Jeffrey T. Linderoth

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Education

Georgia Institute of Technology, School of ISyE, Atlanta, GA.
Ph.D. in Industrial Engineering, 1998.
Program Concentrations: Optimization, Computer Science.
Thesis: *Topics in Parallel Integer Optimization.* Advisor: Martin Savelsbergh.

Georgia Institute of Technology, School of ISyE, Atlanta, GA.
M.S. in Operations Research, 1994.

University of Illinois at Urbana-Champaign, Department of General Engineering.
B.S. (with highest honors), 1992.

Employment

University of Wisconsin-Madison	Madison, WI
Associate Professor of Industrial and Systems Engineering	2008 - present
Associate Professor of Computer Science (by courtesy)	2008 - present
Assistant Professor of Industrial and Systems Engineering	2007 - 2008
Assistant Professor of Computer Science (by courtesy)	2007 - 2008
Lehigh University	Bethlehem, PA
Adjunct Associate Professor of Industrial and Systems Engineering	2008 - 2009
Adjunct Assistant Professor of Industrial and Systems Engineering	2007 - 2008
Assistant Professor of Industrial and Systems Engineering	2002 - 2007
Axioma, Inc.	Marietta, GA
Senior Consultant	2000-2002
Argonne National Lab	Argonne, IL
Enrico Fermi Scholar	1999-2000
Postdoctoral Research Assistant, Mathematics and Computer Science Division	1998-1999
Georgia Institute of Technology	Atlanta, GA
Graduate Research Assistant, School of Industrial and Systems Engineering	1993-1998
Graduate Teaching Assistant, School of Industrial and Systems Engineering	1992-1993
United States Geological Survey	Urbana, IL
Research Assistant	1991-1992
University of Illinois at Urbana-Champaign	Urbana, IL
Undergraduate Research Assistant	1990-1992

Refereed Book Chapters

J. T. Linderoth and S. J. Wright, "Computational Grids for Stochastic Programming," S. Wallace and W. Ziemba (eds). *Applications of Stochastic Programming*, SIAM Mathematical Series on Optimization, 61-77, 2005.

J. T. Linderoth and T. K. Ralphs, "Noncommercial Software for Mixed-Integer Linear Programming," J. Karlof (ed). *Integer Programming: Theory and Practice*, CRC Press Operations Research Series, 253-303, 2005.

W. Glankwamdee and J. T. Linderoth, "MW: A Software Framework for Combinatorial Optimization on Computational Grids," E. Talbi, (ed). *Parallel Combinatorial Optimization*, John Wiley & Sons, 239-261, 2006.

Refereed Journal Articles

J. T. Linderoth and M. W. P. Savelsbergh, "A Computational Study of Branch and Bound Search Strategies for Mixed Integer Programming," *INFORMS Journal on Computing*, 11:173-187, 1999.

A. Atamtürk, E. L. Johnson, J. T. Linderoth and M. W. P. Savelsbergh, "A Relational Modeling System for Linear and Integer Programming," *Operations Research*, 48:846-857, 2000.

Q. Chen, M. Ferris, and J. T. Linderoth, "FATCOP 2.0: Advanced Features in an Opportunistic Mixed Integer Programming Solver," *Annals of Operations Research*, 103:17-32, 2001.

J.-P. Goux, S. Kulkarni, J. T. Linderoth, and M. E. Yoder, "Master-Worker: An Enabling Framework for Applications on the Computational Grid", *Cluster Computing*, 4:63-70, 2001.

J. T. Linderoth, E. K. Lee, and M. W. P. Savelsbergh, "A Parallel, Linear Programming Based Heuristic for Large Scale Set Partitioning Problems," *INFORMS Journal on Computing*, 13:191-209, 2001.

P. Bauer, J. T. Linderoth, and M. W. P. Savelsbergh, "A Branch and Cut Approach to the Cardinality Constrained Circuit Problem," *Mathematical Programming*, 9:307-348, 2002.

K. Anstreicher, N. Brixius, J.-P. Goux and J. T. Linderoth, "Solving Large Quadratic Assignment Problems on Computational Grids", *Mathematical Programming, Series B*, 91:563-588, 2002.

J. T. Linderoth and S. J. Wright, "Implementing a Decomposition Algorithm for Stochastic Programming on a Computational Grid," *Computational Optimization and Applications*, special issue on Stochastic Programming, 24:207-250, 2003.

J. T. Linderoth and S. J. Wright, "2003 COAP Best Paper Award," *Computational Optimization and Applications*, 29:123-126, 2004.

J. T. Linderoth, "A Simplicial Branch-and-Bound Algorithm for Solving Quadratically Constrained Quadratic Programs," *Mathematical Programming, Series B*, 103:251-282, 2005.

J. T. Linderoth, A. Shapiro, and S. J. Wright, "The Empirical Behavior of Sampling Methods for Stochastic Programming", *Annals of Operations Research*, 142:219-245, 2006.

J. T. Linderoth and R. Musmanno, "Optimization on Grids—Optimization for Grids", *Parallel Computing*, 32:627-628, 2006.

U. Janjarassuk and J. T. Linderoth, "Reformulation and Sampling to Solve a Stochastic Network Interdiction Problem," *Networks*, 52:120-132, 2008.

W. Glankwamdee, J. Linderoth, P. Connard, J. Hutton, and J. Shen, "Combining Optimization and Simulation for Strategic and Operational Industrial Gas Production and Distribution," *Computers*

and Chemical Engineering, 32:2536-2546, 2008.

J. Linderoth, F. Margot, and G. Thain, "Improving Bounds on the Football Pool Problem via Symmetry Reduction and High-Throughput Computing", *INFORMS Journal on Computing*, 21:445-457, 2009.

J. Ostrowski, J. T. Linderoth, F. Rossi, and S. Smriglio, "Orbital Branching", *Mathematical Programming*, to appear, 2009.

O. Günlük and J. T. Linderoth, "Perspective Relaxation of Mixed Integer Nonlinear Programs with Indicator Variables", *Mathematical Programming, Series B*, to appear, 2009.

Refereed Conference Proceedings

J.-P Goux, S. Kulkarni, J. T. Linderoth, and M. E. Yoder, "An Enabling Framework for Master-Worker Applications on the Computational Grid", *Proceedings of the Ninth IEEE International Symposium on High Performance Distributed Computing*, pp. 43-50, 2000.

J. Ostrowski, J. T. Linderoth, F. Rossi, and S. Smriglio, "Orbital Branching", M. Fischetti and D. Williamson (eds). *IPCO 2007: The Twelfth Conference on Integer Programming and Combinatorial Optimization*, *Lecture Notes in Computer Science*, Vol. 4517, 104-118, 2007.

O. Günlük and J. T. Linderoth, "Perspective Relaxation of Mixed Integer Nonlinear Programs with Indicator Variables", *IPCO 2008: The Thirteenth Conference on Integer Programming and Combinatorial Optimization*, *Lecture Notes in Computer Science*, Vol. 5035, 1-16, 2008.

J. Ostrowski, J. Linderoth, F. Rossi, and S. Smriglio, "Constraint Orbital Branching", *IPCO 2008: The Thirteenth Conference on Integer Programming and Combinatorial Optimization*, *Lecture Notes in Computer Science*, Vol. 5035, 225-239, 2008.

S. Leyffer, J. T. Linderoth, J. Luedtke, A. Miller, and T. Munson, "Applications and Algorithms for Mixed Integer Nonlinear Programming," *Journal of Physics: Conference Series*, Vol. 180, 2009.

T. Wu, A. Davoodi, and J. T. Linderoth, "GRIP: Scalable ILP for 3D Global Routing", *Proceedings of the 46th Design Automation Conference*, 320-325, 2009.

Technical Reports

J. T. Linderoth and S. A. Burns, "Performance of Simulated Annealing as a Circuit Placement Optimization Method," UIUC Department of General Engineering Report 91-04, UIL U-ENG-91-3206, 1991.

J.-P Goux, J. T. Linderoth, and M. E. Yoder, "Metacomputing and the Master-Worker Paradigm," Preprint ANL/MCS-P792-0200, Mathematics and Computer Science Division, Argonne National Laboratory, 2000.

M. Freimer, D. Thomas and J. T. Linderoth, "The Impact of Sampling Methods on Bias and Variance in Stochastic Linear Programs", Lehigh University Department of Industrial and Systems Engineering Technical Report 05T-002, 2005.

W. Glankwamdee and J. T. Linderoth, "Lookahead Branching for Mixed Integer Programming", Lehigh University Department of Industrial and Systems Engineering Technical Report 06T-004, 2006.

B. Gemici, J. T. Linderoth S. D. Wu, and J. Moore, "R&D Project Portfolio Analysis for the Semiconductor Industry," Lehigh University Department of Industrial and Systems Engineering Technical Report 06T-005, 2006.

K. Abhishek, S. Leyffer, and J. T. Linderoth, "FilMINT: An Outer-Approximation-Based Solver for

Nonlinear Mixed Integer Programs", Preprint ANL/MCS-P1374-0906, Mathematics and Computer Science Division, Argonne National Lab, 2006.

C. Novoa, R. Berger, J. T. Linderoth, and R. Storer, "A Set-Partitioning-Based Model for the Stochastic Vehicle Routing Problem," Technical Report 06T-008, Industrial and Systems Engineering, Lehigh University, 2006.

J. T. Linderoth, F. Margot, and G. Thain, "The Tera-Gridiron: A Natural Turf for High-Throughput Computing," Technical Report 07T-001, Industrial and Systems Engineering, Lehigh University, 2007.

K. Abhishek, S. Leyffer, and J. T. Linderoth, "Modeling without Categorical Variables: A Mixed-Integer Nonlinear Program for the Optimization of Thermal Insulation Systems," Preprint ANL/MCS-P1434-0607, Mathematics and Computer Science Division, Argonne National Lab, 2007.

M. Altunay, S. Leyffer, J. T. Linderoth, and Z. Xie, "Optimal Responses to Attacks on the Open Science Grid", Submitted, 2009.

T. Wu, A. Davoodi, and J. T. Linderoth, "A Parallel Integer Programming Approach to Global Routing", Submitted, 2009.

O. Günlük and J. T. Linderoth, "Perspective Reformulation and Applications," Submitted, 2009.

J. Ostrowski, J. T. Linderoth, F. Rossi, and S. Smriglio, "Solving Large Steiner Triple Covering Problems," Technical Report #1663, Computer Sciences Department, University of Wisconsin-Madison, 2009.

Other Publications (Unrefereed)

L. Clarke, J. T. Linderoth, E. L. Johnson, G. L. Nemhauser, R. Bhagavan, and M. Jordan, "Using OSL to Improve the Computational Results of a MIP Logistics Model", EKKNEWS, 16, 1995.

P. Bauer, J. T. Linderoth, and M. W. P. Savelsbergh, "Facets of the Cardinality Constrained Circuit Polytope", published at *Optimization Online*: `http://www.optimization-online.org/DB_HTML/2001/07/356.html`, 2001.

Honors and Awards

Polygon Engineering Council Outstanding Instructor, Industrial Engineering, University of Wisconsin-Madison, 2009.

University Housing's Honored Instructor Award, University of Wisconsin-Madison, 2008.

Eleanor & Joseph F. Libsch Early Career Research Award, Lehigh University, 2006.

Department of Energy Early Career Principal Investigator Award: Applied Mathematics, Computer Science, and High-Performance Networks, 2005-2007

IBM Faculty Partnership Award, 2005-2006

Lehigh Engineering Ingenuity Award for Exceptional Accomplishment in Teaching and/or Research by a Junior Faculty Member, 2005

Best Paper Award, with S. J. Wright, 2003.
"Decomposition Algorithms for Stochastic Programming on a Computational Grid" was judged as the top paper published in *Computational Optimization and Applications* in 2003.

SIAM Activity Group on Optimization Prize, with K. Anstreicher, N. Brixius, and J.-P Goux, 2002
The SIAM Activity Group on Optimization (SIAG/OPT) Prize, established in 1992, is awarded to the author(s) of the most outstanding paper, as determined by the prize committee, on a topic in optimization published in English in a peer-reviewed journal. Prize is awarded every three years.

Enrico Fermi Scholar, Argonne National Lab, 1999-2000.

Recognition of Outstanding Paper, *Ninth IEEE International Symposium on High Performance Distributed Computing*, 2000.

Presidential Fellowship, Georgia Tech, 1992-1996.

Saluditorian, University of Illinois, Dept. of General Engineering, 1992.

Tau Beta Pi, Illinois Alpha. Secretary, 1991. Treasurer, 1992.

National Science Foundation, Research Experience for Undergraduates, 1990-1992.

Research Funding

"Reconfiguring Power Systems to Minimize Cascading Failures: Models and Algorithms," Department of Energy, Co-Principal Investigator, $1,053,904 (UW portion), 8/09—8/12, with I. Dobson and S. Wright (PI), University of Wisconsin-Madison, I. Hiskens, University of Michigan, and D. Bienstock, Columbia University.

"Collaborative Research: Next Generation Solvers for Mixed Integer Nonlinear Programs: Structure, Search, and Implementation," Department of Energy, (DE-FG02-08ER25861), Principal Investigator, $528,476 (UW portion), 8/08—8/11, with J. Luedtke, University of Wisconsin-Madison, Sven Leyffer and Todd Munson, Argonne National Lab, and Andrew Miller Université Bordeaux 1.

"Collaborative Research: Next Generation Solvers for Mixed Integer Nonlinear Programs: Structure, Search, and Implementation," National Science Foundation (CCF-0830153), Principal Investigator, $199,997 (UW portion), 8/08—8/11, with J. Luedtke, University of Wisconsin-Madison, Sven Leyyer and Todd Munson, Argonne National Lab, and Andrew Miller Université Bordeaux 1.

"Short Courses in Support of Technology for Process Planning," Pennsylvania Infrastructure Technology Alliance (PITA X), Principal Investigator, $36,000, 11/06—6/08.

"Unrestricted Research Grant," Air Products & Chemicals, Principal Investigator, $60,500, 7/05—4/07

"Research on Large Scale Optimization," Air Products & Chemicals, Principal Investigator, $25,000, 2006.

"IBM Faculty Partnership Grant," International Busniess Machines, Principal Investigator, $20,000, 1/2006—12/2006.

"Short Courses in Support of Technology for Process Planning," Pennsylvania Infrastructure Technology Alliance (PITA IX), Principal Investigator, $17,219, 11/05—3/07.

"Optimization Under Nonconvexity and Uncertainty: Algorithms and Software," Department of Energy (DE-FG02-05ER25694) and (DE-FG02-09ER25869), Principal Investigator, $230,637, 8/05—8/09.

"Advanced Computational Techniques for Optimization," SAS Institute, Inc., Co-Principal Investigator, $105,000, 8/05—8/06, with T. Ralphs, Lehigh University.

"Exploiting Cyberinfrastructure to Solve Real-Time Integer Programs," National Science Foundation (CMMI-0522796), Principal Investigator, $249,161 (Lehigh portion), 9/05—9/08, with T. Ralphs, Lehigh University, S. Ahmed, G. Nemhauser, and M. Savelsbergh, Georgia Institute of Technology, and A. Miller and M. Ferris, University of Wisconsin-Madison.

"CIEG Supplement: Exploiting Cyberinfrastructure to Solve Real-Time Integer Programs," National Science Foundation (CMMI-0715062), Principal Investigator, $15,000, 3/07.

"Computational Models and Algorithms for Enterprise-wide Optimization of Process Industries," Pennsylvania Infrastructure Technology Alliance (PITA VIII), Principal Investigator,

$78,588 (Lehigh portion), 4/05—4/06, joint with I. Grossmann, L. Biegler, J. Hooker, Carnegie-Mellon University, and A. Schaefer, University of Pittsburgh.

"Unrestricted Research Grant," Air Products & Chemicals, Principal Investigator, $27,500, 7/05—7/06.

"Take or Pay Valuation," Air Products & Chemicals and The BOC Group, Principal Investigator, $22,500, 3/05—3/06.

"MW: Master-Worker Middleware for Grids," National Science Foundation (OCI-0330607), Principal Investigator, $209,700 (Lehigh portion), 9/03—9/07, with S. Wright and M. Livny, University of Wisconsin-Madison.

"A GAMS Interface to IPOPT for Large-Scale Nonlinear Programming," Air Products & Chemicals and Pennsylvania Infrastructure Technology Alliance (PITA VIII), $1100, 6/04–9/05, with L. Biegler, Carnegie Mellon University.

"Enterprise-Wide Optimization", Air Products & Chemicals and Pennsylvania Infrastructure Technology Alliance (PITA VII), Co-Principal Investigator, $50,000, 1/03—1/04, with R. Berger, E. Perevalov, T. Ralphs, and A. Ross, Lehigh University.

Equipment Grants

"Optimization on a Computational Grid," Alliance Allocations Board, (DDM050005), Principal Investigator, 126,000 CPU Hours (2007), 200,000 CPU Hours (3/06), 250,000 CPU Hours (3/05).

"Numerical Optimization on the TeraGrid," Partnerships for Advanced Computational Infrastructure (PACI) (TG-DDM040003), Principal Investigator, 30,000 CPU Hours, (2/04).

"High Performance Computing for Numerical Optimization," Partnerships for Advanced Computational Infrastructure (PACI) (DDM040004), Principal Investigator, 11,000 CPU Hours (1/04).

"Grid Computing for Optimization,"National Resource Allocations Committee (NRAC) (MCA00N015N), Collaborator, 310,000 CPU Hours, (3/00), with M. Ferris, University of Wisconsin-Madison.

Editor and Review

Area Editor, *Mathematical Programming Computation*, 2008-present

Editorial Board, *Optimization Methods and Software*, 2008-present (Handled 1)

Editorial Board, *Computation Optimization and Applications*, 2007-present (Handled 6)

Associate Editor, *Asia-Pacific Journal of Operational Research*, 2007-present (handled 3)

Associate Editor, *INFORMS Journal on Computing*, 2003-present (handled 26).

Guest Editor, *Parallel Computing*, special issue on "Optimization on Grids—Optimization for Grids", 2006.

Topical Editor, *Wiley Encyclopedia of Operations Research and Managemtn Science*, Integer Programming and Optimization Software, to be published in 2010. Area Coordinator—Integer Programming, *Optimization Online*, 2000-present.

Area Coordinator—Applications, OR, and Management Science, *Optimization Online*, 2000-present.

Area Coordinator—Stochastic Programming, *Optimization Online*, 2003-present.

Area Coordinator—Robust Optimization, *Optimization Online*, 2003-present.

Refereed publications for the following journals. (Number refereed in parentheses):

SIAM Journal on Optimization (3),

Mathematical Programming (12),

Operations Research (2),
Management Science (2),
INFORMS Journal on Computing (2),
Algorithmica (1),
Computational Optimization and Applications (7),
Transportation Science (1),
Discrete Applied Mathematics (1),
Operations Research Letters (4),
Optimization Methods and Software (2),
Discrete Optimization (1),
Journal of Global Optimization (1),
Annals of Operations Research (3),
European Journal of Operational Research (1),
Computational Management Science (1),
IEEE Transactions on Parallel and Distributed Systems (1),
Parallel Computing (6),
International Journal of Systems Science (1),
4OR (1),
Constraints (1)

Refereed proposals for the following institutions:

Nebraska Experimental Program to Stimulate Competitive Research (2009)
National Science Foundation (Served on panels in 2006 and 2007)
U.S. Civilian Research and Development Foundation (2006)
Chilean Research Fund Council (2006)

Invited Presentations

"Strong Relaxations and Computations for Global Optimization Problems with Multilinear Terms"

20th International Symposium on Mathematical Programming, Chicago, August, 2009.

"Flexible Isomorphism Pruning"

MIP 2009, University of California-Berkeley, June, 2009.

"Inequalities from Strong Branching Information for Mixed Integer Nonlinear Programs"

Computational Issues in Mixed Integer Nonlinear Programming Workshop, Institut de Mathematiques de Bordeaux (IMB), Université Bordeaux 1, March 2009.

"Models and Algorithms for Stochastic Programming"

Enterprise-Wide Optimization Workshop, Carnegie Mellon University, Pittsburgh, March, 2009.

"MINLP Wars: Building an Effective Solver for Convex Mixed Integer Nonlinear Programs"

Institute for Mathematics and Its Applications, "Hot Topics" Workshop on Mixed Integer Nonlinear Programming, Minneapolis, November, 2008.

"Constraint Orbital Branching"

Institut de Mathématiques de Bordeaux (IMB), Université Bordeaux 1, March 2009

INFORMS Annual Meeting, Washington DC, October 2008

INFORMS Optimization Meeting, Atlanta, March 2008

"A Different Perspective on Perspective Cuts"

Institut de Mathématiques de Bordeaux (IMB), Université Bordeaux 1, July 2009

Department of Energy Principal Investigator Annual Meeting, Argonne National Lab, Argonne, IL, October, 2008.

MIP 2007, Centre de Recherches Mathématiques, Université de Montréal, August, 2007.

"Stochastic Programming for Decision Making in an Uncertain Environment"

CMU-RC Research Committee Meeting, Mount Pleasant, MI, June 2008.

CMU-RC Business Intelligence Forum, Mount Pleasant, MI, June 2008.

"Perspective Relaxation of Mixed Integer Nonlinear Programs with Indicator Variables"

IPCO 2008, Bertinoro, Italy, May 2008.

"Feasibility Pump Heuristics for Mixed Integer Nonlinear Programs"

20th International Symposium on Mathematical Programming, Chicago, August, 2009.

SIAM Conference on Optimization, Boston, May 2008

"Latest Developments with FilMINT"

Operations Research Symposium, University of Sannio, Benevento, Italy, June 2008.

INFORMS Optimization Meeting, Atlanta, March 2008

INFORMS Computing Society National Meeting, Charleston, January 2009

"Using Computational Grids for Solving Stochastic Programs"

INFORMS Annual Meeting, Seattle, November 2007

"Experiments With Solving Difficult Integer Programs on Distributed Computing Platforms"

INFORMS Annual Meeting, Seattle, November 2007

"Computational Grids for Stochastic Programming"

Semi-Plenary, 11th Conference on Stochastic Programming (SPXI), Universitätscampus Wien, Vienna, Austria, August 2007.

"Orbital Branching"

Institut de Mathématiques de Bordeaux (IMB), Université Bordeaux 1, March 2009

COPTA Optimization Seminar, University of Wisconsin-Madison, April 2008.

IPCO 2007, Cornell University, Ithaca, NY, June 2007.

Department of Energy Principal Investigator Annual Meeting, Lawrence Livermore National Lab, Livermore, CA, May 2007.

"Solving Hard Integer Programs with MW"

Condor Week, University of Wisconsin-Madison, Madison, WI, May 2007.

"Solving Symmetric Integer Programs"

Decision, Risk, and Operations Division of the Columbia Business School, Columbia University, New York, September, 2009.

IBM TJ Watson Research Center Operations Research Seminar, Yorktown Heights, February 2007.

"Strong(er) Branching for Mixed Integer Programming"

Workshop on Hybrid Methods and Branching Rules in Combinatorial Optimization, Centre de Recherches Mathématiques, Université de Montréal, September 2006

"The Football Pool Problem"

PLENARY, Open Science Grid Consortium All-Hands Meeting, San Diego Supercomputing Center, March 2007.

19th International Symposium on Mathematical Programming, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil, August 2006.

"Using a Computational Grid for Optimization"

Università dell'Aquila Optimization Seminar, L'Aquila, Italy, June 2006.

Department of Industrial and Systems Engineering Seminar, University of Wisconsin-Madison, Madison, February 2006.

Department of Systems and Industrial Engineering Seminar, University of Arizona, Tucson, February 2006.

Fifth Annual Columbia Optimization Day, New York, December 2005.

"Rescheduling Bulk Gas Production and Distribution"

DIMACS Workshop on Computational Optimization and Logistics Challenges in the Enterprise (COLCE), ExxonMobil Research & Engineering, April 2006.

"Condor and the Football Pool Problem"

Condor Week, University of Wisconsin-Madison, Madison, WI, April, 2006.

High Performance Computing Day, Lehigh University, Bethlehem, PA, April 2006.

"Mixed Integer Nonlinear Programming"

TUTORIAL, with S. Leyffer, INFORMS Annual Meeting, San Francisco, November 2005

"Reformulation and Sampling to Solve a Stochastic Network Interdiction Problem"

INFORMS Annual Meeting, San Francisco, November 2005

"Branch-and-Bound on a Computational Grid"

SEMI-PLENARY, Research Center on Software Technology (RCOST), Mini-workshop on Computational Grids, Benevento, Italy, October 2005.

"Optimization on the Computational Grid"

Operations Research Roundtable, Air Products & Chemicals, Allentown, PA, May 2006.

Operations Research Symposium, Virginia Commonwealth University, Richmond, VA, March 2006.

SAS Institute, Inc. Cary, NC, August 2005.

Operations Research Colloquium, Penn State University, State College, PA, February 2005.

INVITED PANELIST, Optimization and Cyberinfrastructure Panel Discussion, First International Conference on Continuous Optimization, Troy, NY, August 2004.

IBM TJ Watson Research Center Operations Research Seminar, Yorktown Heights, November 2003.

Carnegie Mellon GSIA Operations Research Seminar, Pittsburgh, March 2003.

INFORMS National Meeting, San Jose, November 2002.

"A Branch-and-Bound Method for Nonconvex Quadratic Programming Implemented on a Computational Grid"

2005 International Conference on Complementarity, Duality, and Global Optimization, Blacksburg, Virginia, August 2005.

PLENARY, High-Performance Algorithms and Software for Nonlinear Optimization, Ischia, Italy, June 2004.

"A Survey of Cyberinfrastructure in Operations Research"

TUTORIAL, INFORMS 2007 Conference on O.R. Practice, Vancouver, CA, May 2007.

TUTORIAL, International Federation of Operations Research Societies Triennial Conference, Honolulu, July 2005.

Multi-Disciplinary Workshop at the Interface of Cyberinfrastructure and Operations Research, with Enterprise-wide Applications, National Science Foundation, Washington DC, August 2004.

"Applying Integer Programming Techniques to Global Optimization Problems"

SAS Institute, Inc. Cary, NC, May 2006.

SIAM Conference on Optimization, Stockholm, May 2005.

INFORMS National Meeting, Atlanta, October 2003.

"Multistage Stochastic Programming on a Computational Grid"

University of California-Davis, Department of Mathematics, April 2006.

Stevens Institute of Technology, Department of Mathematical Sciences Optimization of Stochastic Systems Seminar, April 2005.

Northwestern University, Department of Industrial Engineering and Management Science Seminar Series, Evanston, January 2005.

The Tenth International Conference on Stochastic Programming, Tucson, October 2004.

INFORMS National Meeting, Denver, October 2004.

"MW: The Master Worker Library"

Paradyn/Condor Week, Madison, WI, March, 2005.

"MW: A Master-Worker Toolkit for Implementing Operations Research Algorithms on the Computational Grid"

Fourth International Workshop of the EURO Working Group on Parallel Processing in Operations Research, Mont-Tremblant, Canada, January, 2005.

"An Empirical Comparison of Branching Rules and Heuristic Methods in MINTO"

INFORMS Computing Society (ICS) Conference, Annapolis, January 2005.

"Building and Solving Stochastic Programs"

Workshop on Domain-Specific Languages for Numerical Optimization, Argonne National Lab, August, 2004.

"MW: Master-Worker Middleware for Grids"

INFORMS National Meeting, Pittsburgh, November, 2006.

Eleventh SIAM Conference on Parallel Processing for Scientific Computing, San Francisco, February, 2004.

NSF Shared Cyberinfrastructure (SCI) Division, Principal Investigators Meeting, Washington DC, February, 2004.

"Solving Multistage Stochastic Linear Programs on the Computational Grid"

INFORMS National Meeting, Atlanta, October 2003.

"Nonconvex Quadratic Programs and the Computational Grid"

Lehigh Chemical Process Modeling and Control Seminar Series, Bethlehem, PA, April, 2004.

Argonne Global Optimization Theory Institute, Argonne, September 2003.

18th International Mathematical Programming Symposium, Copenhagen, August 2003.

"Parallel Computing for Branch-and-{Bound,Cut}"

CORC Discussions on Mixed Integer Programming, New York, June 2003.

"Solving Large Quadratic Assignment Problems on Computational Grids"

SIAM Activity Group on Optimization Prize Lecture, 2002 SIAM Conference on Optimization, Toronto, July 2002.

"Optimization Over the Internet"

Lehigh University, February 2002.

Georgia Institute of Technology, ISyE Seminar Series, Atlanta, December 2001.

University of North Carolina Operations Research Colloquium, Chapel Hill, February 2001.

INFORMS Roundtable Winter Meeting, Savannah, January 2001.

"Using Personal Condor to Solve Large Scale Numerical Optimization Problems"

Paradyn/Condor Week, Madison, March 2001.

"Sampling-Based Methods for Stochastic Programming on Metacomputers"

University of British Columbia, Vancouver, January 2001.

"Decomposition Algorithms for Stochastic Programming on the Computational Grid"

University of British Columbia, Vancouver, January 2001.

APMOD – Applied Mathematical Programming and Modelling, London, April 2000.

INFORMS National Meeting, Philadelphia, November 1999.

"Metacomputing for Stochastic Optimization"

17th International Mathematical Programming Symposium, Atlanta, August, 2000

"Stochastic Programming and Nondifferentiable Optimization Convergence Theory"

Stochastic Programming Day, Northwestern University, June 2000

"Metacomputing and Optimization"

INFORMS National Meeting, Salt Lake City, May 2000.

ILOG, Mountain View, CA, May, 2000.

University of Chicago, Graduate School of Business, April 2000

INFORMS Chicago Local Chapter Meeting, March 2000

SUNY-Buffalo, Praxair OR Colloqium, February 2000

Sabre Decision technologies, Dallas, January 2000

"Integer Programming and Metacomputing"

INFORMS National Meeting, Salt Lake City, May 2000.

"Solving HUGE QAPs with Condor"

Paradyn/Condor Week, Madison, March 2000.

"Computational Integer Programming for Dummies."
Optimization for Dummies Seminar, Argonne National Laboratory, June 1999.

"PARINO: A Parallel Branch & Cut Code"
INFORMS National Meeting, Cincinnati, May 1999.

"Issues in Parallel Branch and Price"
DIMACS/RUTCOR: Discrete Optimization '99, New Brunswick, NJ, July 1999
INFORMS National Meeting, Cincinnati, May 1999.

"MWLShaped: A High-Throughput Code for Two-Stage Stochastic Linear Programs"
metaNEOS/Condor Workshop, Argonne, June, 1999.
metaNEOS/Condor Workshop, Madison, February, 1999.

"MW: An Enabling Framework for Master-Worker Applications on the Computational Grid"
Ninth IEEE Symposium on High Performance and Distributed Computing, Pittsburgh, August 2000.
Mathematics and Computer Science Division, Argonne National Laboratory, April, 1999.

"Topics in Parallel Integer Optimization"
University of Southern California, Department of Industrial and Systems Engineering, Los Angeles, February 1998
Mathematics and Computer Science Division, Argonne National Laboratory, April 1998.

"A Parallel Solution Approach to the Set Partitioning Problem,"
Optimization Technology Center Seminar, Northwestern University, January, 1999.
INFORMS National Meeting, Montreal, April 1998.

"The Cardinality Constrained Circuit Problem."
16th International Mathematical Programming Symposium, Lausanne, Switzerland, 1997.

"Integrated Production and Distribution of Industrial Gases."
INFORMS National Meeting, New Orleans, 1995.

"Experiences with OSLp on the IBM SP2."
Second OSL Network Group Conference, New Orleans, 1995.

Courses Taught

ISyE323—Operations Research - Deterministic Modeling Fall 2008. (Enrollment: 70)

ISyE320—Simulation and Probabilistic Modeling Spring 2009. (Enrollment: 40)
Student teacher evaluations (scale of 5.0)
Instructor Rating: 4.5

ISyE323—Operations Research - Deterministic Modeling Fall 2008. (Enrollment: 78)
Student teacher evaluations (scale of 5.0)
Instructor Rating: 3.8

ISyE635—Tools and Environments for Optimization — Spring 2007. (Enrollment: 27)
Student teacher evaluations (scale of 5.0)
Instructor Rating: 4.3

ISyE323—Operations Research - Deterministic Modeling — Fall 2007. (Enrollment: 53)
Student teacher evaluations (scale of 5.0)
Instructor Rating: 3.3

IE170—Algorithms in Systems Engineering — Spring 2007. (Enrollment: 12)
Student teacher evaluations (scale of 5.0)
Teaching Effectiveness: 4.9
Course Quality: 4.7
Instructor Knowledge: 5.0
Instructor Enthusiasm: 5.0

IE171—Algorithms in Systems Engineering Laboratory — Spring 2007. (Enrollment: 12)
Student teacher evaluations (scale of 5.0)
Teaching Effectiveness: 4.4
Course Quality: 3.8
Instructor Knowledge: 4.9
Instructor Enthusiasm: 4.7

IE426—Optimization Models and Applications — Fall, 2006. (Enrollment: 28)
Student teacher evaluations (scale of 5.0)
Teaching Effectiveness: 4.5
Course Quality: 4.6
Instructor Knowledge: 4.9
Instructor Enthusiasm: 4.8

IE417—Nonlinear Programming — Spring, 2006. (Enrollment: 15)
Student teacher evaluations (scale of 5.0)
Teaching Effectiveness: 4.2
Course Quality: 4.3
Instructor Knowledge: 4.0
Instructor Enthusiasm: 4.8

IE426—Optimization Models and Applications — Fall, 2005. (Enrollment: 18)
Student teacher evaluations (scale of 5.0)
Teaching Effectiveness: 4.5
Course Quality: 4.5
Instructor Knowledge: 4.9
Instructor Enthusiasm: 4.6

IE418—Integer Programming — Spring, 2005. (Enrollment: 13)
Student teacher evaluations (scale of 5.0)
Teaching Effectiveness: 4.4
Course Quality: 4.2
Instructor Knowledge: 4.8
Instructor Enthusiasm: 4.2

ENG5—Introduction to Engineering Practice — Fall 2004. (Enrollment: 24)

ISE185—ISELP Honors Seminar — Fall 2004. (Enrollment: 8)

IE418—Integer Programming — Fall, 2003. (Enrollment: 12)
Student teacher evaluations (scale of 5.0)
Teaching Effectiveness: 4.9
Course Quality: 4.7
Instructor Knowledge: 4.9
Instructor Enthusiasm: 4.9

IE316—Optimization Models and Applications — Fall, 2003 (Enrollment: 49)
Student teacher evaluations (scale of 5.0)
Teaching Effectiveness: 4.4
Course Quality: 4.3
Instructor Knowledge: 4.9
Instructor Enthusiasm: 4.8

IE495—Stochastic Programming — Spring, 2003 (Enrollment: 16)
Student teacher evaluations (scale of 5.0)
Teaching Effectiveness: 4.8
Course Quality: 4.8
Instructor Knowledge: 5.0
Instructor Enthusiasm: 4.9

IE398—Applications of Operations Research — Fall, 2002 (Enrollment: 16)
Student teacher evaluations (scale of 5.0)
Teaching Effectiveness: 4.8
Course Quality: 4.7
Instructor Knowledge: 4.9
Instructor Enthusiasm: 5.0

Short Courses Offered

"Experimental Algorithmics, with a Focus on Branch and Bound for Discrete Optimization Problems," (with Cindy Phillips, Sandia National Lab)

DIMACS Reconnect Satellite Conference, Lafayette College, Easton, PA, June 2004.

"Numerical Optimization for Large Scale Systems,"

Winter School on High Performance and Grid Computing, Università della Calabria, Rende, Italy, March, 2005.

"A Practical Guide to Mixed Integer Nonlinear Programming," (with Sven Leyffer, Argonne National Lab),

SIAM Conference on Optimization, Stockholm, May 2005.

"Grid Computing for Optimization: Modeling and Solution," (with Michael Ferris and Stephen Wright, University of Wisconsin-Madison)

Second International Conference on Continuous Optimization (ICCOPT-II), McMaster University, Hamilton, Ontario, Canada, August, 2007.

Course Development

New Courses Developed

Stochastic Programming, IE495
Optimization Models and Applications, IE426
Applications in Operations Research, IE398

University Training

Taught lecture on "Using Parallel Computing to Run Multiple Jobs, " (2003, 2004) Lehigh's

Beowulf computing cluster training seminar

Student Supervision

Ph.D Students, Lehigh University

Kumar Abhishek	2008	"Topics in Mixed Integer Nonlinear Programming"
Wasu Glankwamdee	2008	"Topics in Branch and Bound on Computational Grids"
James Ostrowski	2009	"Solving Symmetric Integer Programs"
Udom Janjarassuk	2009	"Exploiting Parallel Processors for Effective Solutions to Stochastic Programs"

Ph.D. Students, University of Wisconsin-Madison

Mustafa Kılınç	(2010)	"Cutting Planes and Strong Formulations for Mixed Integer Nonlinear Programming"
Mahdi Namazifar	(2011)	Undecided
Hyemin Jeon	(2011)	Undecided
Chia-Chun Tsai	(2011)	Undecided

Masters Students, Lehigh University

Wasu Glankwamdee	2004	"Lookahead Branching in Mixed Integer Programming"

Ph.D. Thesis Committees

Shangyuan Luo	2003	Lehigh	"Investigations of Parallel Replacement Analysis."
João Gonçalves	2005	Lehigh	"Elementary Linear Programming Algorithms for Finding Starting Solutions for Primal-Dual Interior Point Methods."
Dorid Mustafa	2005	Lehigh	"Internet Congestion Control: A Decentralized Rate Control Protocol Using Explicit and Implicit Congestion Notification."
Clara Novoa	2005	Lehigh	"Dynamic Vehicle Routing with Stochastic Customer Arrivals and Demands."
Yan Xu	2007	Lehigh	"Scalable Parallel Tree Search Algorithms."
Shane Drew	2007	Northwestern	"Quasi-Monte Carlo Methods for Stochastic Programming"
Hyong-Mo Jeon	2008	Lehigh	"Joint Location-Inventory Optimization with Unreliable Facilities."
Ashutosh Mahajan	2009	Lehigh	"Advances in Branch-and-Cut Algorithms for Mixed Integer Programming"
Sarah Drewes	2009	T.U. Darmstadt	"Mixed Integer Second Order Cone Programming"
Zeliha Acka	2009	Lehigh	"Integrated Location-Routing-and-Scheduling Problem: Models and Algorithms"
Menal Guzelsoy	2009	Lehigh	"Duality, Warm Starting, and Sensitivity Analysis in Mixed-Integer Programming"
Matthew Galati	(2009)	Lehigh	"Decomposition Methods for Large-scale Discrete Optimization."
Uchechukwu Okpara	(2010)	UW-Madison	"Aviation Security: A Model to Study the Threat to Commercial Aviation from Man-Portable Air Defense Systems (MANPADS)"
Naraphorn Haphuriwat	(2010)	UW-Madison	"Tradeoffs Between Target Hardening and Overarching Protection"
Tai-Hsuan Wu	(2010)	UW-Madison	"Global Routing"

Guided Independent Study, Lehigh University

ISyE699, Advanced Independent Study

Pat O'Connell, Fall 2009	"Case Studies in Operations Research" (3 credits)
Sarah Dufresne, Fall 2009	"Case Studies in Operations Research" (1 credit)
Thomas Barnhardt, Spring 2008	"Optimization Resources on the Internet" (2 credits)

IE 372, Systems Engineering Design

Daniel Chun, Spring 2004	"The NEOS Server System"

IE 430, Management Science Project

Thomas de Marffy, Summer 2003	"Defining Relationships Between the S&P Computers (Hardware) and S&P Computers (Software) Benchmarks Using Regression Analysis and Hypothesis Testing"
Jackie Griffin, Spring 2006	"Easing Rescheduling Complexity for a Bulk Gas Production and Distribution Problem"

IE 460, Engineering Project

Udom Janjarassuk, Spring 2005	"The Stochastic Network Interdiction Problem"

University Service

Lehigh University

2003, 2005	Library and Technology Services, Hiring Committee, 2003, 2005.
2004	Library and Technology Services, Compute Server Selection Committee, 2004.
2003-2007	Lehigh High Performance Computing Committee

University of Wisconsin-Madison

2007-	Faculty Senate (Alternate)
2008-	University Information Technology Committee

Department Service

Lehigh University, Industrial and Systems Engineering

2003-2004	Faculty Hiring Committee
2002-2007	Qualifier Exam Committee, Optimization

University of Wisconsin-Madison, Industrial and Systems Engineering

2009	Chair, 5-year Review Committee, Prof. Leyuan Shi
2008	Member, Tenure package preparation committee, John Lee
2008-	Member, Academic Affairs Committee
2008-	Member, Faculty Affairs Committee
2008-	Coordinator, Qualifier Exam Committee, Optimization
2007-2008	Qualifier Exam Committee, Stochastics, Quantitative Decision Making
2007-2008	Graduate Recruiting & Admissions Committee
2007-2008	Graduate Policy & Exams Committee
2007-2008	Student Scholarships Committee
2008	Chair, Colloquium Committee

Professional Activities

Member, Technical Program Committee, Parallel Optimization in Emerging Computing Environments (POECE) 2010, Hammamet, Tunisia, 2010

Member, Program Committee, TOGO Global Optimization Workshop, Toulouse, 2010

Member, Local Organizing Committee, 20th International Symposium on Mathematical Programming, 2009

Member, Prize Committee, Beale-Orchard-Hayes Award, 2009

Newsletter Editor, INFORMS Computing Society, 2008-2010

Member, Local Organizing Committee, MIP 2008 Workshop, New York, 2008.

Member, Committee on Stochastic Programming (COSP), 2007-2010

Member, Program Committee, IPDPS 2008, Algorithms Track, 2008

Member, Prize Committee, INFORMS Computing Society Student Paper Competition, 2007

Secretary-Treasurer, INFORMS Computing Society, 2006-2008

Organizing Committee, MIP 2006 Workshop, Miami, 2006.

Organizing Committee, DIMACS Workshop on COIN-OR, Piscataway, NJ, 2006.

Organizing Committee, Institute for Mathematics and Its Applications "Hot Topics" Workshop on Integer Programming, 2005.

Member, Program Committee: Parallel and Grid Computing for Optimization (PGCO 2007), Prague, 2007

Member, Program Committee: Sixth International Conference on Parallel Processing and Applied Mathematics, Poznan, Poland, 2005.

Member, Technical Leadership Council: Computation Infrastricture for Operations Research (COIN-OR) Foundation, 2004-2005.

Administrator, *Network Enabled Optimization System* (NEOS), 1998-present.

Responsible for development and distribution of MINTO mixed integer programming software, 2003—present.

Responsible for development and distribution of SUTIL stochastic programming utility library

Mathematical Programming Society (MPS), Member, 1994—present

Society for Industrial and Applied Mathematics (SIAM), Member 2003—present

Institute for Operations Research and Management Science (INFORMS), Member, 1992—present

Consulting

Air Products & Chemicals, 2004-2006

Axioma, 2003-2006

Barclay's Bank 2006-2007

BOC Gases, 2005

Dow Chemicals, 2008

ILOG, 2006

Portland Gas & Electric, 2008-2009

Ziena, 2005-2007