadratic and Conic Optimization*, \$400,000, 2006–12
- National Science Foundation Grant for *Collaborative Research: Theory and Implementation of Semidefinite Programming and Its Application to Combinatorial Optimization*, \$255,818, 2000–05
- New Technology in the Learning Environment Grant, University of Iowa, \$1,500, 2004

- Old Gold Fellowships, University of Iowa, \$12,000, 2002–03

# JOURNAL PUBLICATIONS (listed in reverse chronological order by appearance of manuscript)

- [J01] [A Copositive Approach for Two-Stage Adjustable Robust Optimization with Uncertain Right-Hand Sides](#), with G. Xu, September 2016, revised May 2017, to appear in *Computational Optimization and Applications*.
- [J02] [Quadratic Programs with Hollows](#), with B. Yang and K. Anstreicher, January 2016, revised December 2016 and April 2017, published “Online First” in *Mathematical Programming Series A*, DOI 10.1007/s10107-017-1157-0.
- [J03] [Robust Sensitivity Analysis of the Optimal Value of Linear Programming](#), with G. Xu, *Optimization Methods and Software*, 32(6):1187-1205, 2017.
- [J04] [Nearly Efficient Tuitions and Subsidies in American Public Higher Education](#), with G. Fethke, *Economics of Education Review*, 55, 182-197, 2016. DOI 10.1016/j.econedurev.2016.09.003.
- [J05] [A Gentle, Geometric Introduction to Copositive Optimization](#), *Mathematical Programming Series B*, 151(1), 89–116, 2015. DOI 10.1007/s10107-015-0888-z.
- [J06] [A Branch-and-Bound Algorithm for Instrumental Variable Quantile Regression](#), with G. Xu, August 2014, revised October 2015, January 2016, and July 2016, published “Online First” in *Mathematical Programming Computation*, DOI 10.1007/s12532-017-0117-2, software DOI 10.5281/zenodo.224444.
- [J07] [How to Convexify the Intersection of a Second Order Cone and a Nonconvex Quadratic](#), with F. Kılınç-Karzan, *Mathematical Programming Series A*, 162, 393–429, 2017.
- [J08] [A Two-Variable Analysis of the Two-Trust-Region Subproblem](#), with B. Yang, *SIAM Journal on Optimization*, 26(1), 661–680, 2016.
- [J09] [Faster, but Weaker, Relaxations for Quadratically Constrained Quadratic Programs](#), with S. Kim and M. Kojima, *Computational Optimization and Applications*, 59(1), 27–45, 2014.
- [J10] [The Trust Region Subproblem with Non-Intersecting Linear Constraints](#), with B. Yang, *Mathematical Programming Series A*, 149(1–2), 253–264, 2015.
- [J11] [Non-Convex Mixed-Integer Nonlinear Programming: A Survey](#), with A. Letchford, *Surveys in Operations Research and Management Science*, 17, 97–106, 2012.
- [J12] [A First-Order Smoothing Technique for a Class of Large-Scale Linear Programs](#), with J. Chen, *SIAM Journal on Optimization*, 24(2), 598–620, 2014.
- [J13] [Robust Rankings for College Football](#), *Journal of Quantitative Analysis in Sports*, 8(2), 2012, DOI 10.1515/1559-0410.1405.
- [J14] [Unbounded Convex Sets for Non-Convex Mixed-Integer Quadratic Programming](#), with A. Letchford, *Mathematical Programming Series A*, 143(1-2), 231-256, 2014.
- [J15] [Representing Quadratically Constrained Quadratic Programs As Generalized Copositive Programs](#), with H. Dong, *Operations Research Letters*, 40(3), 203-206, 2012.
- [J16] [Second-Order Cone Constraints for Extended Trust-Region Subproblems](#), with K. Anstreicher, *SIAM Journal on Optimization*, 23(1), 432-451, 2013.
- [J17] [Globally Solving Nonconvex Quadratic Programming Problems via Completely Positive Programming](#), with J. Chen, *Mathematical Programming Computation*, 4(1), 33-52, 2012.
- [J18] [Separation and Relaxation for Cones of Quadratic Forms](#), with H. Dong, *Mathematical Programming Series A*, 137(1), 343-370, 2013.

- [J19] [Modifying Soysters Model for the Traveling Salesman Problem with Interval Travel Times](#), with N. Cho and A.M. Campbell, *Far East Journal of Applied Mathematics*, 86(2), 117–144, 2014.
- [J20] [Optimizing a Polyhedral-Semidefinite Relaxation of Completely Positive Programs](#), *Mathematical Programming Computation*, 2(1), 1-19, 2010.
- [J21] [A Semidefinite Approach to the Hypergraph Minimum Bisection Problem](#), with C. Choi, *Optimization*, 60(3):413-427, 2011.
- [J22] [On Non-Convex Quadratic Programming with Box Constraints](#), with A.N. Letchford, *SIAM Journal on Optimization*, 20(2):1073-1089, 2009.
- [J23] [The Difference Between 5x5 Doubly Nonnegative and Completely Positive Matrices](#), with K. Anstreicher and M. Dür, *Linear Algebra and Its Applications*, 431:1539-1552, 2009.
- [J24] [A p-Cone Sequential Relaxation Procedure for 0-1 Integer Programs](#), with J. Chen, *Optimization Methods and Software*, 24(4):523-548, 2009.
- [J25] [Relaxing the Optimality Conditions of Box QP](#), with J. Chen, *Computational Optimization and Applications*, 48:653-673, 2011.
- [J26] [Computable Representations for Convex Hulls of Low-Dimensional Quadratic Forms](#), with K. Anstreicher, *Mathematical Programming Series B*, 124(1-2):33-43, 2010.
- [J27] [Globally Solving Box-Constrained Nonconvex Quadratic Programs with Semidefinite-Based Finite Branch-and-Bound](#), with D. Vandenbussche, *Computational Optimization and Applications*, 43(2):181-195, 2009.
- [J28] [On the Copositive Representation of Binary and Continuous Nonconvex Quadratic Programs](#), *Mathematical Programming Series A*, 120(2):479-495, 2009.
- [J29] [On Handling Free Variables in Interior-Point Methods for Conic Linear Optimization](#), with M.F. Anjos, *SIAM Journal on Optimization*, 18(4):1310-1325, 2007.
- [J30] [Ensemble Pruning via Semi-definite Programming](#), with Y. Zhang and W.N. Street, *Journal of Machine Learning Research*, 7:1315-1338, 2006.
- [J31] [A Finite Branch-and-Bound Algorithm for Nonconvex Quadratic Programming via Semidefinite Relaxations](#), with D. Vandenbussche, *Mathematical Programming Series A*, 113(2):259-282, 2008.
- [J32] [Coordinating the Supply Chain in the Agricultural Seed Industry](#), with P.C. Jones and T. Lowe, *European Journal of Operational Research*, 185:354-377, 2008.
- [J33] [Solving Maximum-Entropy Sampling Problems Using Factored Masks](#), with J. Lee, *Mathematical Programming Series B*, 109:263-281, 2007.
- [J34] [Newsvendor Games: Convex Optimization of Centralized Inventory Operations](#), with M. Dror, *TOP*, 20(3):707-728, 2012.
- [J35] [Computational Enhancements in Low-Rank Semidefinite Programming](#), with C. Choi, *Optimization Methods and Software*, 21(3):493-512, 2006.
- [J36] [Solving Lift-and-Project Relaxations of Binary Integer Programs](#), with D. Vandenbussche, *SIAM Journal on Optimization*, 16(3):726-750, 2006.
- [J37] [Local Minima and Convergence in Low-Rank Semidefinite Programming](#), with R.D.C. Monteiro, *Mathematical Programming Series A*, 103:427-444, 2005.
- [J38] [D.C. Versus Copositive Bounds for Standard QP](#), with K. Anstreicher, *Journal of Global Optimization*, 33:299-312, 2005.

- [J39] [Semidefinite Programming in the Space of Partial Positive Semidefinite Matrices](#), *SIAM Journal on Optimization*, 14:139-172, 2003.
- [J40] [A Computational Study of a Gradient-Based Log-Barrier Algorithm for a Class of Large-Scale SDPs](#), with R.D.C. Monteiro and Y. Zhang, *Mathematical Programming Series B*, 95:359-379, 2003.
- [J41] [A Nonlinear Programming Algorithm for Solving Semidefinite Programs via Low-Rank Factorization](#), with R.D.C. Monteiro, *Mathematical Programming Series B*, 95:329-357, 2003.
- [J42] [Maximum Stable Set Formulations and Heuristics Based on Continuous Optimization](#), with R.D.C. Monteiro and Y. Zhang, *Mathematical Programming Series A*, 94:137-166, 2002.
- [J43] [Rank-Two Relaxation Heuristics for Max-Cut and Other Binary Quadratic Programs](#), with R.D.C. Monteiro and Y. Zhang, *SIAM Journal on Optimization*, 12:503-521, 2001.
- [J44] [Interior Point Algorithms for Semidefinite Programming Based on a Nonlinear Formulation](#), with R.D.C. Monteiro and Y. Zhang, *Computational Optimization and Applications*, 22:49-79, 2002.
- [J45] [Solving a Class of Semidefinite Programs via Nonlinear Programming](#), with R.D.C. Monteiro and Y. Zhang, *Mathematical Programming Series A*, 93:97-122, 2002.
- [J46] [A General Framework for Establishing Polynomial Convergence of Long-Step Methods for Semidefinite Programming](#), with R.D.C. Monteiro, *Optimization Methods and Software*, 18:1-38, 2003.
- [J47] [A Projected Gradient Algorithm for Solving the Maxcut SDP Relaxation](#), with R.D.C. Monteiro, *Optimization Methods and Software*, 15:175-200, 2001.

#### REFEREED BOOK CHAPTERS (listed in reverse chronological order)

- [B01] [Copositive Programming](#), *Handbook of Semidefinite, Cone and Polynomial Optimization: Theory, Algorithms, Software and Applications*, edited by M.F. Anjos and J.B. Lasserre, 201-218, 2011.
- [B02] [The MILP Road to MIQCP](#), with A. Saxena, *IMA Volumes in Mathematics and Its Applications*, edited by J. Lee and S. Leyffer, 154:373-406, 2011.

#### REFEREED CONFERENCE PUBLICATIONS

- [C01] [Sharing Classifiers Among Ensembles from Related Problem Domains](#), with Y. Zhang and W.N. Street, *Proceedings of the Fifth IEEE International Conference on Data Mining (ICDM'05)*, 522-529, 2005.

#### MANUSCRIPTS UNDER REVIEW (listed in reverse chronological order by appearance of manuscript)

- [M01] [A Data-Driven Distributionally Robust Bound on the Expected Optimal Value of Uncertain Mixed 0-1 Linear Programming](#), with G. Xu, August 2017, submitted to *Computational Management Science*.
- [M02] [Robust Grading](#), with V. Picialli, May 2017, submitted to *European Journal on Operational Research*.

#### PRESENTATIONS (listed in reverse chronological order)

- [P01] A Gentle, Geometric Introduction to Copositive Optimization, “Beyond Convexity: Emerging Challenges in Data Science” CMO-BIRS Workshop, Oaxaca, Mexico, October 2017 (invited talk).
- [P02] A Copositive Approach for Two-Stage Adjustable Robust Optimization with Uncertain Right-Hand Sides, SIAM Conference on Optimization, Vancouver, May 2017 (invited).

- [P03] A Copositive Approach for Two-Stage Adjustable Robust Optimization with Uncertain Right-Hand Sides, University of Texas at Austin, Austin, TX, May 2017 (invited).
- [P04] My Experience in the 2016 INFORMS Syngenta Crop Challenge, Workshop on Designing Optimal Genetic Improvement and Agronomic Systems, Iowa State University, Ames, Iowa, November 2016 (invited).
- [P05] A Copositive Approach for Two-Stage Adjustable Robust Optimization with Uncertain Right-Hand Sides, Universität Klagenfurt, Klagenfurt, Austria, November 2016 (invited).
- [P06] A Copositive Approach for Two-Stage Adjustable Robust Optimization with Uncertain Right-Hand Sides, Georgia Tech, Atlanta, GA, October 2016 (invited).
- [P07] Robust Sensitivity Analysis, University of Minnesota, Minnesota, MN, May 2016 (invited).
- [P08] Balancing Weather Risk and Crop Yield for Soybean Variety Selection, INFORMS Conference on Business Analytics and Operations Research, Orlando, FL, April 2016 (invited).
- [P09] How to Convexify the Intersection of a Second Order Cone and a Nonconvex Quadratic, INFORMS, Philadelphia, PA, October 2015 (invited).
- [P10] A Gentle, Geometric Introduction to Copositive Optimization, Twenty-Second International Symposium on Mathematical Programming, Pittsburgh, July 2015 (invited semi-plenary).
- [P11] Robust Sensitivity Analysis for Linear Programming, First Pacific Optimization Conference, Wuxi, China, November 2014 (invited).
- [P12] A Gentle, Geometric Introduction to Copositive Optimization, Workshop on Emerging Topics in Conic and Discrete Optimization, Engineering Systems and Design, Singapore University of Technology and Design, Singapore, October 2014 (invited tutorial).
- [P13] Robust Rankings for American College Football, Università degli Studi di Roma “Tor Vergata,” Rome, May 2014 (invited).
- [P14] Interior-Point Methods for Linear Programming, Università degli Studi di Roma “Tor Vergata,” Rome, May 2014 (invited).
- [P15] Copositive Optimization, Third University of Florida SIAM Gators Conference, Gainesville, FL, March 2014 (invited faculty speaker).
- [P16] A Two-Variable Analysis of the Two-Trust-Region Subproblem, Eighteenth Combinatorial Optimization Workshop, CNRS Centre Paul Langevin, Aussois, France, January 2014 (invited).
- [P17] The Trust Region Subproblem with Non-Intersecting Linear Constraints, INFORMS, Minneapolis, MN, October 2013 (invited).
- [P18] Robust Rankings for College Football, INFORMS, Minneapolis, MN, October 2013 (invited).
- [P19] Robust Rankings for American College Football, Tilburg University, Tilburg, Netherlands, July 2013 (invited).
- [P20] Copositive Optimization, Fourth International Conference on Continuous Optimization (ICCOPT-IV), Lisbon, Portugal, July 2013 (invited semi-plenary).
- [P21] Unbounded Convex Sets for Non-Convex Mixed-Integer Quadratic Programming, INFORMS Computing Society Conference, Santa Fe, NM, January 2013 (invited).
- [P22] Robust Rankings for College Football, Department of Mathematics, Grinnell College, December 2012 (invited).
- [P23] Robust Rankings for American College Football, Mixed Integer Programming (MIP), Davis, CA, July 2012 (invited).
- [P24] Uncertainty and Robustness: Two Optimization Models, Fuqua School of Business, Duke University, March 2012.

- [P25] Separation and Relaxation for Completely Positive Matrices, Tenth SIAM Conference on Optimization, Darmstadt, Germany, May 2011 (invited).
- [P26] Cuts for Nonconvex Quadratic Programming, Optimization Days, Montreal, May 2011 (invited).
- [P27] Cuts for Nonconvex Quadratic Programming, IBM T. J. Watson Research Center, Yorktown Heights, NY, March 2011 (invited).
- [P28] Separating Cuts for Quadratic Programs, INFORMS, Austin, TX, November 2010 (invited).
- [P29] New Approximations for Copositive Matrices, INFORMS, Austin, TX, November 2010 (invited).
- [P30] Nonconvex Quadratic Programming: Models and Algorithms, West Coast Optimization Meeting, University of Washington, Seattle, WA, May 2010 (invited).
- [P31] Nonconvex Quadratic Programming with Box Constraints, Operations Research Seminar, Carnegie Mellon University, Pittsburgh, PA, April 2010 (invited).
- [P32] Nonconvex Quadratic Programming: Models and Algorithms, Department of Industrial and Systems Engineering, University of Wisconsin-Madison, Madison, WI, September 2009 (invited).
- [P33] Optimizing a Polyhedral-Semidefinite Relaxation of Completely Positive Programs, Twentieth International Symposium on Mathematical Programming, Chicago, August 2009 (invited).
- [P34] Optimizing a Polyhedral-Semidefinite Relaxation of Completely Positive Programs, Università di Firenze, Florence, May 2009 (invited).
- [P35] Short Course on Semidefinite Programming, Sapienza Università di Roma, Rome, May 2009 (invited).
- [P36] Optimizing a Polyhedral-Semidefinite Relaxation of Completely Positive Programs, OptimA Workshop, University of Illinois Urbana-Champaign, March 2009 (invited).
- [P37] New Results on Non-Convex Quadratic Programming, Chinese University of Hong Kong, November 2008 (invited).
- [P38] Convex Hulls of Low-dimensional Quadratic Forms over Polytopes, INFORMS, Washington D.C., October 2008 (invited).
- [P39] On the Copositive Representation of Binary and Continuous Nonconvex Quadratic Programs, Ninth SIAM Conference on Optimization, Boston, May 2008 (invited).
- [P40] Representing NP-Hard Problems as Convex Programs, Northwestern University, Evanston, November 2007 (invited).
- [P41] On the Copositive Representation of Binary and Continuous Nonconvex Quadratic Programs, INFORMS, Seattle, November 2007 (invited).
- [P42] Representing NP-Hard Problems as Convex Programs, Second International Conference on Continuous Optimization (ICCOPT-II), McMaster University, Hamilton, Ontario, August 2007 (invited).
- [P43] An Introduction to Semidefinite Programming and Its Applications, INFORMS International, Puerto Rico, July 2007 (invited tutorial).
- [P44] Representing NP-Hard Problems as Convex Programs, Tepper School of Business, Carnegie Mellon University, Pittsburgh, March 2007 (invited).
- [P45] Representing NP-Hard Problems as Convex Programs, Department of Industrial Engineering, University of Pittsburgh, February 2007 (invited).
- [P46] Handling Free Variables in Conic Optimization with Application to Moment Relaxations, Nineteenth International Symposium on Mathematical Programming, Rio de Janeiro, August 2006 (invited).

- [P47] A Finite Branch-and-Bound Algorithm for Nonconvex Quadratic Programming via Semidefinite Programming, 21st European Conference on Operational Research, Iceland, July 2006 (invited).
- [P48] A Finite Branch-and-Bound Algorithm for Nonconvex Quadratic Programming via Semidefinite Programming, Department of Mathematics, University of Washington, February 2006 (invited).
- [P49] A Finite Branch-and-Bound Algorithm for Nonconvex Quadratic Programming via Semidefinite Programming, Department of Mathematics, North Carolina State University, February 2006 (invited).
- [P50] A Finite Branch-and-Bound Algorithm for Nonconvex Quadratic Programming via Semidefinite Programming, Workshop on Semidefinite Programming and Its Applications, National University of Singapore, Singapore, January 2006 (invited).
- [P51] A Finite Branch-and-Bound Algorithm for Nonconvex Quadratic Programming via Semidefinite Programming, INFORMS, San Francisco, November 2005 (invited).
- [P52] The Low-Rank Algorithm for Large-Scale Semidefinite Programming, University of Waterloo, Waterloo, October 2005 (invited).
- [P53] Solving Lift-and-Project Relaxations of Binary Integer Programs, University of Michigan, Ann Arbor, September 2005 (invited).
- [P54] Solving Lift-and-Project Relaxations of Binary Integer Programs, Tepper School of Business, Carnegie Mellon University, Pittsburgh, February 2005 (invited).
- [P55] Solving Lift-and-Project Relaxations of Binary Integer Programs, Workshop on Integer Programming and Continuous Optimization, Chemnitz University of Technology, Germany, November 2004 (invited).
- [P56] Computational Enhancements in Low-Rank Semidefinite Programming, INFORMS, Denver, October 2004 (invited).
- [P57] Computational Enhancements in Low-Rank Semidefinite Programming, First International Conference on Continuous Optimization (ICCOPT-I), Rensselaer Polytechnic Institute, Troy, August 2004 (invited).
- [P58] Maximum Stable Set Formulations and Heuristics Based on Continuous Optimization, SIAM Conference on Discrete Mathematics, Nashville, June 2004 (invited).
- [P59] Local Minima and Convergence in Low-Rank Semidefinite Programming, Workshop on Large Scale Nonlinear and Semidefinite Programming, University of Waterloo, Waterloo, May 2004 (invited).
- [P60] Solving Semidefinite Programs via Nonlinear Programming, University of Maryland, Baltimore County, Baltimore, November 2003 (invited).
- [P61] Local Minima and Convergence in Low-Rank Semidefinite Programming, INFORMS, Atlanta, October 2003 (invited).
- [P62] Semidefinite Programming in the Space of Partial Positive Semidefinite Matrices, Eighteenth International Symposium on Mathematical Programming, Copenhagen, August 2003 (invited).
- [P63] Semidefinite Programming in the Space of Partial Positive Semidefinite Matrices, INFORMS, San Jose, November 2002 (invited).
- [P64] Computational Experience with a Gradient-Based Algorithm for Semidefinite Programming, Seventh SIAM Conference on Optimization, Toronto, May 2002 (invited).
- [P65] Rank-Two Semidefinite Relaxation Heuristics for Max-Cut and Other Binary Quadratic Programs, Seventh SIAM Conference on Optimization, Toronto, May 2002 (invited).
- [P66] A Nonlinear Programming Algorithm for Solving Semidefinite Programs via Low-rank Factorization, Seventh SIAM Conference on Optimization, Toronto, May 2002 (invited).

- [P67] Solving Semidefinite Programs via Nonlinear Programming, Northwestern University, Evanston, April 2002 (invited).
- [P68] The Maximum Stable Set Problem: New Approaches via Continuous Optimization, McMaster University, Hamilton, March 2002 (invited).
- [P69] Rank-Two Semidefinite Relaxation Heuristics for Max-Cut and Other Binary Quadratic Programs, INFORMS, Miami, November 2001 (invited).
- [P70] Computing the Lovasz Theta Number of a Graph, INFORMS, Miami, November 2001 (invited).
- [P71] Maximum Stable Set Formulations and Heuristics Based on Continuous Optimization, Novel Approaches to Hard Discrete Optimization, University of Waterloo, Waterloo, April 2001 (contributed).
- [P72] Rank-Two Relaxation Heuristics for Maxcut, Seventh U.S.-Mexico Workshop in Numerical Analysis, Mrida, Mexico, January 2001 (contributed).
- [P73] A Nonlinear Programming Algorithm for Solving Semidefinite Programs via Low-Rank Factorization, INFORMS, San Antonio, November 2000 (invited).
- [P74] Solving Semidefinite Programs via Nonlinear Programming, INFORMS, San Antonio, November 2000 (invited).
- [P75] A Nonlinear Programming Algorithm for Solving Semidefinite Programs via Low-Rank Factorization, DIMACS Seventh Implementation Challenge, Rutgers, November 2000 (invited).
- [P76] A Nonlinear Programming Algorithm for Solving Semidefinite Programs via Low-Rank Factorization, Seventeenth International Symposium on Mathematical Programming, Atlanta, August 2000 (invited).
- [P77] Solving Semidefinite Programs via Nonlinear Programming: Transformations, Derivatives and Computational Results, Tokyo Institute of Technology, Tokyo, June 2000 (invited).
- [P78] A General Framework for Establishing Polynomial Convergence of Long-Step Methods for Semidefinite Programming, INFORMS, Salt Lake City, May 2000 (invited).
- [P79] Solving Semidefinite Programs via Nonlinear Programming: Transformations, Derivatives and Computational Results, INFORMS, Salt Lake City, May 2000 (invited).
- [P80] Solving Semidefinite Programs via Nonlinear Programming: Transformations, Derivatives and Computational Results, INFORMS, Philadelphia, November 1999 (invited).
- [P81] A General Framework for Establishing Polynomial Convergence of Long-Step Methods for Semidefinite Programming, Sixth SIAM Conference on Optimization, Atlanta, May 1999 (invited).

## SOFTWARE

- *QuadProgBB* version 20120229, proposed and developed in publication [J09] (available from personal webpage)
- *OptDNN*, proposed and developed in publications [J12] and [J20] (available from personal webpage)
- *SDPLR 1.03-beta*, proposed and developed in publications [J27], [J29], [J33], and [J39] (available from personal webpage and over the Web at [www-neos.mcs.anl.gov](http://www-neos.mcs.anl.gov))
- *Max-AO*, proposed in publication [J35] (available on [GitHub](#))
- *CirCut*, proposed in publication [J36] (available from [coauthor](#))

## COURSE DESIGN AND DEVELOPMENT

- *Applied Optimization* (Iowa MSCI:6130), Spring 2017
- *Data Programming in R* (Iowa MSCI:6060), Spring 2015



- *Optimization and Simulation Modeling* (Iowa MSCI:3800), Fall 2013
- *Linear Programming* (Iowa 06K:286/MSCI:6600), Fall 2004

## AWARDS AND HONORS

- Core Faculty Member of the Year, University of Iowa MBA, 2017
- Innovations in Teaching Award for *Data Programming in R*, University of Iowa Tippie College of Business, 2017
- Core Faculty Member of the Year, University of Iowa MBA, 2016
- Third Place (out of 36 international teams), INFORMS Syngenta Crop Challenge, sponsored by Syngenta and the INFORMS Analytics Society, with B. Shetty and L. Tong, 2016
- Top 5 Most Downloaded, *Surveys in Operations Research and Management Science* journal, 2014
- Strategic Innovation Faculty Member of the Year, University of Iowa MBA, 2013
- Certificate of Excellence in Reviewing, *Operations Research Letters*, 2013
- Meritorious Service Award for Associate Editors, *Operations Research*, 2012
- G.R.E.A.T. Faculty Award (First Year), Des Moines Executive MBA Class of 2012, April 2012
- Dean's Teaching Excellence Recognition, Fall 2005, Fall 2006, Fall 2011
- Dean's Teaching Award in Management Sciences, 2011
- *Computational Optimization and Applications* Best Paper Award, 2009 for the paper [J18]. Award citation has appeared in: COAP 2009 Best Paper Award, *Computational Optimization and Applications*, 47:567-570, 2010
- Top 10 Most Highly Cited, *Optimization Methods and Software* journal, 2000-2008
- Honorable Mention, Young Researcher Competition, International Conference on Continuous Optimization, 2004
- New Hot Paper recognition by ISI Essential Science Indicators for the paper [J36]
- Optimization Prize for Young Researchers, Optimization Section of INFORMS, 2002
- Delta Sigma Pi Outstanding Faculty Award, University of Iowa, 2002
- Presidential Fellowship, Georgia Institute of Technology, 1997–2001
- Strahan Mathematics Award, University of Georgia, 1996
- Phi Beta Kappa member

## PROFESSIONAL SERVICE AND EXTERNAL ACTIVITIES

### Editorial positions

- Associate Editor, *Management Sciences*, 2014–present
- Co-Editor, *Discrete Optimization*, special issue on Conic Discrete Optimization, 2014–2016
- Associate Editor, *Operations Research*, 2011–present
- Associate Editor, *SIAM Journal on Optimization*, 2011–present
- Associate Editor, *Mathematics of Operations Research*, 2011–present
- Co-Editor, *Optima* (newsletter of the Mathematical Optimization Society), 2010–present
- Associate Editor, *Operations Research Letters*, 2009–14
- Associate Editor, *Mathematical Programming Computation*, 2008–13
- Associate Editor, *Surveys in Operations Research and Management Science*, 2009–13
- Associate Editor, *Asia-Pacific Journal of Operational Research*, 2007–10

### Society positions

- Member, Board of Directors, Computing Society, INFORMS, 2014–17
- Council Member, Mathematical Optimization Society, 2012–15
- Vice-Chair for Linear Programming and Complementarity, Optimization Society, INFORMS, 2008–10
- Member, INFORMS (Institute for Operations Research and the Management Sciences)
- Member, SIAM (Society for Industrial and Applied Mathematics)
- Member, MPS (Mathematical Programming Society)

#### Conference organization

- Member, Program Committee, SIAM Conference on Optimization (SIOPT), Vancouver, 2017
- Session Organizer, International Symposium on Mathematical Programming (ISMP), Pittsburgh, 2015
- Session Organizer, Eleventh SIAM Conference on Optimization, San Diego, 2014
- Member, Program Committee, 17th Conference on Integer and Combinatorial Optimization, Bonn, 2014
- Session Organizer, INFORMS Annual Meeting, Minneapolis, MN, 2013
- Session Organizer, Fourth International Conference on Continuous Optimization (ICCOPT-IV), Lisbon, 2013
- Session Organizer, International Symposium on Mathematical Programming (ISMP), Berlin, 2012
- Session Organizer, Modeling Optimization Conference: Theory and Applications (MOPTA), Bethlehem, PA, 2012
- Cluster Organizer, INFORMS Midwest Regional Meeting, Columbus, Ohio, 2011
- Session Organizer, Tenth SIAM Conference on Optimization, Darmstadt, Germany, 2011
- Session Organizer, INFORMS Annual Meeting, Austin, 2010
- Cluster and Session Organizer, INFORMS Annual Meeting, San Diego, 2009
- Cluster Organizer, INFORMS Annual Meeting, Washington D.C., 2008
- Session Organizer, Ninth SIAM Conference on Optimization, Boston, 2008
- Session Organizer, INFORMS Annual Meeting, Seattle, 2007
- Stream Co-Organizer and Session Chair, Second International Conference on Continuous Optimization (ICCOPT-II), McMaster University, Hamilton, Ontario, 2007
- Session Chair, EURO XXI, Reykjavik, Iceland, 2006
- Session Chair, INFORMS Annual Meeting, San Francisco, 2005
- Session Chair, INFORMS Annual Meeting, Atlanta, 2003

#### Referee positions, prize committees, and review panels

- Member, University of Nebraska MS in Business Analytics Program Review, 2017
- Chair, INFORMS Optimization Society Young Researcher Prize committee, 2016
- Member, INFORMS Optimization Society Young Researcher Prize committee, 2015
- Member, Evaluation Team for ICIAM15 (International Congress on Industrial and Applied Mathematics 2015) Travel Awards, 2015
- Member, INFORMS Optimization Society Young Researcher Prize committee, 2013
- Member, ICCOPT 2013 Young Researcher Prize committee, 2013
- National Science Foundation review panel, 2007, 2012
- Member, INFORMS Junior Faculty Interest Group Paper Prize committee, 2012
- Member, Mixed Integer Programming Workshop Poster Award committee, 2012
- Chair, INFORMS Computing Society Paper Prize committee, 2011
- INFORMS Nicholson Student Paper Prize committee, 2010–11
- INFORMS Computing Society Paper Prize committee, 2010
- INFORMS Optimization Society Student Paper Prize committee, 2009

- Referee for *Mathematical Programming*, *SIAM Journal on Optimization*, *Optimization Methods and Software*, *Optimization Letters*, *INFORMS Journal on Computing*, *Journal of Global Optimization*, *Computational Optimization and Applications*, *Discrete Applied Mathematics*, *Discrete Optimization*, *Mathematics of Operations Research*, *Operations Research*, *Optimization and Engineering*, *4OR*, *Annals of Operations Research*, *ANZIAM Journal*, *Automatica*, *European Journal of Operational Research*, *Foundations of Computational Mathematics*, *INFORMS Transactions on Education*, *International Transactions on Operational Research*, *Journal of Computational and Graphical Statistics*, *RAIRO*, *SIAM Review*, *TOP*

#### Additional training

- *UI Student Judicial Procedures and Sexual Violence Investigation Strategies and Response* offered by the University of Iowa, 2015
- *Statement of Accomplishment with Distinction* for Coursera course *R Programming*, 2015
- *The Intersection of Title IX and Title VII in Higher Education: What Every Faculty Grievance Panel Needs to Know* offered by the University of Iowa, 2014
- *TILE Classroom Essentials* offered by the University of Iowa, 2013
- *Lean Academy Course* offered by the Lean Aerospace Initiative, 2006

#### Consulting and external seminars

- Medcara Pharmaceuticals, 2012
- Caterpillar, 2011–12
- Discover Financial Services, 2008

### UNIVERSITY SERVICE

- Member, Strategic Plan Review Committee, Tippie College of Business, 2016–17
- Member, Management Sciences Faculty Recruiting Committee, 2001–02, 2005–06, 2007–08, 2016–17
- Member, Elected Faculty Council, Tippie College of Business, 2016–18
- Member, Graduate Education Task Force, Graduate College, 2015–16
- Member, Department Secretary Search Committee, Department of Management Sciences, 2015
- Member, Faculty Panel, NSF CAREER Workshop, University of Iowa, 2014
- Member, Promotion-and-Tenure Departmental Review Committee, Department of Management Sciences, 2013–14
- Member, Post-Tenure Review Committee, Department of Management Sciences, 2013–14
- Chair, Analytics Master's Proposal Committee, Department of Management Sciences, 2013–15
- Member, Management Sciences Graduate Committee, 2003–05, 2006–07, 2013–15
- Member, Faculty Judicial Commission, 2013–16
- Member, Internal Funding Initiatives Review, Office of the VP for Research and Economic Development, 2013–15
- Chair, Management Sciences Faculty Recruiting Committee, 2012–13
- Member, AMCS (Applied Mathematical and Computational Sciences) Executive Committee, 2012–present
- Member, Management Sciences Internal Evaluation Sub-Committee, 2008–09, 2012–13, 2015–16
- Member, Core MBA Committee, 2002–03, 2010–11, 2012–13
- Member, Collegiate and Dean Teaching Awards Committee, 2011–12, 2012–13
- Member, AMCS (Applied Mathematical and Computational Sciences) Admission Committee, 2011–12
- Member, University of Iowa Faculty Engagement Corps, 2010
- Secretary, Elected Faculty Council, Tippie College of Business, 2008–10
- Organizer, Management Sciences Seminar Series, 2001–02, 2006–07

- Executive MBA Committee, 2003–05

## ADVISING, MENTORING, AND SUPERVISING

### Ph.D. Advisor

|               |  |             |
|---------------|--|-------------|
| Guanglin Xu   | Management Sciences<br>University of Minnesota (initial)   | 2017 Summer |
| Boshi Yang    | Appl Math and Comp Sci<br>Carnegie Mellon University (initial)<br>Clemson University (current)                                     | 2015 Summer |
| Hongbo Dong   | Appl Math and Comp Sci (with K. Anstreicher)<br>University of Wisconsin Madison (initial)<br>Washington State University (current) | 2011 Fall   |
| Jieqiu Chen   | Management Sciences<br>Argonne National Laboratory (initial)<br>Microsoft (current)  | 2010 Summer |
| Changhui Choi | Management Sciences<br>University of Colorado Denver (initial)<br>Korea Insurance Research Institute (current)                     | 2007 Spring |

### Sponsored Postdoctoral Fellows

|             |  |                           |
|-------------|--|---------------------------|
| Nayoung Cho | Management Sciences (with A. Campbell) | 2009 Spring – 2010 Summer |
|-------------|--|---------------------------|

### Ph.D. Committee

|                      |                                  |                      |
|----------------------|----------------------------------|----------------------|
| Areesh Mittal        | University of Texas at Austin    | 2018 Fall (expected) |
| Xiaolong Kuang       | Lehigh University                | 2017 Spring          |
| Silviya Valeva       | Appl Math and Comp Sci           | 2017 Spring          |
| Zhenzhen Yan         | National University of Singapore | 2017 Spring          |
| Santanu Bhowmick     | Computer Science                 | 2017 Spring          |
| Nathaniel Richmond   | Appl Math and Comp Sci           | 2016 Fall            |
| Vivek Sardeshmukh    | Computer Science                 | 2016 Summer          |
| Fahrettin Cakir      | Management Sciences              | 2016 Summer          |
| Huan Jin             | Management Sciences              | 2016 Summer          |
| Alexander Vinel      | Industrial Engineering           | 2015 Spring          |
| Amit Verma           | Management Sciences              | 2014 Summer          |
| Alexander Michalka   | Columbia University              | 2013 Summer          |
| Lian Duan            | Management Sciences              | 2012 Summer          |
| Moh. Khoshneshin     | Management Sciences              | 2012 Summer          |
| Gaurav Kanade        | Computer Science                 | 2011 Summer          |
| Nicholas Liefker     | Management Sciences              | 2010 Summer          |
| Jon Van Laarhoven    | Mathematics                      | 2010 Spring          |
| Samid Hoda           | Carnegie Mellon University       | 2010 Spring          |
| Policarpio Soberanis | Industrial Engineering           | 2009 Fall            |
| Benton McCune        | Computer Science                 | 2009 Fall            |
| Chih-Lin Chi         | Health Informatics               | 2009 Summer          |
| Dengfeng Zhang       | Management Sciences              | 2008 Fall            |
| Anureet Saxena       | Carnegie Mellon University       | 2008 Spring          |
| Kaan Ataman          | Management Sciences              | 2007 Summer          |

|                      |                     |             |
|----------------------|---------------------|-------------|
| Rajiv Raman          | Computer Science    | 2007 Spring |
| Thaddeus Sim         | Management Sciences | 2007 Spring |
| Victoria Shimanovich | Computer Science    | 2006 Summer |
| Yi Zhang             | Management Sciences | 2006 Summer |

Ph.D Qualifying / Comprehensive / Preliminary Committee

|                    |                        |                        |
|--------------------|------------------------|------------------------|
| Michael Redmond    | Management Sciences    | 2017 Fall              |
| Runchao Ma         | Management Sciences    | 2016 Fall, 2017 Fall   |
| Yuanyang Liu       | Management Sciences    | 2016 Fall              |
| Cole Stiegler      | Appl Math and Comp Sci | 2016 Spring            |
| Bhupesh Shetty     | Management Sciences    | 2015 Summer            |
| Santanu Bhowmick   | Computer Science       | 2015 Spring            |
| Vivek Sardeshmukh  | Computer Science       | 2014 Fall              |
| Preethi Isaac      | Management Sciences    | 2014 Spring            |
| Guanglin Xu        | Management Sciences    | 2014 Spring            |
| Xi Chen            | Management Sciences    | 2014 Spring            |
| Wenjun Wang        | Management Sciences    | 2014 Spring            |
| Huan Jin           | Management Sciences    | 2014 Spring            |
| Fahrettin Cakir    | Management Sciences    | 2013 Spring            |
| Stacy Voccia       | Management Sciences    | 2013 Spring            |
| Qiong Zhang        | Management Sciences    | 2013 Spring            |
| Shu Zhang          | Management Sciences    | 2013 Spring            |
| Huan Jin           | Management Sciences    | 2012 Fall              |
| Kamal Lamsal       | Management Sciences    | 2012 Spring            |
| Chuanjie Liao      | Management Sciences    | 2012 Spring            |
| Senay Yasar Saglam | Management Sciences    | 2011 Spring            |
| Amit Verma         | Management Sciences    | 2010 Fall, 2012 Spring |
| Lian Duan          | Management Sciences    | 2010 Spring            |
| Hongbo Dong        | Appl Math and Comp Sci | 2009 Fall              |
| Gaurav Kanade      | Computer Science       | 2008 Fall              |
| Darin Mohr         | Appl Math and Comp Sci | 2008 Summer            |
| Seyon Yoon         | Appl Math and Comp Sci | 2007 Fall              |
| Nicholas Liefker   | Management Sciences    | 2007 Fall              |
| Justin Goodson     | Management Sciences    | 2007 Fall              |
| Jieqiu Chen        | Management Sciences    | 2007 Fall              |
| Chih-Lin Chi       | Health Informatics     | 2007 Spring            |
| Benton McCune      | Computer Science       | 2006 Fall              |
| Hui Chen           | Management Sciences    | 2006 Spring            |
| Dengfeng Zhang     | Management Sciences    | 2005 Fall              |
| Thaddeus Sim       | Management Sciences    | 2005 Fall              |
| Benton McCune      | Computer Science       | 2005 Spring            |
| Rajiv Raman        | Computer Science       | 2004 Fall              |

Graduate or Undergraduate Project Advisor

|                    |                        |             |
|--------------------|------------------------|-------------|
| Ling Tong          | Management Sciences    | 2016 Spring |
| Bhupesh Shetty     | Management Sciences    | 2016 Spring |
| Jeff Landgren      | Appl Math and Comp Sci | 2015 Fall   |
| Deepakkumar Rohida | MBA                    | 2010–11     |

|                 |                     |             |
|-----------------|---------------------|-------------|
| Kevin Kotek     | Management Sciences | 2010 Summer |
| Daniela Navarro | Management Sciences | 2006 Summer |

Directed Readings

|                 |                        |             |
|-----------------|------------------------|-------------|
| Natalie Clark   | Appl Math and Comp Sci | 2013 Fall   |
| Anonya Bagchi   | MBA                    | 2013 Spring |
| Danielle Walker | MBA                    | 2013 Spring |
| Pankaj Kumar    | MBA                    | 2013 Spring |
| Scott Marsh     | MBA                    | 2012 Spring |
| Isaac Hess      | MBA                    | 2012 Spring |

Graduate Mentor (Ethnic Inclusion Effort for Iowa Engineering)

|               |                        |         |
|---------------|------------------------|---------|
| James Ratliff | Industrial Engineering | 2011–13 |
|---------------|------------------------|---------|

Sponsored Short-Term Visitors

|                      |                                      |            |
|----------------------|--------------------------------------|------------|
| Peter J.C. Dickinson | University of Groningen, Netherlands | 2012 March |
| Mirjam Dür           | University of Groningen, Netherlands | 2007 June  |