

Simge Küçükyavuz

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EDUCATION

University of California, Berkeley	Berkeley, CA
Ph.D. Industrial Engineering and Operations Research	2004
M.S. Industrial Engineering and Operations Research	2000
Middle East Technical University	Ankara, Turkey
B.S. Industrial Engineering	1998

APPOINTMENTS

Northwestern University , Industrial Engineering and Management Sciences	Evanston, IL
Department Chair	2023 – present
David A. and Karen Richards Sachs Professor	2023 – present
Professor	2021 – 2023
Associate Professor	2018 – 2021
University of Vienna , Faculty of Mathematics	Vienna, Austria
Visiting Professor	Jan 2024
University of Southern California , Epstein Industrial and Systems Engineering	Los Angeles, CA
Epstein Visiting Scholar	Fall 2022
University of Washington , Industrial and Systems Engineering	Seattle, WA
Dean's Associate Professor	2016 – 2018
The Ohio State University , Integrated Systems Engineering	Columbus, OH
Associate Professor	2012 – 2016
Assistant Professor	2009 – 2012
University of Arizona , Systems and Industrial Engineering	Tucson, AZ
Assistant Professor	2006 – 2008
Visiting Assistant Professor	2004 – 2006
Hewlett-Packard Laboratories , Decision Technologies	Palo Alto, CA
Research Associate	2003

RESEARCH EXPERTISE

Theory and Methodology: Mixed-integer optimization, optimization under uncertainty, and large-scale optimization
Applications: Infrastructure (e.g., power systems, computing), social networks, statistical learning, supply chain management, humanitarian logistics

JOURNAL ARTICLES

1. X. Xie, I. Gurvich and S. Küçükyavuz, Dynamic Allocation of Reusable Resources: Logarithmic Regret in Overloaded Networks, *forthcoming*, **Operations Research**, 2024+.
2. Q. Yu* and S. Küçükyavuz, On Constrained Mixed-Integer DR-Submodular Minimization, *forthcoming*, **Mathematics of Operations Research**, 2024+.
 - Mixed-Integer Programming (MIP) Workshop Student Poster Prize Honorable Mention, 2022.
3. L. Wei*, A. Atamtürk, A. Gómez and S. Küçükyavuz, On the Convex Hull of Convex Quadratic Optimization Problems with Indicators, **Mathematical Programming**, 204(1-2), 703-737, 2024.
4. F. Kılınç-Karzan, S. Küçükyavuz, D. Lee and S. Shafieezadeh-Abadeh, Conic Mixed-Binary Sets: Convex Hull Characterizations and Applications, *forthcoming*, **Operations Research**, 2023+.
5. S. Küçükyavuz, A. Shojaie, H. Manzour*, L. Wei* and Hao-Hsiang Wu, Consistent Second-Order Conic Integer Programming for Learning Bayesian Networks, **Journal of Machine Learning Research**, 24(322), 1-38, 2023.

*Post-doc/Ph.D./M.Sc. advisee

6. Q. Yu* and S. Küçükyavuz, Strong Valid Inequalities for a Class of Concave Submodular Minimization Problems under Cardinality Constraints, **Mathematical Programming**, 201(1-2), 803-861, 2023.
- Nemhauser Student Paper Prize, 2023.
7. P. Liu, S. Fattahi, A. Gómez and S. Küçükyavuz, A Graph-based Decomposition Method for Convex Quadratic Optimization with Indicators, **Mathematical Programming**, 200(2), 669-701, 2023.
- INFORMS Computing Society Student Paper Prize Runner-Up, 2022.
8. N. Ho-Nguyen, F. Kılınç-Karzan, S. Küçükyavuz and D. Lee, Strong Formulations for Distributionally Robust Chance-Constrained Programs with Left-Hand Side Uncertainty under Wasserstein Ambiguity, **INFORMS Journal on Optimization**, 5(2), 211-232, 2023.
9. N. Ho-Nguyen, F. Kılınç-Karzan, S. Küçükyavuz and D. Lee, Distributionally Robust Chance-Constrained Programs with Right-Hand Side Uncertainty under Wasserstein Ambiguity, **Mathematical Programming**, 196(1-2), 641-672, 2022.
10. F. Kılınç-Karzan, S. Küçükyavuz and D. Lee, Joint Chance-Constrained Programs and the Intersection of Mixing Sets through a Submodularity Lens, **Mathematical Programming**, 195(1-2), 283-326, 2022.
11. L. Wei*, A. Gómez and S. Küçükyavuz, Ideal Formulations for Constrained Convex Optimization Problems with Indicator Variables, **Mathematical Programming**, 192(1-2), 57-88, 2022.
- Nemhauser Student Paper Prize, 2021.
12. N. Noyan, M. Meraklı* and S. Küçükyavuz, Two-stage Stochastic Programming under Multivariate Risk Constraints with an Application to Humanitarian Relief Network Design, **Mathematical Programming**, 191(1), 7-45, 2022.
13. S. Küçükyavuz and R. Jiang, Chance-Constrained Optimization under Limited Distributional Information: A Review of Reformulations Based on Sampling and Distributional Robustness, **EURO Journal on Computational Optimization**, 10, 100030, 1-45, 2022. **(Invited survey)**
- EJCO Marguerite Frank Best Paper Prize, Honorable Mention, 2022.
14. Q. Yu* and S. Küçükyavuz, An Exact Cutting Plane Method for k -submodular Function Maximization, **Discrete Optimization**, 42, 100670, 1-19, 2021.
15. H. Manzour*, S. Küçükyavuz, H.-H. Wu and A. Shojaie, Integer Programming for Learning Directed Acyclic Graphs from Continuous Data, **INFORMS Journal on Optimization**, 3(1), 46-73, 2021.
16. Q. Yu* and S. Küçükyavuz, A Polyhedral Approach to Bisubmodular Function Minimization, **Operations Research Letters**, 49(1), 5-10, 2021.
17. M. Meraklı* and S. Küçükyavuz, Risk Aversion to Parameter Uncertainty in Markov Decision Processes with an Application to Slow-Onset Disaster Relief, **IIE Transactions**, 52(8), 811-831, 2020.
18. H.-H. Wu* and S. Küçükyavuz, An Exact Method for Constrained Maximization of the Conditional Value-at-Risk of a Class of Stochastic Submodular Functions, **Operations Research Letters**, 48(3), 356-361, 2020.
19. H.-H. Wu* and S. Küçükyavuz, Probabilistic Partial Set Covering with an Oracle for Chance Constraints, **SIAM Journal on Optimization**, 29(1), 690-718, 2019.
20. X. Liu*, F. Kılınç-Karzan and S. Küçükyavuz, On Intersection of Two Mixing Sets with Applications to Joint Chance-Constrained Programs, **Mathematical Programming**, 175(1-2), 29-68, 2019.
21. M. Meraklı* and S. Küçükyavuz, Vector-Valued Multivariate Conditional Value-at-Risk, **Operations Research Letters**, 46(3), 300-305, 2018.
22. X. Liu* and S. Küçükyavuz, A Polyhedral Study of the Static Probabilistic Lot-Sizing Problem, **Annals of Operations Research**, 261(1-2), 233-254, 2018.
23. H.-H. Wu* and S. Küçükyavuz, A Two-Stage Stochastic Programming Approach for Influence Maximization in Social Networks, **Computational Optimization and Applications**, 69(3), 563-595, 2018.
24. A. Atamtürk, S. Küçükyavuz and B. Tezel, Path Cover and Path Pack Inequalities for the Capacitated Fixed-Charge Network Flow Problem, **SIAM Journal on Optimization**, 27(3), 1943-1976, 2017.
25. X. Liu*, S. Küçükyavuz and N. Noyan, Robust Multicriteria Risk-Averse Stochastic Programming Models, **Annals of Operations Research**, 259(1), 259-294, 2017.
26. S. Küçükyavuz and N. Noyan, Cut Generation for Optimization Problems with Multivariate Risk Constraints, **Mathematical Programming**, 159(1), 165-199, 2016.
27. P. Damcı-Kurt*, S. Küçükyavuz, D. Rajan and A. Atamtürk, A Polyhedral Study of Production Ramping, **Mathematical Programming**, 158(1), 175-205, 2016.
28. X. Liu*, S. Küçükyavuz and J. Luedtke, Decomposition Algorithms for Two-Stage Chance-Constrained Programs, **Mathematical Programming**, 157(1), 219-243, 2016.

- INFORMS Computing Society Student Paper Prize Runner-Up, 2015.
- 29. A. Atamtürk, A. Gómez and S. Küçükyavuz, Three-partition Inequalities for Constant Capacity Fixed-charge Network Flow Problem, **Networks**, 67(4), 299-315, 2016.
- 30. M. Walter, P. Damcı-Kurt*, S. Dey and S. Küçükyavuz, On a Cardinality-Constrained Transportation Problem With Market Choice, **Operations Research Letters**, 44(2), 170-173, 2016.
- 31. P. Damcı-Kurt*, S. Dey and S. Küçükyavuz, On the Transportation Problem with Market Choice, **Discrete Applied Mathematics**, 181, 54-77, 2015.
- 32. D. Gade*, S. Küçükyavuz and S. Sen, Decomposition Algorithms with Gomory Cuts for Two-Stage Stochastic Integer Programs, **Mathematical Programming**, 144(1-2), 39-64, 2014.
- ICS (INFORMS Computing Society) Prize, 2015.
- 33. M. Zhang* and S. Küçükyavuz, Finitely Convergent Decomposition Algorithms for Two-Stage Stochastic Pure Integer Programs, **SIAM Journal on Optimization**, 24(4), 1933-1951, 2014.
- 34. M. Zhang*, S. Küçükyavuz and S. Goel*, A Branch-and-Cut Method for Dynamic Decision-Making under Joint Chance Constraints, **Management Science**, 60(5), 1317-1333, 2014.
- 35. Y. Song, J. Luedtke and S. Küçükyavuz, Chance-Constrained Binary Packing Problems, **INFORMS Journal on Computing**, 26(4), 735-747, 2014.
- 36. D. Gade* and S. Küçükyavuz, Formulations for Dynamic Lot Sizing with Service Levels, **Naval Research Logistics**, 60(2), 87-101, 2013.
- 37. S. Küçükyavuz, On Mixing Sets Arising in Chance-Constrained Programming, **Mathematical Programming**, 132(1), 31-56, 2012.
- INFORMS Junior Faculty Interest Group (JFIG) Paper Competition, Third place, 2009.
- 38. M. Zhang*, S. Küçükyavuz and H. Yaman, A Polyhedral Study of Multiechelon Lot Sizing with Intermediate Demands, **Operations Research**, 60(4), 918-935, 2012.
- George Nicholson Student Paper Competition, First place, 2012.
- 39. B. Chen, S. Küçükyavuz and S. Sen, A Computational Study of the Cutting Plane Tree Algorithm for General Mixed-Integer Linear Programs, **Operations Research Letters**, 40(1), 15-19, 2012.
- 40. B. Chen, S. Küçükyavuz and S. Sen, Finite Disjunctive Programming Characterizations for General Mixed-Integer Linear Programs, **Operations Research**, 59(1), 202-210, 2011.
- 41. D. Gade* and S. Küçükyavuz, A Note on Lot-Sizing with Fixed Charges on Stocks: The Convex Hull, **Discrete Optimization**, 8(2), 385-392, 2011.
- 42. Y. Gao, Y.-C. Chiu, S. Wang and S. Küçükyavuz, Optimal Refueling Station Location and Supply Planning for Hurricane Evacuation, **Transportation Research Record**, 2196, 56-64, 2010.
- 43. S. Küçükyavuz and Y. Pochet, Uncapacitated Lot-Sizing with Backlogging: The Convex Hull, **Mathematical Programming**, 118(1), 151-175, 2009.
- 44. K. Huang and S. Küçükyavuz, On Stochastic Lot Sizing with Random Lead Times, **Operations Research Letters**, 36(3), 303-308, 2008.
- 45. A. K. Andreas, J. C. Smith and S. Küçükyavuz, Branch-and-Price-and-Cut Algorithms for Solving the Reliable h -Paths Problem, **Journal of Global Optimization**, 42(4), 443-466, 2008.
- 46. A. Atamtürk and S. Küçükyavuz, An $O(n^2)$ Algorithm for Lot Sizing with Inventory Bounds and Fixed Costs, **Operations Research Letters**, 36(3), 297-299, 2008.
- 47. A. Atamtürk and S. Küçükyavuz, Lot Sizing with Inventory Bounds and Fixed Costs: Polyhedral Study and Computation, **Operations Research**, 53(4), 711-730, 2005.

PREPRINTS

- 48. T. Xu*, A. Taeb, S. Küçükyavuz, and A. Shojaie, An Asymptotically Optimal Coordinate Descent Algorithm for Learning Bayesian Networks from Gaussian Models, 2024.
- 49. A. Bansal* and S. Küçükyavuz, A Computational Study of Cutting-Plane Methods for Multi-Stage Stochastic Integer Programs, 2024.
- 50. A. Bhathena, S. Fattahi, A. Gomez and S. Küçükyavuz, A Parametric Approach for Solving Convex Quadratic Optimization with Indicators Over Trees, 2024.
- 51. P. Liu, A. Atamtürk, A. Gómez and S. Küçükyavuz, Polyhedral Analysis of Quadratic Optimization Problems with Stieltjes Matrices and Indicators, 2024.
- 52. T. Xu*, A. Taeb, S. Küçükyavuz, and A. Shojaie, Integer Programming for Learning Directed Acyclic Graphs from Non-identifiable Gaussian Models, 2023.

53. L. Wei* and S. Küçükyavuz, An Outer Approximation Method for Solving Mixed-Integer Convex Quadratic Programs with Indicators, 2023.
54. H.-Y. Huang, H.-H. Wu and S. Küçükyavuz, Mixed-Integer Programming for a Class of Robust Submodular Maximization Problems, 2023.

CONFERENCE PROCEEDINGS

55. J. Hambleton, A. Nally and S. Küçükyavuz, Optimal Test Methods for Determining Material Parameters, **Proceedings of the 20th International Conference on Soil Mechanics and Geotechnical Engineering**, 389-394, 2022.
56. L. Wei*, A. Gómez and S. Küçükyavuz, On the Convexification of Constrained Quadratic Optimization Problems with Indicator Variables, In: D. Bienstock, G. Zambelli (eds), *Integer Programming and Combinatorial Optimization, IPCO 2020*, **Lecture Notes in Computer Science**, vol 12125, 433–447, Springer, Cham, 2020. (Refereed, 26% acceptance)
57. S. Goel* and S. Küçükyavuz, Dynamic Probabilistic Lot Sizing with Service Level Constraints, **Proceedings of the 2nd International Workshop on Lot Sizing**, 2011.
58. S. Küçükyavuz and D. Gade*, Algorithms and Strong Formulations for Production Planning with Service Level Constraints, **NSF ENG-CMMI Engineering Research and Innovation Conference Proceedings**, 2011.
59. S. Küçükyavuz, Mixed-Integer Optimization for Production Planning Under Uncertainty, **NSF ENG-CMMI Engineering Research and Innovation Conference Proceedings**, 2009.

BOOK CHAPTERS

60. S. Küçükyavuz and Q. Yu*, Mixed-Integer Programming Approaches to Generalized Submodular Optimization and its Applications, **INFORMS TutORials in Operations Research** (eds. E. Bish and H. Balasubramanian), 1-30, 2023.
61. S. Küçükyavuz and S. Sen, An Introduction to Two-Stage Stochastic Mixed-Integer Programming, **INFORMS TutORials in Operations Research** (eds. R. Batta and J. Peng), 1-27, 2017.
62. D. Gade* and S. Küçükyavuz, Pure Cutting Plane Algorithms and Their Convergence, **Wiley Encyclopedia of Operations Research and Management Sciences** (ed. J. J. Cochran), 1-11, 2013.
63. S. Küçükyavuz, Mixed-Integer Optimization Approaches to Deterministic and Stochastic Inventory Management, **INFORMS TutORials in Operations Research** (ed. J. Geunes), 90–105, 2011.

PATENT

64. United States Patent, US8745265, Interconnection Fabric Connection, J.W. Drew, J. Wilkes, C. O’Toole, D. Hagerman and S. Küçükyavuz, 2014.

GRANTS

- Co-Principal Investigator: *A Complex Challenge: Social Learning in the Age of Artificial Intelligence*, **Northwestern Institute on Complex Systems**, Northwestern University, with W. Brady and E-A. Horvat (co-PIs), \$15,000, 2023–2024.
- Principal Investigator: *Generalized Submodular Optimization: Theory, Algorithms, and Computation*, **Office of Naval Research** #N00014-22-1-2602, \$373,093, 2022–2025.
- Principal Investigator: *Collaborative Research: CIF: Small: Convexification-based Decomposition Methods for Large-Scale Inference in Graphical Models*, **National Science Foundation** CISE-CCF-CIF #2007814, with A. Gómez (PI at USC), Total: \$499,992, NU portion: \$249,990, 2020-2023.
- Principal Investigator: *Theoretical Foundations and Scalable Algorithms for Mixed-Integer Conic Optimization with System Choice*, **Office of Naval Research** #N00014-19-1-2321, with F. Kılınç-Karzan (subcontractor at CMU), Total: \$449,985, NU portion: \$224,989, 2019–2022.
- Co-Principal Investigator: *Sensing Material Properties as Nature Intends*, **Center for Engineering Sustainability and Resilience**, Northwestern University, with J. Hambleton (PI), \$60,000, 2020–2021.
- Principal Investigator: *Mixed-Integer Programming Approaches for Risk-Averse Multicriteria Optimization*, **National Science Foundation** ENG-CMMI-SMOR #1907463 (formerly #1537317, #1733001), \$258,582, 2015–2019.

Principal Investigator: *Collaborative Research: 2018 Mixed Integer Programming Workshop Poster Session, Greenville, South Carolina, June 18-21, 2018*, **National Science Foundation** ENG-CMMI-OE #1841303, with A. Gupte (PI at Clemson), Total: \$5,000, NU portion: \$2,500, 2018–2019.

Principal Investigator: *CAREER: Mixed-Integer Optimization under Joint Chance Constraints*, **National Science Foundation** ENG-CMMI-OR #1732364 (formerly #1055668), \$400,000, 2011–2017.

Principal Investigator: *Stochastic Mixed-Integer Optimization: Polyhedral Theory, Large-Scale Algorithms and Computations*, **National Science Foundation** ENG-CMMI-OR #1100383, with S. Sen, \$230,000, 2011–2012 (co-PI), 2012–2014 (PI).

Principal Investigator: *Mixed-Integer Optimization for Multi-Item, Multi-Echelon Production and Distribution Planning*, **National Science Foundation** ENG-CMMI-MES #0917952 (formerly #0824480), \$242,693, 2008–2012.

Principal Investigator: *Dynamic Optimization Approaches for Air Transportation Problems under Uncertainty*, **Center for Aviation Studies**, Ohio State University, \$25,000, 2012.

Co-Principal Investigator: *Opportunities for Graduate SIE Research through Industrial Partnerships*, Graduate Incentives for Growth Award, **Graduate College**, University of Arizona, with L. Lopes (PI) and G. Bayraksan (co-PI), \$26,572, 2008.

HONORS AND AWARDS

INFORMS Senior Member, 2024–present
INFORMS Fellow, 2023
Honorable Mention, Marguerite Frank Best Paper Prize, 2022
NU-INFORMS Graduate Teaching Award, 2019–2020, 2020–2021
National Science Foundation CAREER Award, 2011–2017
INFORMS Volunteer Service Award, 2016
INFORMS Computing Society (ICS) Prize (with S. Sen, D. Gade, J. Higle, L. Ntaimo, H. Sherali), 2015
Lumley Research Award, Ohio State University, 2014
Third place in INFORMS Junior Faculty Interest Group Paper Competition, 2009
Award for Excellence at the Student Interface, University of Arizona, 2008
International House Scholar, University of California, Berkeley, 1999–2000
Rafael Rodriguez Golden Age Scholar, University of California, Berkeley, 1998–1999

POSTDOCTORAL SUPERVISION

Merve Meraklı, Northwestern University
September 2018 - August 2019
First placement: Exxon-Mobil Research (Mathematical Optimization Computational Scientist)

PH.D. STUDENT SUPERVISION

Former Ph.D. Students

Linchuan Wei, Northwestern University
Dissertation title: Mixed-Integer Convex Quadratic Programs with Indicators: Theory, Algorithms, and Applications
Graduated: June 2024
Award: Nemhauser Student Paper Prize, 2021.
First placement: Université de Montréal (Postdoctoral Research Associate)

Qimeng (Kim) Yu, Northwestern University
Dissertation title: Generalized Submodular Optimization: Theory, Algorithms and Applications
Graduated: August 2023
Awards: MIP Workshop Student Poster Prize Honorable mention, 2022; Nemhauser Student Paper Prize, 2023.
First placement: Université de Montréal (Assistant Professor)

Hasan Manzour, University of Washington
Dissertation title: Mixed Integer Quadratic Optimization for Learning Directed Acyclic Graphs from Continuous Data

Graduated: December 2019 (co-advised by A. Shojaie)

First placement: Amazon (Research Scientist)

Hao-Hsiang Wu, University of Washington

Dissertation title: Stochastic Combinatorial Optimization with Applications in Graph Covering

Graduated: December 2018

First placement: National Yang Ming Chiao Tung University, Taiwan (Assistant Professor)

Merve Meraklı, University of Washington

Dissertation title: Risk-Averse Optimization in Multicriteria and Multistage Decision Making

Graduated: August 2018

First placement: Northwestern University (Postdoctoral Research Associate)

Xiao Liu, Ohio State University

Dissertation title: Integer Programming Approaches to Risk-Averse Optimization

Graduated: December 2016

Award: Runner-up in ICS Student Paper Prize, 2015

First placement: United Airlines (Senior Operations Research Analyst)

Pelin Damcı-Kurt, Ohio State University

Dissertation title: Mixed-Integer Programming Methods for Transportation and Power Generation Problems

Graduated: May 2014

First placement: Lightning Bolt Solutions (Senior Operations Research Engineer)

Minjiao Zhang, Ohio State University

Dissertation title: Polyhedral Approaches to Dynamic Decision Making under Uncertainty

Graduated: August 2013

Award: First place in George Nicholson Student Paper Competition, 2012

First placement: University of Alabama (Assistant Professor)

Dinakar Gade, Ohio State University

Dissertation title: Algorithms and Reformulations for Large-Scale Integer and Stochastic Integer Programs

Graduated: August 2012 (co-advised by S. Sen)

Award: First place in IIE Doctoral Colloquium Poster Competition, 2012

First placement: Iowa State University (Postdoctoral Research Associate)

Current Ph.D. Students

Akul Bansal, Fall 2020–2025 (expected)

Hsiao-Yu Hu, Fall 2022–2027 (expected)

Tong Xu, Fall 2022–2027 (expected)

Award: Arthur P. Hurter Outstanding First Year Ph.D. student, 2023.

M.S. THESIS SUPERVISION

Saunhya Goel, Ohio State University

Thesis title: Dynamic Probabilistic Lot Sizing with Service Level Constraints

Graduated: June 2011

First placement: Qualcomm (Senior Computational Engineer)

COURSES TAUGHT

External Short Courses

Vienna Graduate School on Computational Optimization, Faculty of Mathematics, University of Vienna, Jan 15-26, 2024, Vienna, Austria.

Summer School, The 22nd Conference on Integer Programming and Combinatorial Optimization, Georgia Institute of Technology, May 17-18, 2021, Atlanta, GA.

Northwestern University

IEMS 457 Integer Programming (G); Spring 2019, Winter 2021, Spring 2023

IEMS 454 Large-Scale Optimization (G); Winter 2020, 2022

IEMS 450-1 Mathematical Optimization (G); Fall 2018, 2019, 2020, 2021

IEMS 313 Foundations of Optimization (U); Fall 2019, 2020, 2021

University of Washington

IND E 412 Integer and Dynamic Programming (U); Spring 2017, 2018

IND E 599-B Integer Programming (G); Winter 2017

The Ohio State University

ISE 7210 Large-Scale Optimization (G); Spring 2014, 2016

ISE 3200 Linear and Integer Programming (U); Spring, Autumn 2013; Spring 2016

ISE 6220 Network Optimization (G); Spring 2015

ISE 5200 Linear Optimization (G); Autumn 2012

ISE 822 Integer Optimization Methods (G); Spring 2012

ISE 720 Linear Programming (G); Autumn 2009, 2010, 2011

ISE 894 Network Optimization (G); Winter 2009, 2010, Spring 2011

ISE 520 Fundamentals of Linear Optimization (U); Winter 2010, 2011, 2012

ISE 890 Seminar in Industrial Engineering (G); Academic Year 2010–2011

ISE 542 Production Systems III (U); Spring 2009

University of Arizona

SIE 644 Integer & Combinatorial Optimization (G); Fall 2006, Spring 2008

SIE 645 Nonlinear Optimization (G); Spring 2007

SIE 544 Linear Programming (G); Spring 2005, Fall 2007

SIE 340 Deterministic Models in OR (U); Fall 2007, 2008

SIE 321 Probabilistic Models in Operations Research (U); Spring 2006

SIE 463 Facilities & Production Systems (U); Fall 2004, 2005

SIE 462 Production System Analysis (U); Fall 2004, 2005

EDITORIAL BOARD MEMBERSHIP

Operations Research, 2024–present

Mathematics of Operations Research, 2018–present

Mathematical Programming, 2018–present

SIAM Journal on Optimization, 2021–present

MOS-SIAM Series on Optimization Classics Book Series, 2021–present

Wiley Encyclopedia of Operations Research and Management Science, 2011–present

Mathematical Programming Computation, 2018–2022

Service Science, 2014–2019

Naval Research Logistics, 2015–2018

Networks, 2014–2018

Journal of Global Optimization, 2014–2018

Computational Optimization and Applications, 2012–2018

RAIRO-Operations Research, 2014–2018

4OR, 2014–2016

PRIZE COMMITTEES

INFORMS Computing Society (ICS) Prize, 2024 (**Chair**)

INFORMS Optimization Society Farkas Prize, 2023

INFORMS Optimization Society Young Researcher Prize, 2017, 2021 (**Chair**)

Mathematical Optimization Society A.W. Tucker Prize, 2018 (**Chair**), 2021

INFORMS George Nicholson Student Paper Prize, 2016, 2018

INFORMS Optimization Society Student Paper Prize, 2012, 2013 (**Chair**)

INFORMS Junior Faculty Interest Group Paper Prize, 2012

INFORMS Poster Competition, 2011

REVIEWS

Research Proposal Review:

- National Science Foundation
- Office of Naval Research
- Air Force Office of Scientific Research
- Natural Sciences and Engineering Research Council of Canada (NSERC)
- Chilean National Science and Technology Commission (CONICYT)
- University of Washington Royalty Research Fund

Referee: Annals of Operations Research; Canadian Journal of Forest Research; Computational Optimization and Applications; Computers and Industrial Engineering; Computers and Operations Research; Discrete Applied Mathematics; Discrete Optimization; European Journal of Operational Research; IEEE Transactions on Power Systems; IIE Transactions; INFORMS Journal on Computing; International Journal of Operational Research; Journal of Global Optimization; Management Science; Mathematical Programming; Mathematical Programming Computation; Mathematics of Operations Research; Naval Research Logistics; Networks; Operations Research; Operations Research Letters; Optimization Letters; Optimization Methods and Software; Proceedings of Integer Programming and Combinatorial Optimization; Production and Operations Management; Service Science; SIAM Journal of Discrete Mathematics; SIAM Journal on Optimization.

PROFESSIONAL SERVICE

Co-chair: IISE Doctoral Colloquium Committee, 2024

Academic Advisory Board: University of Washington, Industrial and Systems Engineering, 2023–present

Chair: INFORMS Computing Society, 2020-2021

Chair-Elect: INFORMS Computing Society, 2018-2019

Co-Chair: INFORMS Subdivisions Council, Evaluating Data Needs Subcommittee, 2019

Board of Directors: INFORMS Computing Society, 2016–2018

Member: INFORMS Strategic Planning Committee, 2018

Member: INFORMS TutORials in Operations Research Editor-in-Chief Search Committee, 2017

Treasurer and Secretary: INFORMS Computing Society, 2012–2013

Invited panelist:

- Getting Research Grants, INFORMS Doctoral Student Colloquium, 2014
- Grant Writing for New Faculty, INFORMS Annual Meeting, 2013

CONFERENCE LEADERSHIP

Program Committee Member:

- Integer Programming and Combinatorial Optimization (IPCO), Madison, WI, 2023
- Integer Programming and Combinatorial Optimization (IPCO), Ann Arbor, MI, 2019
- International Symposium on Mathematical Programming (ISMP), Bordeaux, France, 2018

Emerging Topics Chair: INFORMS Annual Meeting, Seattle, WA, 2019

Cluster Co-chair:

- INFORMS Computing Society, INFORMS Annual Meeting, Seattle, WA, 2019
- INFORMS Computing Society Conference, Richmond, VA, 2015

Cluster Chair:

- INFORMS Computing Society, INFORMS Annual Meeting, Phoenix, AZ, 2018
- ALIO-INFORMS Joint International Meeting, Buenos Aires, Argentina, 2010

Scientific Program Committee Member: The XV International Conference on Stochastic Programming, Trondheim, Norway, 2019

Local Committee Chair: 11th Workshop on Mixed-Integer Programming, Columbus, OH, 2014

Program Committee Co-chair: INFORMS Midwest Conference, Columbus, OH, 2011

Organization Committee Member:

- 15th Workshop on Mixed-Integer Programming, Greenville, SC, 2018
- 6th Workshop on Mixed-Integer Programming, Berkeley, CA, 2009

- 5th Workshop on Mixed-Integer Programming, New York City, NY, 2008

Session Chair:

- International Symposium on Mathematical Programming, 2015, 2018
- INFORMS Computing Society Conference, 2013, 2017
- INFORMS Optimization Society Conference, 2014
- INFORMS National Meetings, 2006, 2008, 2009, 2011, 2012, 2016
- INFORMS Midwest Conference, 2011
- ALIO-INFORMS Joint International Meeting, 2010
- INFORMS Telecommunications Conference, 2008

UNIVERSITY SERVICE

- Provost's Committee on Honorary Degrees:* Northwestern University, 2023-present
- Master of Science in Analytics (MSiA) Deputy Director Search Committee:* Northwestern University, 2023
- Strategic Planning Committee:* Northwestern University, 2020-present; Ohio State University, 2011
- Faculty Search Committee:* Northwestern University, 2018-2019, 2019-2020 (Computer Science, external member), 2022-2023 (chair); University of Washington, 2016-2018; Ohio State University, 2015-2016
- Graduate Committee:* Northwestern University, 2018-present; University of Washington, 2016-2018; Ohio State University, 2009-2012, 2015-2016; University of Arizona, 2006-2008
- Undergraduate Advising:* Northwestern University, 2018-present
- Vice President's Data Science Research Networking Group on Climate Change:* Northwestern University, 2019-2020
- Nemhauser Awards Committee:* Northwestern University, 2018-2019, 2019-2020 (chair)
- IEMS Liaison:* Center for Engineering Sustainability and Resilience, Northwestern University, 2019
- Peer Evaluation of Teaching Committee:* University of Washington, 2016-2018; Ohio State University, 2012-2013
- Promotion and Tenure Subcommittee:* Ohio State University, 2013
- Chair Advisory Committee:* Ohio State University, 2012-2013
- Faculty Development Committee:* Ohio State University, 2012-2013
- Facilities and Computing Committee:* Ohio State University, 2012-2014
- Department Chair Search Committee:* Ohio State University, 2011
- Faculty Advisor:* Ohio State INFORMS Student Chapter, 2009-2011
- Graduate Faculty Representative:* Ohio State University, 2011, 2015, 2016.
- Organizer:* Operations Research Qualifier, Ohio State University, 2009, 2010
- Quarter to Semester Curriculum Committee:* Ohio State University, 2009
- Steering Committee Chair:* Modeling and Optimization Research and Education (MORE) Institute, University of Arizona, 2008

INVITED PLENARIES, KEYNOTES, AND TUTORIALS

- Mixed-Integer Convex Optimization for Causal Discovery*, Optimization Workshop: Theory, Algorithms, and Applications, Bogotá, Colombia, 2024 (**Keynote**).
- Mixed-Integer Programming Approaches to Generalized Submodular Optimization and its Applications* (with Q. Yu), INFORMS Annual Meeting, Phoenix, AZ, 2023 (**Tutorial**).
- Stochastic Submodular Optimization*, International Conference on Stochastic Programming, Davis, CA, 2023 (**Plenary**).
- New Perspectives on Mixed-Integer Convex Optimization with Applications in Statistical Learning*, International Symposium on Mathematical Programming (ISMP), virtual, 2022 (**Semi-plenary**).
- Strong Formulations for Joint Chance-Constrained Programs*, Modeling and Optimization: Theory and Algorithms (MOPTA), virtual, 2021 (**Plenary**).
- Markov Decision Processes Under Parameter Uncertainty with a Chance-constrained Programming Approach*, International Conference on Stochastic Programming, Trondheim, Norway, 2019 (**Semi-plenary**).
- Stochastic Graph Covering Models and Methods*, 22nd Combinatorial Optimization Workshop, Aussois, France, 2018 (**Distinguished Speaker**).

An Introduction to Two-Stage Stochastic Mixed-Integer Programming (with S. Sen), INFORMS Annual Meeting, Houston, TX, 2017 (**Tutorial**).

Mixed-Integer Optimization Approaches to Deterministic and Stochastic Inventory Management, INFORMS Annual Meeting, Charlotte, NC, 2011 (**Tutorial**).

INVITED SEMINARS

Computational Applied Mathematics and Operations Research, Rice University, November 2024.
Operations Research Center, Massachusetts Institute of Technology, October 2024.
Industrial and Operations Engineering Department, University of Michigan, September 2024.
Inaugural ISE Student Conference, University of Illinois Urbana-Champaign, April 2024 (**Keynote**).
Wm Michael Barnes '64 Department of Industrial and Systems Engineering, Texas A&M University, April 2024.
Industrial and Systems Engineering Department, University of Tennessee, Knoxville, April 2024.
Workshop in Operations/Management Science, Booth School of Business, University of Chicago, March 2024.
Industrial and Systems Engineering Department, University of Florida, March 2008, March 2024.
Milton Stewart School of Industrial and Systems Engineering, Georgia Institute of Technology, October 2023.
Operations Research and Financial Engineering Department, Optimization Seminar, Princeton University, April 2023.
Industrial Engineering and Operations Research Department, University of California, Berkeley, May 2012, November 2014, November 2016, November 2022.
Epstein Industrial and Systems Engineering Department, University of Southern California, March 2013, February 2019, October 2022.
Systems and Industrial Engineering Department (with S. Sen), University of Arizona, September 2021.
Statistics and Applied Probability Department, University of California, Santa Barbara, May 2021.
Engineering Management, Information, and Systems Department, Southern Methodist University, March 2021.
Mathematics of Data & Decisions Seminars, University of California, Davis, February 2021.
AdONE: Advanced Optimization in a Networked Economy Research Training Group, Technische Universität München, February 2021.
Industrial and Systems Engineering Department, University of Minnesota, December 2020.
Industrial and Systems Engineering Department, University of Wisconsin-Madison, October 2011, October 2019.
Center for Optimization and Statistical Learning, Northwestern University, May 2019.
Operations Research and Industrial Engineering Program, University of Texas, Austin, April 2019.
Leeds School of Business, University of Colorado, Boulder, March 2019.
Krannert School of Management, Purdue University, November 2018.
Industrial and Systems Engineering Department, University at Buffalo, November 2018.
Industrial Engineering and Management Sciences Department, Northwestern University, April 2012, December 2013, February 2017.
Industrial and Systems Engineering Department, University of Washington, February 2006, February 2016, November 2017.
Industrial Engineering Department, Middle East Technical University, Ankara, Turkey, December 2014.
Industrial Engineering Department, Bilkent University, Ankara, Turkey, December 2014, September 2010.
Computational Engineering Division, Lawrence Livermore National Laboratories, November 2014.
Industrial and Systems Engineering Department, Lehigh University, March 2011, January 2014.
Industrial and Operations Engineering Department, University of Michigan, September 2012.
Integrated Systems Engineering Department, Ohio State University, May 2008.
Combinatorics and Optimization Department, University of Waterloo, Ontario, Canada, February 2008.
Industrial Engineering Department, Arizona State University, October 2005.

INVITED CONFERENCE PRESENTATIONS

INFORMS Annual Meeting: Seattle, WA, October 2024; Phoenix, AZ, October 2023; Indianapolis, IN, October 2022; virtual, October 2021; virtual, November 2020; Seattle, WA, October 2019; Phoenix, AZ, November 2018; Houston, TX, October 2017; Nashville, TN, November 2016; Philadelphia, PA, November 2015; San Francisco, CA, November 2014; Minneapolis, MN, October 2013; Phoenix, AZ, October 2012; Charlotte, NC, November 2011; Austin, TX, November 2010; San Diego, CA, October 2009; Washington, D.C., October 2008; Seattle, WA, November 2007; Pittsburgh, PA, November 2006; San Francisco, CA, November 2005; Denver, CO, October 2004; Atlanta, GA, October 2003.

International Symposium on Mathematical Programming (ISMP): Montréal, Canada, July 2024; Bordeaux, France, July 2018; Pittsburgh, PA, July 2015; Berlin, Germany, August 2012; Chicago, IL, August 2009; Rio de Janeiro, Brazil, August 2006.

Mixed-Integer Nonlinear Optimization: A Hatchery for Modern Mathematics, Oberwolfach, Germany, August 2023.

SIAM Conference on Optimization (OP): Seattle, WA, May 2023; virtual, July 2021; Vancouver, Canada, May 2017; San Diego, CA, May 2014.

Mixed-Integer Programming (MIP) Workshop: Los Angeles, CA, May 2023; New Brunswick, NJ, May 2022 (poster); virtual, May 2021 (poster); virtual, May 2020 (poster); Cambridge, MA, July 2019; Columbus, OH, July 2014; Madison, WI, July 2013 (poster); Davis, CA, July 2012 (poster); Waterloo, Canada, June 2011 (poster); Atlanta, GA, July 2010.

Machine Learning NeEDS Mathematical Optimization, virtual, February 2023.

US and Mexico Workshop on Optimization and its Applications, Huatulco, Mexico, January 2023.

International Conference on Continuous Optimization (ICCOPT), Bethlehem, PA, August 2022.

INFORMS Optimization Society (IOS) Conference: Greenville, SC, March 2022; Denver, CO, March 2018; Princeton, NJ, March 2016; Houston, TX, March 2014; Miami, FL, February 2012; Atlanta, GA, March 2008.

21st Conference on Integer Programming and Combinatorial Optimization (IPCO), virtual, June 2020.

Discrete Optimization Talks (DOTs), virtual, May 2020.

Combinatorial Optimization Workshop: Aussois, France, January 2020; January 2014.

Mathematical Optimization of Systems Impacted by Rare, High-Impact Random Events, Providence, RI, June 2019.

Industrial and Systems Engineering Research Conference (ISERC): Orlando, FL, May 2018 (poster); Anaheim, CA, May 2016; Orlando, FL, May 2012; Vancouver, B.C., Canada, May 2008.

Amazon Supply Chain Optimization Faculty Summit, October 2017 (poster).

West Coast Optimization Meeting, Surrey, BC, Canada, September 2017.

European Conference on Stochastic Optimization (ECSO), Rome, Italy, September 2017.

INFORMS Computing Society Conference: Austin, TX, January 2017; Richmond, VA, January 2015; Santa Fe, NM, January 2013.

International Conference on Stochastic Programming (ICSP), Bergamo, Italy, July 2013.

Integer Programming Workshop, Valparasio, Chile, March 2012.

INFORMS Midwest Conference, Columbus, OH, August 2011.

International Workshop on Lot Sizing, İstanbul, Turkey, August 2011.

19th Triennial Conference of the International Federation of Operations Research Societies (IFORS), Melbourne, Australia, July 2011.

Integer Programming Down Under: Theory, Algorithms and Applications, Newcastle, Australia, July 2011.

Society of Industrial and Applied Mathematics (SIAM) Annual Meeting, Pittsburgh, PA, July 2010.

ALIO-INFORMS Joint International Meeting, Buenos Aires, Argentina, June 2010.

INFORMS Telecommunications Conference, College Park, MD, March 2008.

INFORMS International Meeting, Puerto Rico, July 2007.

Data-Driven Decisions Workshop, Ohio State University, Columbus, OH, November 2006.

EURO/INFORMS Joint International Meeting, İstanbul, Turkey, July 2003.