JEAN-PHILIPPE P. RICHARD
Professor

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A. SUMMARY

Jean-Philippe P. Richard is a professor in the Department of Industrial and Systems Engineering at the University of Minnesota where he serves as Director of Faculty and Academic Affairs. Prior to joining the University, Jean-Philippe held academic positions at Purdue and at the University of Florida where he was a UF term professor and PhD coordinator for Industrial and Systems Engineering.

His research interests are in the theoretical and computational aspects of mixed integer nonlinear optimization. He is particularly interested in convexification methods and polyhedral approaches to these problems. He is also interested in the application of these techniques in data, medicine, and transportation.

His research has been funded by NSF and AFOSR and he has carried cooperative research with several Class I railroads including UPRR and CSX. He is an associate editor for Mathematics of Operations Research, JOGO, IISE Transactions, and Optimization Letters. He is the recipient of an NSF CAREER award, multiple teaching awards, and a best application paper award from II(S)E Transactions.

B. EDUCATION & PROFESSIONAL EXPERIENCE

B.1. DEGREES

1998 - 2002 — **Ph.D. in Algorithms, Combinatorics and Optimization** — **@GT**
School of Industrial and Systems Engineering
Georgia Institute of Technology
Atlanta, GA
Dissertation title: "Lifted Inequalities for 0-1 Mixed Integer Programming"
Advisor: George L. Nemhauser

1993 - 1998 — **Bachelor of Science in Applied Mathematics Engineering** — **@UCL**
Faculté des Sciences Appliquées
Université Catholique de Louvain
Louvain-La-Neuve, Belgium
Thesis title: "Problèmes de Production Multi-Niveaux en Temps Continu (Continuous Time Multi-level Production Problems)"
Advisor: Laurence A. Wolsey

B.2. PROFESSIONAL EXPERIENCE

2018 - Present — **Professor** — **@UMN**
Department of Industrial and Systems Engineering, University of Minnesota, Minneapolis, MN

2015 - 2018 — **Professor** — **@UF**
Department of Industrial and Systems Engineering, University of Florida, Gainesville, FL

2008 - 2015 — **Associate Professor** — **@UF**
Department of Industrial and Systems Engineering, University of Florida, Gainesville, FL

2002 - 2008 — **Assistant Professor** — **@Purdue**
School of Industrial Engineering, Purdue University, West Lafayette, IN

1998 - 2002 — **Research Assistant** — **@GT**
School of Industrial and Systems Engineering, Georgia Institute of Technology, Atlanta, GA

Spring 2002 — **Instructor** — **@GT**
School of Industrial and Systems Engineering, Georgia Institute of Technology, Atlanta, GA

Fall 2001 — **Teaching Assistant** — **@GT**
School of Industrial and Systems Engineering, Georgia Institute of Technology, Atlanta, GA

Summer 2000	**Intern** Axioma Inc., Marietta, GA
Summer 1999	**Intern** Norfolk Southern, Atlanta, GA
Summer 1996	**Intern** PCPM, Louvain-La-Neuve, Belgium

C. HONORS, AWARDS, & RECOGNITIONS

2024-2025	CSE and CBS Leads Leadership Program, UMN	**@UMN**
2023	Penrose Excellence in Teaching Award, ISyE, UMN	**@UMN**
2022	Thank a teacher note, CEI, UMN	**@UMN**
2021	Thank a teacher note, CEI, UMN	**@UMN**
2019	Thank a teacher note, CEI, UMN	**@UMN**
2018	Outstanding Faculty Member Award, OEM program,	**@UF**
2017-2019	University of Florida Term Professorship,	**@UF**
2008	IIE Transactions Best Application Paper Award	**@Purdue**
2007-2008	First Place, Pritsker Outstanding Undergraduate Teaching Award, School of Industrial Engineering, Purdue University,	**@Purdue**
2007-2008	Industrial Engineering Nominee, Potter Outstanding Undergraduate Teaching Award, College of Engineering, Purdue University	**@Purdue**
2006-2007	Industrial Engineering Nominee, Murphy Outstanding Undergraduate Teaching Award, Purdue University	**@Purdue**
2006-2007	First Place, Pritsker Outstanding Undergraduate Teaching Award, School of Industrial Engineering, Purdue University	**@Purdue**
2006-2007	First Place, James H. Greene Graduate Educator Award, School of Industrial Engineering, Purdue University	**@Purdue**
2005-2006	Second Place, Pritsker Outstanding Undergraduate Teaching Award, School of Industrial Engineering, Purdue University	**@Purdue**
2004-2005	First Place, James H. Greene Graduate Educator Award, School of Industrial Engineering, Purdue University	**@Purdue**
2004-2005	Third Place, Pritsker Outstanding Undergraduate Teaching Award, School of Industrial Engineering, Purdue University	**@Purdue**
2004	NSF CAREER award	**@Purdue**
2003	Sigma Xi Best Ph.D. Thesis Award, Georgia Institute of Technology, Atlanta	**@Purdue**
2001	INFORMS Doctoral Colloquium, Miami	**@GT**

D. GRANTS AND CONTRACTS

09/24-08/27 **@UMN**

"Collaborative Research: Models and Algorithms for Family Medicine Residency Scheduling with Clinic First Objectives**."**
Sponsor: National Science Foundation
Role: co-PI
Award Amount: $163,731.00 (JPR's share)

10/23 - 09/26 **@UMN**

"Collaborative Research: Disrupting West Virginia's opioid crisis: a multi-disciplinary approach through interdiction and harm reduction**."**
Sponsor: National Science Foundation
Role: PI
Award Amount: $238,665.00 (JPR's share)

08/23-07/26 **@UMN**

"Novel Models and Methods for Optimization Problems with Tree Ensembles Embedded**."**
Sponsor: Airforce Office of Scientific Research
Role: PI
Award Amount: $379,837.00

08/17-07/22 **@UF/UMN**

"Collaborative Research: Novel Relaxations for Cardinality-constrained Optimization Problems with Applications in Network Interdiction and Data Analysis.**."**
Sponsor: Sponsor: National Science Foundation
Role: PI
Award Amount: $351,017.00 (JPR's share)

08/12-07/16 **"**Collaborative Research: Novel Tighter Relaxations for Complementarity Constraints with Applications to Nonlinear and Bilevel Programming**."** **@UF**
Sponsor: National Science Foundation
Role: PI
Award Amount: $213,816.00 (JPR's share)

05/12-05/17 **"**New Modeling and Solution Paradigms for Transportation Problems with Applications to Railroads**."** **@UF**
Sponsor: National Science Foundation
Role: PI
Award Amount: $233,134.00

02/12-12/12 **"**Incorporating Stochasticity in an Improved Optimization-Based Decision Support System for Coal/Bulk Monthly Reservations Planning**."** **@UF**
Sponsor: CSX Transportation
Role: PI
Award Amount: $48,000

02/11-01/12 **"**Optimization-based Decision Support System for Coal/Bulk Monthly Reservations Planning**."** **@UF**
Sponsor: CSX Transportation
Role: PI
Award Amount: $37,000

07/09-06/12 **"**Collaborative Research: Generating Stronger Cuts for Nonlinear Programs Via Orthogonal Disjunctions and Lifting Techniques**."** **@UF**
Sponsor: National Science Foundation
Role: PI
Award Amount: $202,689 (JPR's share)

06/07-05/08 **"**Cutting Planes Techniques in Nonlinear Programming**."** **@Purdue**
Sponsor: Purdue Research Foundation
Role: PI
Award Amount: $14,627

09/04-08/06 **"**Vulnerability Assessment and Mitigation for Water Infrastructure Systems Against Intentional Physical Attacks**."** **@Purdue**
Sponsor:
Role: PI (50%), co-PI Mark Lawley
Award Amount: $14,979

01/04-12/04 **"**Improving the Assignment of Empty Cars in the UPRR Network**."** **@Purdue**
Sponsor: Union Pacific RailRoad
Role: PI
Award Amount: $52,396.70

01/04-12/08 **"**CAREER: Improving the Optimization and Re-Optimization of Mixed Integer Programs through the Study of Continuous Variables**."** **@Purdue**
Sponsor: National Science Foundation
Role: PI
Award Amount: $400,000

E. PUBLICATIONS

■ *E.1. BOOK CHAPTERS*

1. J.-P. P. Richard, "Optimization models and methods," *Maynard's Industrial and Systems Engineering Handbook, 6th Edition*, 2023.
2. J.-P. P. Richard, "Inequalities from group relaxations," *Wiley Encyclopedia of Operations Research and Management Science*, 2011.
3. J.-P. P. Richard, "Lifting techniques for mixed integer programming," *Wiley Encyclopedia of Operations Research and Management Science*, 2011.
4. J.-P. P. Richard and S. Dey, "The group-theoretic approach to mixed integer programming," in *50 Years of Integer Programming 1958-2008*, eds Junger et al., Springer, 727-801, 2010.

■ *E.2. FULL ARTICLES IN REFEREED PUBLICATIONS*

5. J. Kim, J.-P. P. Richard, and M. Tawarmalani, "A reciprocity between tree ensemble optimization and multilinear optimization," accepted for publication, *Operations Research*, 2024.
6. J. Kim, J.-P. P. Richard, and M. Tawarmalani, "Piecewise polyhedral relaxations of multilinear optimization," accepted for publication, *SIAM Journal on Optimization*, 2024.
7. A. Goyal and J.-P. P. Richard, "Globally Solving a Class of Bilevel Programs with Spatial Price Equilibrium Constraints," accepted for publication, *Optimization Letters*, 2024.
8. A. Bansal, J.-P. P. Richard, B. P. Berg, and Y. Huang, "A sequential follower refinement algorithm for robust surgery scheduling," *INFORMS Journal on Computing*, **36**, 918-937, 2024.
9. X. Gu, S. S. Dey, and J.-P. P. Richard, "Solving sparse separable bilinear programs using lifted bilinear cover inequalities," accepted for publication, *INFORMS Journal on Computing*, **36**, 884-899, 2024.
10. N. Mirzavand Boroujeni, J.-P. P. Richard, D. Sterling, and C. Wilke, "A novel linear network-based optimization model for high dose radiation brachytherapy," *Physics in Medicine & Biology*, **68**, 175018, 2023.
11. A. Estes and J.-P. P. Richard, "Smarter predict-then-optimize for two-stage linear programs with side information," *INFORMS Journal on Optimization*, **5**, 295-320, 2023.
12. X. Gu, S. S. Dey and J.-P. P. Richard, "Lifting convex inequalities for bipartite bilinear programs," *Mathematical Programming*, **197**, 587–619, 2023.
13. J. Kim, M. Tawarmalani, and J.-P. P. Richard, "Convexification of permutation-invariant sets and an application to sparse principal component analysis," *Mathematics of Operations Research*, **47**, 2547-2584, 2022.
14. J. Zhu, J. Ming, J.-P. Richard, R. Qin, "Distributionally robust optimization for fire station location under uncertainties," *Scientific Reports*, **12**, 5394, 2022.
15. J. Ming, J.-P. P. Richard, and J. Zhu, "A facility location and allocation model for cooperative fire services," *IEEE Access*, **9**, 90908 – 90918, 2021.
16. T. T. Nguyen, J.-P. P. Richard, and M. Tawarmalani, "Convexification techniques for linear complementarity constraints," *Journal on Global Optimization*, **80**, 249-286, 2021.
17. J. Kim, M. Tawarmalani, and J.-P. P. Richard, "On cutting planes for cardinality-constrained optimization problems," *Mathematical Programming*, **178**, 417-448, 2019.
18. D. Davarnia, J.-P. P. Richard, E. Icyuz-Ay, and B. Taslimi, "Network models with unsplittable node flows with application to unit train scheduling," *Operations Research*, **67**, 1053-1068, 2019.
19. T. T. Nguyen, J.-P. P. Richard, and M. Tawarmalani, "Deriving convex hulls through lifting and projection," *Mathematical Programming*, **169**, 377-415, 2018.
20. D. Davarnia, J.-P. P. Richard, and M. Tawarmalani, "Simultaneous convexification of bilinear functions over polytopes with application to network interdiction," *SIAM Journal on Optimization*, **27**, 1801-1833, 2017.
21. A. N. Arslan, J.-P. P. Richard, and Y. Guan, "On the polyhedral structure of two-level lot-sizing problems with supplier selection," *Naval Research Logistics*, **8**, 647-666, 2016.
22. I. Icyuz-Ay, J.-P. P. Richard, E. Eskigun and D. Acharya, "A two-model solution approach for the monthly coal train reservations planning problem," *Transportation Science*, **50**, 926-946, 2016.
23. Y. Tang, J.-P. P. Richard, and J. C. Smith, "A class of algorithms for mixed-integer bilevel min-max optimization," *Journal on Global Optimization*, **66**, 225-262, 2016.
24. D. L. Burchett and J.-P. P. Richard, "Multi-commodity variable upper bound flow models," *Discrete Optimization*, **17**, 89-122, 2015.
25. A. Diabat and J.-P. P. Richard, "An integrated supply chain problem: a nested lagrangian relaxation approach," *Annals of Operations Research*, **229**, 303-323, 2015.
26. K. H. Chung, J.-P. P. Richard, and M. Tawarmalani, "Lifted inequalities for 0-1 mixed-integer bilinear covering sets," *Mathematical Programming*, **145**, 403-450, 2014.
27. T. Le, A. Diabat, J.-P. P. Richard, and Y. Yih, "A column generation-based heuristic algorithm for an inventory routing problem with perishable product," *Optimization Letters*, **7**, 1481-1502, 2013.
28. M. Tawarmalani, J.-P. P. Richard, and C. X. Xiong, "Explicit convex and concave envelopes through polyhedral subdivisions," *Mathematical Programming*, **138**, 531-577, 2013.
29. A. Diabat, J.-P. P. Richard, and C. W. Codrington "A Lagrangian relaxation approach to simultaneous strategic and tactical planning in supply chain design," *Annals of Operations Research*, **203**, 55-80, 2013.

30. J. P. Turner, J. Qiao, M. Lawley, J.-P. Richard, and D. Abraham, "Mitigating shortage and distribution in damaged water networks," *Socio-Economic Planning Sciences*, **46**, 315-326, 2012.

31. A. T. Tuncel, F. Preciado-Walters, R. L. Rardin, M. Langer, and J.-P. P. Richard, "Strong valid inequalities for fluence map optimization problems under dose-volume restrictions," *Annals of Operations Research*, **196**, 819-840, 2012.

32. A. Narisetty, J.-P. P. Richard, and G. L. Nemhauser "Lifted tableaux inequalities for 0-1 mixed-integer programs: a computational study," *Informs Journal on Computing*, **23**, 416-424, 2011.

33. B. Zeng and J.-P. P. Richard, "A polyhedral study on 0-1 knapsack problems with disjoint cardinality constraints: strong valid inequalities by sequence-independent lifting," *Discrete Optimization*, **8**, 259-276, 2011.

34. B. Zeng and J.-P. P. Richard, "A polyhedral study on 0-1 knapsack problems with disjoint cardinality constraints: facet-defining inequalities by sequential lifting," *Discrete Optimization*, **8**, 277-301, 2011.

35. M. Tawarmalani , J.-P. P. Richard, and K. H. Chung. "Strong valid Inequalities for orthogonal disjunctions and bilinear covering sets," *Mathematical Programming*, **124**, 481-512, 2010.

36. S. Dey and J.-P. P. Richard, "Relations between facets of low- and high-dimensional group problems," *Mathematical Programming*, **123**, 285-313, 2010.

37. J.-P. P. Richard and M. Tawarmalani, "Lifting inequalities: a framework for generating strong cuts in nonlinear programming," *Mathematical Programming*, **121**, 61-104, 2010.

38. S. Dey, J.-P. P. Richard, Y. Li, and L. Miller, "On the extreme inequalities of infinite group problems," *Mathematical Programming*, **121**, 145-170, 2010.

39. S. Dey and J.-P. P. Richard, "A cut improvement procedure and its application to primal cutting plane algorithms," *INFORMS Journal on Computing*, **21**, 137-150, 2009.

40. C. A. Arboleda, D. M. Abraham, J.-P. P. Richard, and R. Lubitz, "Vulnerability assessment of health care facilities during disaster events," *ASCE Journal of Infrastructure Systems*, **15**, 149-161, 2009.

41. J.-P. P. Richard, Y. Li, and L. Miller, "Valid inequalities for MIPs and group polyhedra from approximate liftings," *Mathematical Programming*, **118**, 253-277, 2009.

42. A. Narisetty, J.-P. P. Richard, D. Ramcharan, D. Murphy, G. Minsk, and J. Fuller, "An optimization model for empty freight car assignment at Union Pacific Railroad," *Interfaces*, **38**, 89-102, 2008.

43. M. Lawley, V. Parmeshwaran, J.-P. P. Richard, A. Turkcan, A. Dalal, and D. Ramcharan. "A time-space scheduling model for optimizing recurring bulk railcar deliveries," *Transportation Research Part B Methodological*, **42**, 438-454, 2008.

44. L. A. Miller, Y. Li, and J.-P. P. Richard, "New families of facets of finite and infinite group problems from approximate lifting," *Naval Research Logistics* **55**, 172-191, 2008.

45. Y. Li and J.-P. P. Richard, "Cook, Kannan and Schrijver's example revisited," *Discrete Optimization*, **5**, 724-734, 2008.

46. S. Dey and J.-P. P. Richard, "Facets of two-dimensional infinite group problems," *Mathematics of Operations Research*, **33**, 140-166, 2008.

47. J. Qiao, H.S. Jeong, M. Lawley, J.-P. P. Richard, D.M. Abraham, and Y. Yih, "Allocating security resources in water infrastructure," *IIE Transactions*, **39**, 95-109, 2007.

48. M. U. Thomas and J.-P. P. Richard, "Warranty based method for establishing reliability improvement targets," *IIE Transactions*, **38**, 1049-1058, 2006.

49. H.S. Jeong, J. Qiao, D.M. Abraham, M. Lawley, J.-P. P. Richard, and Y. Yih, "Minimizing the consequences of intentional attack on water infrastructure," *Computer-Aided Civil and Infrastructure Engineering*, **21**, 79-92, 2006.

50. J.-P. P. Richard, I. R. de Farias, and G.L. Nemhauser, "Lifted inequalities for 0-1 mixed integer programming: basic theory and algorithms," *Mathematical Programming*, **98**, 89-113, 2003.

51. J.-P. P. Richard, I. R. de Farias, and G.L. Nemhauser, "Lifted inequalities for 0-1 mixed integer programming: superlinear lifting," *Mathematical Programming*, **98**, 115-143, 2003.

■ *E.3. REFEREED CONFERENCE OR SYMPOSIUM PROCEEDINGS*

52. X. Gu, S. Dey, and J.-P. P. Richard, "Lifting Convex inequalities for bipartite bilinear programs," in M. Singh & David P. Williamson (Eds.): *Integer Programming and Combinatorial Optimization 22. Lecture Notes in Computer Science* **12707**, 148-162, 2021.

53. T. T. Nguyen, M Tawarmalani, and J.-P. P. Richard, "Convexification techniques for linear complementarity constraints," in O. Günlük & G. J. Woeginger (Eds.): *Integer Programming and Combinatoral Optimization 15. Lecture Notes in Computer Science* **6655**, 336-348, 2011.

54. A. Diabat and J.-P. P. Richard, "Optimization modeling of an integrated supply chain network," in Proceedings of the 2009 IEEE IEEM. Proceedings, 518-522, 2009. Proceedings available online with IEEE Xplore.

55. B. Zeng and J.-P. P. Richard, "A framework to derive multidimensional superadditive lifting functions and its applications", in M. Fischetti & D. P. Williamson (Eds.), *Integer Programming and Combinatorial Optimization 12. Lecture Notes in Computer Science* **4513**, 210-224, 2007.

56. S. Dey and J.-P. P. Richard, "Sequential-Merge Facets of the two-dimensional group problem", in M. Fischetti & D. P. Williamson (Eds.), *Integer Programming and Combinatorial Optimization 12. Lecture Notes in Computer Science* **4513**, 30-42, 2007.

57. C.A. Arboleda, D.M. Abraham, J.-P. P. Richard, and R. Lubitz, "Impact of interdependencies between infrastructure systems in the operation of heath care facilities during disaster events," in *Proceedings of the Joint International Conference on Computing and Decision Making in Civil and Building Engineering*, 2006 (proceedings on CD-ROM, ISBN 2921145588).

58. H.S. Jeong, J. Qiao, D.M. Abraham, M. Lawley, J.-P. P. Richard, and Y. Yih, "A consequence mitigation model for water networks subject to intentional physical attacks," in L. Soibelman & F. Pena-Mora (Eds.), *Proceedings of the 2005 ASCE International Conference of Computing in Civil Engineering*, 2005.

59. H. S. Jeong, D. M. Abraham, J. Qiao, M. Lawley, J.-P. P. Richard, and Y. Yih, "Issues in risk management of water networks against intentional attacks," in J.J. Galleher & M.T. Stift (Eds.), *Proceedings of the 2004 ASCE International Conference on Pipeline Engineering and Construction*, 2004.

60. J.-P. P. Richard, I. R. de Farias, and G.L. Nemhauser, "A simplex based algorithm for 0-1 mixed integer programming," in M. Junger, G. Reinelt & G. Rinaldi (Eds.), *Combinatorial Optimization – Eureka, You Shrink! Lecture Notes in Computer Science* **2570**, 158-170, 2003.

61. J.-P. P. Richard, I. R. de Farias, and G.L. Nemhauser, "Lifted inequalities for 0-1 mixed integer programming: basic theory and algorithms," in W. J. Cook & A. S. Schulz (Eds.), *Integer Programming and Combinatorial Optimization 9. Lecture Notes in Computer Science* **2337**, 161-175, 2002.

■ *E.4. WORKING PAPERS*

[Complete Draft]

62. A. Bansal, J.-P. P. Richard, B. P. Berg, and Y. Huang, "Mixed Integer Linear Porgramming Formulations for Robust Surgery Scheduling," target journal, *Naval Research Logisitics*.

63. J.-P. P. Richard, M. Tawarmalani, and J. Kim, "Convexification of 0-1 mixed integer programs with logical or sparsity constraints," target journal, *Mathematical Programming*.

64. N. Mirzavand Boroujeni, J.-P. P. Richard, D. Sterling, and C. Wilke, "An approach for channel placement in 3D-printed masks for high-dose brachytherapy," target journal, *INFORMS Journal on Computing*.

F. PRESENTATIONS

■ *F.1. INVITED PRESENTATIONS*

[Short Course]

1. "Cutting planes for MINLP," Mixed Integer Programming Workshop Summer School, Lexington, 2024. [link]

[National & International Conferences]

1. "Convexification Techniques For Logical Implication Constraints Involving Cardinality Requirements," with M. Tawarmalani and J. Kim, *INFORMS Annual Meeting*, Phoenix, 2023.
2. "Permutation Invariance In 0-1 Mixed Integer Programming," with J. Kim and M. Tawarmalani, *INFORMS Annual Meeting*, (Online), 2020.

3. "On unsplittable flow structures arising in the rail transportation of coal," *4th NYUAD Transportation Symposium*, Abu Dhabi, 2018.
4. "Computational evaluation of new models for tree ensembles optimization," with B. Taslimi, J. Kim, and M. Tawarmalani, *INFORMS Annual Meeting*, Phoenix, 2018.
5. "Computational evaluation of new MIP models for tree ensembles optimization," with J. Kim, B. Taslimi and M. Tawarmalani, *International Symposium on Mathematical Programming*, Bordeaux, 2018.
6. "Polyhedral results for combinatorially-constrained network flows," with D. Davarnia, *INFORMS Annual Meeting*, Nashville, 2016.
7. "On the equate-and-relax procedure for LPCCs," with T. Nguyen and M. Tawarmalani, *INFORMS Annual Meeting*, San Francisco, 2014.
8. "On the convex hull of some nonlinear sets," with T. Nguyen and M. Tawarmalani, *INFORMS Annual Meeting*, Minneapolis, 2013.
9. "Polyhedral results for unsplittable flow problems," with E. Icyuz, *INFORMS Annual Meeting*, Minneapolis, 2013.
10. "Pseudo-superadditive lifting," with A. K. Narisetty, *INFORMS Annual Meeting*, Phoenix, 2012.
11. "Relations between 0-1 mixed integer bilinear covering sets and fixed-charge flow sets," with K. Chung and M. Tawarmalani, *INFORMS Annual Meeting*, Charlotte, 2011.
12. "Lifted inequalities for 0-1 MIPs from multiple constraints," with B. Zeng, *INFORMS Annual Meeting*, Austin, Texas, 2010.
13. "Generalized MIR cuts: results and computation," with Y. Park and S. Dey, *INFORMS Annual Meeting*, San Diego, 2009.
14. "Strong valid inequalities for orthogonal disjunctions and polynomial covering sets," with M. Tawarmalani and K.H. Chung, *International Symposium on Mathematical Programming*, Chicago, 2009.
15. "A computational study of generalized MIR cuts," with Y. Park and S. Dey, *International Symposium on Mathematical Programming*, Chicago, 2009.
16. "MIP techniques in global optimization," *Integer Programming at CORE conference*, Louvain-La-Neuve, Belgium, 2009.
17. "Generalized MIR cuts," with S. Dey, *INFORMS Annual Meeting*, Washington, 2008.
18. "Generalized MIR cuts," with S. Dey, *INFORMS Optimization Society Conference*, Atlanta, 2008.
19. "Lifting and group approaches to MIP," *INFORMS Optimization Society Conference*, Atlanta, 2008.
20. "Strengthened GMICs for 0-1 mixed integer programs," *INFORMS Annual Meeting*, Seattle, 2007.
21. "Strong valid inequalities for 0-1 knapsack sets with cardinality constraints," with B. Zeng, *INFORMS International Meeting*, Puerto Rico, 2007.
22. "Facets of two-dimensional group problems," with S. Dey, *INFORMS International Meeting*, Puerto Rico, 2007.
23. "Strengthened GMICs for 0-1 mixed integer programs," *INFORMS International Meeting*, Puerto Rico, 2007.
24. "MIP lifting techniques for mixed integer nonlinear programs," with M. Tawarmalani, *INFORMS Annual Meeting*, San Francisco, 2005.
25. "Deriving strong inequalities for group polyhedra through approximate lifting," with Y. Li and L. Miller, *INFORMS Annual Meeting*, San Francisco, 2005.
26. "Approximate lifting for integer programming," *INFORMS Annual Meeting*, Denver, 2004.
27. "Approximate superlinear lifting of continuous variables," *INFORMS Annual Meeting*, Denver, 2004.
28. "Strengthening group polyhedra-derived cuts for mixed integer programs through lifting," with Y. Li and L. Miller, *INFORMS Annual Meeting*, Denver 2004.
29. "Lifted inequalities for 0-1 mixed integer programming: theory and computation," with I. R. de Farias and G. L. Nemhauser, *INFORMS Annual Meeting*, San Jose, 2002.
30. "Lifted inequalities for 0-1 mixed integer programming," with I. R. de Farias and G. L. Nemhauser, *Ninth Conference on Integer Programming and Combinatorial Optimization (IPCO2002)*, Boston, 2002.

31. "Lifted inequalities for 0-1 mixed integer programming," with I. R. de Farias and G. L. Nemhauser, *INFORMS Annual Meeting*, Miami, 2001.

[Departmental Seminars]

1. "Solving tree ensemble optimization problems with improved formulations," with J. Kim and M. Tawarmalani, Departmental Seminar, Sauder School of Business, *University of British Columbia*, October 2022.
2. "Convexification using permutation invariance: from 0-1 mixed integer programming to global optimization," with J. Kim and M. Tawarmalani, Departmental Seminar, School of Management and Engineering, *Nanjing University* (Online), November 2020.
3. "Objective-aligned regression for two-stage linear programs," with A. Estes, Departmental Seminar, Industrial and Systems Engineering, *Texas A&M*, February 2020.
4. "On the convexification of permutation-invariant sets arising in MINLP and data problems," with J. Kim and M. Tawarmalani, Operations Research Seminar, Department of Mathematics, *Simon Fraser University*, April 2019.
5. "On convexification techniques and convex relaxations for cardinality constraints," with J. Kim and M. Tawarmalani, Departmental Seminar, Industrial and Enterprise Systems Engineering, *University of Illinois*, March 2018.
6. "On cutting planes for cardinality-constrained linear programs," with J. Kim and M. Tawarmalani, Departmental Seminar, Industrial and Systems Engineering, *University of Wisconsin*, March 2017.
7. "On cutting planes for cardinality-constrained linear programs," with J. Kim and M. Tawarmalani, Departmental Seminar, Graduate School of Industrial Administration, *Carnegie Mellon University*, May 2016.
8. "Improved formulations for network interdiction through envelopes of bilinear functions over polytopes," with D. Davarnia and M. Tawarmalani, Departmental Seminar, Department of Applied Mathematics and Statistics, *John Hopkins University*, April 2015.
9. "Cutting planes and convexification techniques for linear complementarity constraints," with D. Davarnia and M. Tawarmalani, Operations Research Seminar, CORE, *Université Catholique de Louvain*, October 2014.
10. "Convexification techniques for linear complementarity constraints," with T. Nguyen and M. Tawarmalani, Realopt Seminar, Université de Bordeaux, January 2013.
11. "Convexification techniques for linear complementarity constraints," with T. Nguyen and M. Tawarmalani, Departmental Seminar, Industrial Engineering, *University of Pittsburgh*, November 2012.
12. "Convexification techniques for linear complementarity constraints," with T. Nguyen and M. Tawarmalani, OR Colloquium, ISyE, *Georgia Institute of Technology*, December 2011.
13. "Explicit convex and concave envelopes via polyhedral subdivisions," with M. Tawarmalani and C. Xiong, Colloquium, Department of Computational and Applied Mathematics, *Rice University*, October 2010.
14. "Lifted Inequalities for mixed integer (nonlinear) programs," with B. Zeng, A. Narisetty, M. Tawarmalani, and K. Chung, Seminar, *SAS Institute*, Raleigh, North Carolina, November 2010.
15. "The group approach in integer programming," Algorithms Theory Seminar, CISE, *University of Florida*, Fall 2008.
16. "Strong inequalities for integer programs with multiple constraints," with S. Dey and B. Zeng, Seminar, *IBM T.J. Watson Research Center*, December 2006.
17. "New results on group problems," with S. Dey, Y. Li, and L. Miller, "Mixed and Integer Programming - The Way Forward", Louvain-La-Neuve, Belgium, May 2006.
18. "Deriving strong inequalities for group polyhedra through approximate lifting," with Y. Li and L. Miller, Praxair Seminar Series, *State University of New York at Buffalo*, 2005.

[Workshops]

1. "A reciprocity between tree ensemble optimization and multilinear optimization," with J. Kim and M. Tawarnalani, *Mixed Integer Programming Workshop*, DIMACS, Rutgers University, 2022.
2. "Convex envelopes in MINLP: classical results and new developments," *Twentieth Combinatorial Optimization Workshop*, Aussois, France, 2016.
3. "Improved formulations for network interdiction through envelopes of bilinear functions over polytopes," with D. Davarnia and M. Tawarmalani, *Mixed Integer Programming Workshop*, Chicago, 2015.

4. "On the KKT formulation of network interdiction problems," with D. Davarnia and M. Tawarmalani, *Workshop on Mixed Integer Nonlinear Programming*, Pittsburgh, 2014.
5. "On the convex hull of some nonlinear sets," with T. Nguyen and M. Tawarmalani, *Eighteenth Combinatorial Optimization Workshop*, Aussois, France, 2014.
6. "Strong inequalities for polynomial covering sets via orthogonal disjunctions," with M. Tawarmalani, *Workshop on Integer Programming*, Valparaiso, Chile, 2012.
7. "Explicit convex and concave envelopes via polyhedral subdivisions," with M. Tawarmalani and C. Xiong, *Workshop on Mixed Integer Programming*, Atlanta, Georgia, 2010.
8. "The group-theoretic approach for the generation of cutting planes in MIP: theory, computation and perspective," *Twelfth Combinatorial Optimization Workshop*, Aussois, France, 2008.
9. "Extending MIP Lifting techniques to nonlinear programs," with M. Tawarmalani, *Workshop on Mixed Integer Programming*, Miami, 2006.
10. "Lifted inequalities from simplex tableaux," *Discussions on Mixed Integer Programming (GIMME IP 2003)*, Columbia University, New York, 2003.
11. "0-1 mixed integer programming: new cuts and a Gomory-like algorithm," with I. R. de Farias and G. L. Nemhauser, *Fifth Combinatorial Optimization Workshop*, Aussois, France, 2001.

■ *F.2. PRESENTATIONS BY CO-AUTHORS AND PH.D STUDENTS*

1. "Piecewise Polyhedral Relaxations of Multilinear Optimization," presented by M. Tawarmalani with J. Kim, and J.-P. P. Richard, *International Symposium on Mathematical Programming*, Montréal, 2014.
2. "Optimizing channels placement in 3D printed masks for high dose rate brachytherapy (HDR-BT)" presented by N. Mirzavand Boroujeni with J.-P. P. Richard, D. Sterling, and C. Wilke, *INFORMS Annual Meeting*, Indianapolis, 2022.
3. "Mixed-integer linear programming formulations for the robust surgery scheduling problem" presented by A. Bansal with J.-P. P. Richard, B. Berg, and Y.-L. Huang, *INFORMS Annual Meeting*, Indianapolis, 2022.
4. "Lifting convex inequalities For bipartite bilinear programs" presented by X. Gu with S. Dey and J.-P. P. Richard, *INFORMS Annual Meeting*, Anaheim, 2021.
5. "On SDP relaxations for sparse principal component analysis" presented by J. Kim with M. Tawarmalani and J.-P. Richard, *INFORMS Annual Meeting*, Anaheim, 2021.
6. "Valid inequalities for approximating the robust surgery scheduling problem," presented by A. Bansal with J.-P. P. Richard, B. Berg and Y.-L. Huang, *INFORMS Annual Meeting*, Anaheim, 2021.
7. "A reciprocity between tree ensemble optimization and multilinear optimization over the cartesian product of simplices," presented by J. Kim, with J.-P. P. Richard and M. Tawarmalani, *INFORMS Annual Meeting*, Anaheim, 2021.
8. "Decision forests and multilinear polytopes," presented by J. Kim, with B. Taslimi, M. Tawarmalani, and J.-P. P. Richard, *SIAM conference on optimization*, 2021.
9. "Lifting convex inequalities for bipartite bilinear programming," presented by S. Dey, with X. Gu and J.-P. P. Richard, *SIAM conference on optimization*, 2021.
10. "Lifting convex inequalities for bipartite bilinear programming," presented by X. Gu, with S. Dey and J.-P. P. Richard, *IPCO XXII*, 2021.
11. "A cutting plane for tree ensembles optimization," presented by J. Kim, with B. Taslimi, M. Tawarmalani and J.-P. P. Richard, *INFORMS Annual Meeting*, (Online), 2020.
12. "Computational evaluation of new mixed integer programming models for tree ensembles optimization," presented by B. Taslimi, with J.-P. P. Richard, J. Kim, M. Tawarmalani, *INFORMS Annual Meeting*, Seattle, 2019.
13. "Training prediction models for two-stage linear programs with uncertain right-hand sides," presented by A. Estes, with J.-P. P. Richard, *INFORMS Annual Meeting*, Seattle, 2019.
14. "Polyhedral results for tree ensembles optimization," presented by J. Kim, with B. Taslimi, M. Tawarmalani, and J.-P. P. Richard, *INFORMS Annual Meeting*, Seattle, 2019.

15. "Exploiting permutation invariance to construct tight relaxations," presented by M. Tawarmalani, with J. Kim and J.-P. P. Richard, *INFORMS Annual Meeting*, Nashville, 2016.
16. "Exploiting permutation invariance to construct tight relaxations," presented by M. Tawarmalani, with J. Kim and J.-P. P. Richard, *Workshop on Mixed Integer Programming*, Miami, 2016.
17. "Envelopes of bilinear functions over polytopes with application to network interdiction," presented by D. Davarnia, with J.-P. P. Richardand M. Tawarmalani, *INFORMS Annual Meeting*, Philadelphia, 2015.
18. "On the polyhedral structure of a multi-capacity mixing set," presented by A. Arslan, with J.-P. P. Richardand Y. Guan, *INFORMS Annual Meeting*, Philadelphia, 2015.
19. "Sparse principal component analysis (SPCA) via convexification," presented by J. Kim, with M. Tawarmalani and J.-P. P. Richard, *INFORMS Annual Meeting*, Philadelphia, 2015.
20. "A cut generating procedure for cardinality constrained optimization problems (CCOP)," presented by J. Kim, with M. Tawarmalani and J.-P. P. Richard, *International Symposium on Mathematical Programming*, Pittsburgh, 2015.
21. "Envelopes of bilinear functions over polytopes with application to network interdiction," presented D. Davarnia, with J.-P. P. Richardand M. Tawarmalani, *International Symposium on Mathematical Programming*, Pittsburgh, 2015.
22. "Lifted mixing inequalities for a generalized mixing set," presented by A. Arslan, with J.-P. P. Richard and Y. Guan, *INFORMS Annual Meeting,* San Francisco, 2014.
23. "On convex relaxations of network interdiction problems," presented by D. Davarnia, with J.-P. P. Richard and M. Tawarmalani, *INFORMS Annual Meeting,* San Francisco, 2014.
24. "On cutting planes for cardinality constrained optimization problems (CCOP)," presented by J. Kim, with M. Tawarmalani and J.-P. P. Richard, *INFORMS Annual Meeting,* San Francisco, 2014.
25. "Techniques in convexification of separable polynomial inequalities," presented by M. Tawarmalani, with J.-P. P. Richard, *INFORMS Annual Meeting,* San Francisco, 2014.
26. "Techniques in convexification of separable polynomial inequalities," presented by M. Tawarmalani with J.-P. P. Richard, *Workshop on Mixed Integer Nonlinear Programming,* Pittsburgh, 2014.
27. "Decomposition techniques in global optimization," presented by M. Tawarmalani, with J.-P. P. Richard, *SIAM conference on optimization,* San Diego, 2014.
28. "An algorithm for multi-level network-design models arising in evacuation problems," presented by Y. Tang, with J.-P. P. Richard and J.C. Smith, *INFORMS Annual Meeting*, Minneapolis, 2013.
29. "Cardinality constrained linear program: facial disjunctive formulation and valid inequalities," presented by J. Kim, with M. Tawarmalani and J.-P. P. Richard, *INFORMS Annual Meeting*, Minneapolis, 2013.
30. "Convexification techniques for complementarity constraints," presented by M. Tawarmalani, with T. Nguyen and J.-P. P. Richard, *INFORMS Annual Meeting*, Minneapolis, 2013.
31. "Convexification techniques for separable polynomial inequalities," presented by M. Tawarmalani, with J.-P. P. Richard, *INFORMS Annual Meeting*, Minneapolis, 2013.
32. "Multicommodity variable upper bound flow models," presented by D. Burchett with J.-P. P. Richard, *INFORMS Annual Meeting*, Minneapolis, 2013.
33. "On the polyhedral structure of two-level lot-sizing problems arising in vendor managed inventory," presented by A. Arslan, with J.-P. P. Richard and Y. Guan, *INFORMS Annual Meeting*, Minneapolis, 2013.
34. "Polyhedral results for network interdiction problem," presented by D. Davarnia, with J.-P. P. Richard and M. Tawarmalani, *INFORMS Annual Meeting*, Minneapolis, 2013.
35. "An algorithm for bilevel integer interdiction," presented by Y. Tang, with J.-P. P. Richard and J. C. Smith, *INFORMS Annual Meeting*, Phoenix, 2012.
36. "Coal monthly reservations planning," presented by E. Icyuz, with D. Acharya, E. Eskigun, and J.-P. P. Richard, *INFORMS Annual Meeting*, Phoenix, 2012.
37. "Disjunctive cutting planes for linear complementarity constraints," presented by T. Nguyen, with J.-P. P. Richard and M. Tawarmalani, *INFORMS Annual Meeting*, Phoenix, 2012.
38. "Multicommodity variable upper bound flow models," presented by D. Burchett, with J.-P. P. Richard, *INFORMS Annual Meeting*, Phoenix, 2012.

39. "Polyhedral studies for vendor-managed inventory models," presented by A. N. Arslan, with Y. Guan and J.-P. P. Richard, *INFORMS Annual Meeting*, Phoenix, 2012.
40. "Strong cuts for polynomial inequalities via disjunctive arguments," presented by M. Tawarmalani, with J.-P. P. Richard, *INFORMS Annual Meeting*, Phoenix, 2012.
41. "A time-space network flow model for coal/bulk reservations optimization," presented by E. Icyuz, with D. Acharya, E. Eskigun, and J.-P. P. Richard, *INFORMS Annual Meeting*, Charlotte, 2011.
42. "Bilevel integer min-max optimization problems," presented by Y. Tang, with J.-P. P. Richard and J. C. Smith, *INFORMS Annual Meeting*, Charlotte, 2011.
43. "Convexification techniques for linear complementarity constraints," presented by T. Nguyen, with J.-P. P. Richard and M. Tawarmalani, *INFORMS Annual Meeting*, Charlotte, 2011.
44. "Cutting planes for linear complementarity constraints," presented by T. Nguyen, with J.-P. P. Richard and M. Tawarmalani, *INFORMS Annual Meeting*, Charlotte, 2011.
45. "Strong inequalities for polynomial covering sets via orthogonal disjunctions," presented by M. Tawarmalani, with J.-P. P. Richard, *INFORMS Annual Meeting*, Charlotte, 2011.
46. "Explicit convex and concave envelopes via polyhedral subdivisions," presented by M. Tawarmalani, with J.-P. P. Richard and C. Xiong, *INFORMS Annual Meeting*, Austin, 2010.
47. "Global optimization results for the linear complementarity problem," presented by T. Nguyen, with J.-P. P. Richard and M. Tawarmalani, *INFORMS Annual Meeting*, Austin, 2010.
48. "Lifted inequalities for 0-1 mixed-integer bilinear covering sets," presented by K. Chung, with J.-P. P. Richard and M. Tawarmalani, *INFORMS Annual Meeting*, Austin, 2010.
49. "Polyhedral results for MIPs with cardinality constraints," presented by E. Icyuz, with J.-P. P. Richard, *INFORMS Annual Meeting*, Austin, 2010.
50. "Computational study on lifted cuts using multidimensional superadditive lifting method," presented by B. Zeng, with J.-P. P. Richard, *INFORMS Annual Meeting*, San Diego, 2009.
51. "Convexification of nonconvex functions and polyhedral envelopes," presented by C. Xiong, with M. Tawarmalani and J.-P. P. Richard, *INFORMS Annual Meeting*, San Diego, 2009.
52. "Inequalities for covering sets via lifting and orthogonal disjunctions," presented by K. Chung, with J.-P. P. Richard and M. Tawarmalani, *INFORMS Annual Meeting*, San Diego, 2009.
53. "Lifted inequalities for 0-1 mixed integer programs: a computational study," presented by A. Narisetty, with J.-P. P. Richard and G. Nemhauser, *INFORMS Annual Meeting, Washington*, 2008.
54. "Strong inequalities for disjunctive sets via lifting," presented by M. Tawarmalani, with J.-P. P. Richard, *INFORMS Annual Meeting*, Washington, 2008.
55. "Strong bounds for linear optimization problems with k-of-m constraint systems," presented by R. L. Rardin, with A. Tuncel, M. Langer, and J.-P. P. Richard, *Workshop on Mixed Integer Programming*, Columbia, 2008.
56. "An inventory routing problem: fresh produce delivery for HIV patients in Kenya," presented by T. Le, with J.-P. P. Richard and Y. Yih, *INFORMS Annual Meeting*, Seattle, 2007.
57. "Computing maximal sets of mixed integer programs," presented by B. Zeng, with J.-P. P. Richard, *INFORMS Annual Meeting*, Seattle, 2007.
58. "Facets for flow models with cardinality constraints from multidimensional superadditive lifting," presented by B. Zeng, with J.-P. P. Richard, *INFORMS Annual Meeting*, Seattle, 2007.
59. "Generalized MIR cuts," presented by S. Dey, with J.-P. P. Richard, *INFORMS Annual Meeting*, Seattle, 2007.
60. "Sequential-merge inequalities for infinite group problems," presented by S. Dey, with J.-P. P. Richard, *INFORMS Annual Meeting*, Seattle, 2007.
61. "Strong relaxations for fluence map optimization under dose-volume restrictions," presented by R. Rardin, with J.-P. P. Richard, M. Langer and A. Tuncel, *INFORMS Annual Meeting*, Seattle, 2007.
62. "Strong valid inequalities for bilinear integer knapsack sets," presented by K.H. Chung, with J.-P. P. Richard and M. Tawarmalani, *INFORMS Annual Meeting*, Seattle, 2007.
63. "Cook, Kannan and Schrijver's example revisited," presented by Y. Li, with J.-P. P. Richard, *Workshop on Mixed Integer Programming*, Montreal, 2007.

64. "Extending mixed-integer programming lifting techniques to nonlinear programming," presented by M. Tawarmalani, with J.-P. P. Richard, *ICCOPT*, Hamilton, 2007.
65. "Generating strong cuts for nonlinear programs by lifting inequalities," presented by M. Tawarmalani, with J.-P. P. Richard, *Workshop on Mixed Integer Programming*, Montreal, 2007.
66. "A constructive approach for multidimensional superadditive lifting," presented by B. Zeng, with J.-P. P. Richard, *INFORMS Annual Meeting*, Pittsburgh, 2006.
67. "Continuous and discontinuous extreme inequalities for infinite group problem," presented by S. Dey, with J.-P. P. Richard, Y. Li, and L. Miller, *INFORMS Annual Meeting*, Pittsburgh, 2006.
68. "Cook, Kannan and Schrijver's example revisited," presented by Y. Li, with J.-P. P. Richard, *INFORMS Annual Meeting*, Pittsburgh, 2006.
69. "MIP lifting techniques for nonlinear programs," presented by M. Tawarmalani, with J.-P. P. Richard, *INFORMS Annual Meeting*, Pittsburgh, 2006.
70. "Two families of facets for two dimensional infinite group problems," presented by S. Dey, with J.-P. P. Richard, *INFORMS Annual Meeting*, Pittsburgh, 2006.
71. "Valid inequalities for MIPs and group polyhedra from approximate liftings," presented by L. Miller, with Y. Li and J.-P. P. Richard, *INFORMS Annual Meeting*, Pittsburgh, 2006.
72. "A polyhedral study of cardinality constrained 0-1 knapsack problems," presented by B. Zeng, with J.-P. P. Richard, *INFORMS Annual Meeting*, San Francisco, 2005.
73. "Extending superadditive valid inequalities to mixed-integer programs by lifting continuous variables," presented by Y. Li, with L. Miller and J.-P. P. Richard, *INFORMS Annual Meeting*, San Francisco, 2005.
74. "Improved Gomory cuts for primal cutting plane algorithms," presented by S. Dey, with J.-P. P. Richard, *INFORMS Annual Meeting*, San Francicsco, 2005.
75. "Mitigating the consequences of physical destruction on water infrastructure: a perspective from OR," presented by J. Qiao, with H. Jeong, D. Abraham, M. Lawley, J.-P. P. Richard, and Y. Yih, *INFORMS Annual Meeting*, San Francisco, 2005.

G. STUDENT ADVISING & MENTORING

■ *G.1. POSTDOCTORAL STUDENTS ADVISED*

2018-2020	**Alexander Estes** Currently @: University of Maryland, assistant professor	**@UMN**

■ *G.2. PH.D. STUDENTS ADVISED*

as chair/co-chair/major professor

Spring 2027 (Expected)	**Bouchra Er-Rabbany** "TBA"	**@UMN**
Spring 2027 (Expected)	**Chengwenjian Wang** "TBA"	**@UMN**
Spring 2024 (Expected)	**Akshit Goyal** "Modeling uncertainty and equilibrium constraints in Bilevel Optimization" (co-advisor Andrew Lamperski). Currently @: ExxonMobil, mathematical optimization scientist.	**@UMN**
Spring 2023	**Nasim Mirzavand Boroujeni** "Novel models and techniques in optimization for cancer treatment using high dose rate brachytherapy" Currently @: Bayer, data scientist.	**@UMN**

Spring 2022 **Jongeun Kim** **@UMN**
"Discrete optimization models and techniques for problems in data-driven prescriptive analytics"
(co-advisor: M. Tawarmalani)
Currently @: Google, software engineer.

Summer 2016 **Danial Davarnia** **@UF**
"Convexification techniques for bilinear and complementarity constraints with application to network interdiction."
(co-advisor: M. Tawarmalani)
Currently @: Iowa State University, assistant professor.

Summer 2016 **Ayse Nur Arslan** **@UF**
"Polyhedral techniques for mixed integer programs arising in production planning and logistics."
(co-advisor Y. Guan)
Currently @: Université de Bordeaux – INRIA (France), Chargée de recherche.

Spring 2015 **Deon Burchett** **@UF**
"Multi-commodity fixed charge capacitated network design: polyhedral characteristics, network resilience, and algorithms."
Currently @: Mitre, modeling analyst.

Spring 2014 **Yen Tang** **@UF**
"Algorithms for mixed-integer bilevel min-max optimization problems."
(co-advisor J. C. Smith).

Fall 2013 **Trang Nguyen** **@UF**
"Convexification techniques for complementarity and multilinear problems."
(co-advisor M. Tawarmalani)
Currently @: SIFT Analytics group, CTO.

Summer 2013 **Ilksen (Ece) Icyuz** **@UF**
"Optimization models and methods for network flow problems arising in the railroad industry."
Currently @: XPO, senior director, Advanced Analytics.

Fall 2012 **Amar Narisetty** **@Purdue**
"New computational approaches to the solution of mixed integer programs."
(co-advisor Y. Yih)
Currently @: SAS, principal operations research scientist.

Fall 2011 **Chuanhui Xiong** **@Purdue**
"Essays on explicit envelopes through polyhedral subdivisions and contract design in pharmaceutical supply chains."
(advisor M. Tawarmalani)
Currently @: University of North Carolina at Pembroke, associate professor.

Summer 2010 **Kwanghun Chung** **@UF**
"Strong valid inequalities for mixed-integer nonlinear programs via disjunctive programming and lifting."
(co-advisor M. Tawarmalani)
Currently @: Hongik University (Korea), associate professor.

Summer 2008 **Ali Tuncel** **@Purdue**
"Strengthened relaxations and algorithms for radiation therapy optimization under dose-volume restrictions."
(co-advisor R. Rardin)
Currently @: T4 Analytics, founder.

Summer 2008 **Ali Diabat** **@Purdue**
"Large-scale integrated supply chain networks design: models and algorithms."
Currently @: New York University - Abu Dhabi, professor.

Summer 2007 **Bo Zeng** **@Purdue**
"Generating strong cutting planes for unstructured integer programs using lifting."
Currently @: University of Pittsburgh, associate professor.

Spring 2007 **Santanu Dey** **@Purdue**
"Strong cutting planes for unstructured mixed integer programs with multiple constraints."
Awards: Co-winner, INFORMS Nicholson Award for best student paper, 2008.
Awards: Honorable mention, INFORMS Optimization Society best student paper, 2008.
Currently @:Georgia Institute of Technology, professor.

Fall 2005 **Jianhong Qiao** **@Purdue**
"Security enhancement and consequence mitigation strategies for water infrastructure against physical destruction."
(co-advisor M. Lawley)
Currently @: Bain & Company, expert associate partner, Advanced Analytics.

■ *G.3. VISITING DOCTORAL STUDENTS ADVISED*

2020 **Jinke Ming** **@UMN**
Home Institution: USTC (China)

■ *G.4. M.S. STUDENTS ADVISED (WITH THESIS)*

Summer 2011 **Nitish Garg** **@UF**
"A polyhedral study of integer bilinear covering sets."

Summer 2010 **Mohammad Khalil** **@UF**
""On the linear programming and group relaxations of the uncapacitated facility location problem".

Summer 2009 **Fatma Aktulga** **@Purdue**
""Improving practicum scheduling at the department of speech pathology at Purdue".

Fall 2006 **Hyoku Kang** **@Purdue**
""An improved optimization model for assignment of empty cars at Union Pacific".

Fall 2005 **Malek Macaron** **@Purdue**
""Multiple production sites lot-sizing".

Fall 2005 **Giridhar Prasannan** **@Purdue**
""Deriving new facets of the group problem using superadditive lifting and symbolic computation".
(co-advisor, Y. Li)

Summer 2004 **Parbati Ray** **@Purdue**
""An integer program to design fast matrix multiplication algorithms".

Spring 2004 **Amar Narisetty** **@Purdue**
""An optimization model for assignment of empty cars in Union Pacific Railroad Network".
Awards: Honorable mention, 2004 RASIG student paper competition.

■ *G.5. M.S. STUDENTS ADVISED (CAPSTONE PROJECT)*

Spring/Summer 2024 **Sriram Nutulapati** **@UMN (MSDS)**
"Evaluation of Local Search Algorithms for the PrePack Optimization Problem"

Fall 2020 **Abdalla Osman, Zitao Shen, and Ramsey Shaffer** **@UMN**
"WWS Trading"

Spring 2018	**Ryan Barows, Roy Bunting, and Mike Shields** "Polling Stations & Elections Optimization"	@UF
	Ashlyn Affelt, Nathan Hemmes, Sarah Larrabee, Trevor Nemrow, and Kim Wheeler "Walt Disney Parks and Resorts Attraction Asset Investment Analysis."	@UF
	Garrett Cox, Michael Fekete, Shawn Gicka, and Matt Nelson "Optimizing Course Scheduling."	@UF
Spring 2017	**William Gaughan, Ronnie Nienajadlo, and Florence Trinh,** "Optimizing avionics product line campaigns."	@UF
	Nick Farmer, Daniel Fonseca, Anthony Gennette, and Bryan Tanner, "Improving multimodal inbound and outbound operations for a railroad"	@UF
	Venkata Dantuluri, Richard Demming, Jeremy Littleton, Emilia Sampaio, and Tiago Leite "Resource optimization for field service turbine-generator outages"	@UF
Spring 2016	**Gabriele Dionne, Nicholas Licht, Ervin Scott, and Alex Vela,** "Aerosonic LLC: inventory optimization & reduction."	@UF
	Cierra Harrell, Gareth Hearn, Evan Husk, and Jon Looke, "Florida Hospital - patient scheduling"	@UF
Spring 2015	**Mark Daniell, Drew Hanson, Brad Ingram, Justin Maciak, and Jessica Renfrow** "Pair O'Dice Brewing"	@UF
Spring 2014	**Wesley Keith, David Marasco, Veronica Marasco, and Richard Zawadski** "Emerson Process Management Power & Water Solutions: An Investigation of the Renewal Parts Process"	@UF
	Brett Hariton, Caleb Hurst, Thomas John, Ryan Lime, and Benjamin Roseborough "Forecasting locomotive dwell time"	@UF
Spring 2013	**Timothy Heindl, Kurt Kessel, Michael Morehead, Petra Robinson, and Jason Skipper** "CHEP pallet pooling network optimization."	@UF
	Adam Ayer, Jerrod Demers, and Jillian Goodhew "Blue and orange project for process improvement."	@UF
Spring 2012	**David Souders and Michael Upham** "Optimizing sun hydraulics' piston line at Model Screw Products"	@UF
	Joseph Pineda "Optimization of maintenance outage scheduling using mixed integer programming techniques"	@UF
Spring 2011	**Mariane Colon-Zambrana, Michelle Dailey, Rick Sisley, and Clint Walker** "School boundary optimization for Brevard county middle schools"	@UF
	Silvia Valencia and Joseph Williams "Improving the kitting process of left ventricular assist devices"	@UF
Spring 2010	**Tarang Shah and Grant Lian** "Dynamic price engine - DyPE"	@UF

■ *G.6. UNDERGRADUATE SPECIAL PROJECTS DIRECTED*

Spring 2022	**Tora Husar** First Placement @: University of Pennsylvania, Law School	@UMN
Spring 2019	**Yang Luo** First Placement @: University of North Carolina, Statistics & Operations Research, Ph.D.	@UMN
Spring 2019	**Ruihan Sun** First Placement @: University of Amsterdam, Data Science, M.S.	@UMN
Spring 2007	**Sezai Kozikoglu** First Placement @: Columbia, Industrial Engineering and Operations Research, M.S.	@Purdue
Spring 2005	**Huseyin Karaca** First Placement @: Northwestern, Business School, Ph.D.	@Purdue
Spring 2004	**Bilal Gokpinar** First Placement @: Northwestern, Industrial Engineering, Ph.D.	@Purdue

■ G.7. M.S. STUDENTS ADVISED (CAPSTONE PROJECT)

Spring 2024	**Anderson Corporation**	**@UMN**
Spring 2023	**Anderson Corporation**	**@UMN**
Spring 2022	**Anderson Corporation**	**@UMN**
Spring 2021	**Boston Scientific**	**@UMN**
Spring 2020	**UPS**	**@UMN**
Spring 2019	**Boston Scientific**	**@UMN**
Spring 2014	**Crowley**	**@UF**
Fall 2013	**Crowley**	**@UF**
Spring 2013	**Pepsi**	**@UF**
Fall 2012	**Pepsi**	**@UF**
Spring 2012	**Pepsi**	**@UF**
Fall 2011	**Coca-Cola**	**@UF**
Spring 2011	**Coca-Cola**	**@UF**
Spring 2010	**Parkson**	**@UF**
Fall 2009	**Parkson**	**@UF**
Spring 2009	**Shands Hospitals**	**@UF**
Fall 2008	**Winn-Dixie**	**@UF**
Fall 2003	**Seymour Manufacturing**	**@Purdue**
Spring 2003	**Roche**	**@Purdue**

■ G.8. PH.D. COMMITTEE MEMBERSHIP

Summer 2023	**Rishab Gupta**	Advisor: Qi Zhang	**CEMS**	**@UMN**
Spring 2022	**Xiaoyi Gu**	Advisor: S. Dey	**ISyE**	**@GT**
	Pramesh Kumar	Advisor: A. Khani	**CEGE**	**@UMN**
Summer 2021	**Yufeng Zhang**	Advisor: A. Khani	**CEGE**	**@UMN**
Summer 2020	**Shruti Siva Kumar**	Advisor: W. O' Dell	**BME**	**@UF**
Spring 2019	**Zeyang Wu**	Advisor: Q. He	**ISyE**	**@UMN**
Summer 2018	**Roshanak Mohammadivojdan**	Advisor: J. Geunes	**ISE**	**@UF**
	Jianqiu Huang	Advisor: Y. Guan	**ISE**	**@UF**
Summer 2017	**Matthew Norton**	Advisor: S. Uryasev	**ISE**	**@UF**
Fall 2016	**Kai Pan**	Advisor: Y. Guan	**ISE**	**@UF**
Spring 2016	**Melis Teksan**	Advisor: J. Geunes	**ISE**	**@UF**
	Anshu Rajan	Advisors: S. Sahni & P. Khargonekar	**CISE**	**@UF**
	Sercan Yildiz	Advisor: G. Cornuéjols	**GSIA**	**@CMU**
Summer 2015	**Kun Zhao**	Advisors: J. Hartman & Y. Guan	**ISE**	**@UF**
	Jorge Sefair	Advisor: J.C. Smith	**ISE**	**@UF**
	Lai Wei	Advisor: Y. Guan	**ISE**	**@UF**
Spring 2015	**Cong Dang**	Advisor: G. Lan	**ISE**	**@UF**
Summer 2014	**Shantih Spanton**	Advisors: J. Geunes & J. C. Smith	**ISE**	**@UF**
	Chaoyue Zhao	Advisor: Y. Guan	**ISE**	**@UF**
Spring 2014	**Cinthia Perez Siguenza**	Advisor: J. Geunes	**ISE**	**@UF**
Summer 2013	**Mehdi Soheil Hemmati**	Advisor: J. C. Smith.	**ISE**	**@UF**
	Naqeebuddin Syed Mujahid	Advisor: P. Pardalos	**ISE**	**@UF**
	Ruiwei Jiang	Advisor: Y. Guan	**ISE**	**@UF**
Spring 2013	**Michael Prince**	Advisors: J. C. Smith & J. Geunes	**ISE**	**@UF**
Fall 2012	**Sibel Sonuc**	Advisor: J. C. Smith	**ISE**	**@UF**
Summer 2012	**Clay Koshnik**	Advisor: J. Hartman	**ISE**	**@UF**
	Kelly Sullivan	Advisor: J. C. Smith	**ISE**	**@UF**
Spring 2012	**Chin Hon Tan**	Advisor: J. Hartman	**ISE**	**@UF**
Summer 2011	**Siqian Chen**	Advisor: J. C. Smith	**ISE**	**@UF**
Spring 2011	**Jicong Zhang**	Advisor: P. Pardalos	**ISE**	**@UF**
Summer 2010	**Steffen Rebennack**	Advisor: P. Pardalos	**ISE**	**@UF**
Summer 2009	**Tung Le**	Advisor: Y. Yih	**IE**	**@Purdue**
	Honggang Wang	Advisor: B. Schmeiser	**IE**	**@Purdue**
Spring 2009	**Santanu Chakraborty**	Advisor: M. Lawley	**IE**	**@Purdue**
Fall 2008	**Muharrem Mane**	Advisor: W. Crossley	**AAE**	**@Purdue**
	Murat Senel	Advisor: E. Coyle	**ECE**	**@Purdue**
Summer 2008	**Na Young Cho**	Advisor: L. Ozsen	**IE**	**@Purdue**
	Jaewoo Chung	Advisor: J. Tanchoco	**IE**	**@Purdue**
Spring 2008	**Ashwin Ravindran**	Advisors: R. Uzsoy & H. Wan	**IE**	**@Purdue**
Fall 2007	**Abdulrahman Alenezi**	Advisor: L. Ozsen	**IE**	**@Purdue**

Summer 2007	**Nusawardhana**	Advisors: W. Crossley & M. Corless	**AAE @Purdue**
Spring 2007	**Abhijit Upasani**	Advisor: R. Uzsoy	**IE @Purdue**
Summer 2006	**Shengyong Wang**	Advisor: M. Lawley	**IE @Purdue**
Spring 2006	**Karthik Sourirajan**	Advisors: L. Ozsen & R. Uzsoy	**IE @Purdue**
	Carlos Arboleda	Advisor: D. Abraham	**CE @Purdue**
Summer 2005	**Raghu Pasupathy**	Advisor: B. Schmeiser	**IE @Purdue**
Spring 2005	**Pongsakon Tansupaswatdikul**	Advisor: J. Tanchoco	**IE @Purdue**

■ *G.9. PH.D. EXAMINER*

Spring 2014	**James Foster**	Advisor: N. Boland	**Math @Melbourne**

■ *G.10. M.S. (WITH THESIS) COMMITTEE MEMBERSHIP*

Fall 2007	**Tae Hoon Kim**	Advisor: L. Ozsen	**IE @Purdue**
Fall 2006	**Kyoungsun Lee**	Advisor: L. Ozsen	**IE @Purdue**
	Jesse Oberbeck	Advisor: R. Rardin	**IE @Purdue**
Summer 2006	**Jonathan Turner**	Advisor: M. Lawley	**IE @Purdue**
Fall 2005	**Sushma Sukuraman**	Advisor: R. Rardin	**IE @Purdue**
Spring 2005	**Laura Weiland**	Advisor: D. Engi	**IE @Purdue**
Spring 2004	**Sujay Malve**	Advisor: R. Uzsoy	**IE @Purdue**
Fall 2003	**Abhijit Upasani**	Advisor: R. Uzsoy	**IE @Purdue**

H. TEACHING

■ *H.1. COURSES TAUGHT*

[University of Minnesota]

IE3011 — Optimization Models and Methods — **@UMN**

Undergraduate level course providing an introductory survey to the different models and methods used in optimization. Topics covered include LP, NLP, IP, and network modeling. Solution methods covered including gradient descent, simplex, shortest path, and branch-and-bound. Optimality conditions and duality are discussed, along with their application in sensitivity analysis. Applications in production planning, location, data analysis, and finance.

IE3011 — Optimization 1 — **@UMN**

Undergraduate level course providing an introduction to linear optimization. Topics covered include spreadsheet and algebraic modeling, Gaussian elimination and linear algebra, simplex, linear optimization duality and sensitivity analysis, network optimization and zero-sum games. Applications in production planning, data envelopment analysis, and classification.

IE3012 — Optimization 2 — **@UMN**

Undergraduate level course providing an introduction to integer, combinatorial and nonlinear optimization. Topics covered include algebraic and software modeling, branch-and-bound, cutting planes, computational complexity, combinatorial optimization (spanning trees, assignments, matching), first order optimality conditions and gradient descent algorithms. Applications in routing, scheduling, finance, and inventory management.

IE5080 — Optimization Models in Supply Chain — **@UMN**

Master's level course providing a survey of models and methods in logistics. Topics covered including location analysis, routing, and warehousing.

IE5531 — Engineering Optimization — **@UMN**

Master's level course providing a survey of models and methods in deterministic optimization. Topics covered include linear programming, LP duality, sensitivity analysis, nonlinear programming, optimality conditions, KKT conditions, gradient-based algorithms, integer programming and dynamic programming.

IE5541 Project Management **@UMN**
Master's level course providing an introduction to engineering project management. Topics covered include analytical methods for selecting, organizing, budgeting, scheduling, and controlling projects, including risk management and team leadership. The course provides a discussion of both traditional waterfall and agile project management approaches.

IE8531 Discrete Optimization **@UMN**
Ph.D. level course covering theoretical foundations and classical algorithms for the solution of optimization models with integer variables. Topics include model formulations, branch-and-bound, cutting plane and branch-and-cut algorithms, polyhedral combinatorics, heuristic approaches, and computational complexity.

[University of Florida]

ESI4312 Operations Research 1 **@UF**
Undergraduate class describing techniques, methods and algorithms to model and solve optimization problems (NLP, LP, IP, network).

ESI4313 Operations Research 2 **@UF**
Undergraduate class describing techniques, methods and algorithms to model and solve problems involving uncertainty. Focus is given on the study of discrete- and continuous-time Markov chains with applications to queues and queuing networks. Dynamic programming and Markov decision processes are presented.

ESI6314 Deterministic Methods in Operations Research **@UF**
Master's level course describing classical models and solutions methodologies in deterministic optimization. Emphasis is also given to solution methods including simplex, network algorithms and branch-and-bound. The course makes extensive use of the Excel solver, and focuses on the analysis of solution obtained.

ESI6417 Linear Programming and Network Optimization **@UF**
Ph.D. course providing an introduction to Linear Programming and Network Optimization (LPNO). For LP, emphasis is given on modeling, polyhedral theory, simplex, duality theory and senstivity analysis, decomposition algorithms and interior point methods. For NO, emphasis is given on network flow algorithms.

ESI6420 Fundamentals of Mathematical Programming **@UF**
Ph.D. course providing an introduction to Mathematical Programming. Emphasis is given on mathematical programming modeling, basic mathematical concepts used in optimization, convex analysis, optimality conditions, and lagrangian duality.

ESI6912 Decision Making under Uncertainty **@UF**
Master's level course describing classical models and solution methodologies for making decisions in environments that involve uncertainty. Emphasis is given on simulation and analysis of stochastic systems, discrete- and continuous-time Markov chains, queuing, decision trees and dynamic programming.

ESI6449 Advanced Integer Programming **@UF**
Ph.D. course describing advanced techniques, methods and algorithms to solve integer programs. Focus on polyhedral approaches (cutting planes, integer polyhedra, primal algorithms), relaxations, theory of lattices and algebraic geometry approaches (Gröbner bases, generating functions, SOS relaxations).

[Purdue]

IE335 Operations Research - Optimization **@Purdue**
Undergraduate class describing techniques to model and solve optimization problems arising in Engineering. Focus is given on how to transform practical problems into mathematical models. Focus is also given on basic methodologies for solving linear, nonlinear, integer, multi-objective and network optimization problems.

IE535 Linear Programming **@Purdue**
Master's level course describing modeling, solution and analysis techniques for LP. Emphasis is given on valid formulations of complex problems and on commercial algebraic modelers (GAMS). Emphasis is also given on understanding the mechanics of simplex, duality, polyhedral theory, projection and decomposition.

IE537 Discrete Optimization Models and Algorithms **@Purdue**
Master's level course describing classical models and advanced solution methodologies for discrete optimization. Modeling-wise, emphasis is given on valid and strong formulations. Methodology-wise, emphasis is given on distinguishing easy from hard problems and on understanding classical solution methods.

IE634 Integer Programming **@Purdue**
Ph.D. course describing techniques, methods and algorithms to solve integer programs. Emphasis is given on identifying whether or not a problem is tractable (Class P, TDI systems, TU matrices) or not (NP complete problems) and common techniques for solving IPs.

IE639 Combinatorial Optimization **@Purdue**
Ph.D. course presenting algorithms to solve structured discrete optimization problems defined on graphs and networks. Thorough analyzes of algorithms and data structures are presented for problems such as minimum spanning trees, shortest paths, maximum flows, minimum cost flows and matchings.

IE690R Topics in Linear Programming **@Purdue**
Ph.D. course presenting concepts and algorithms for solving large scale linear programs. Different decomposition techniques are presented including Dantzig-Wolfe, Benders, and Primal-Dual. Topics in the theory of polyhedra are presented.

■ *H.2. COURSES INTRODUCED*

IE5080 Optimization Models and Methods in Supply Chain **@UMN**
This new class was first taught in the spring of 2022. It was designed to provide advanced undergraduate students and master's student an introduction to the use of optimization in logistics.

ESI6912 Decision Making Under Uncertainty **@UF**
This new class was first taught in the spring of 2009. It was designed to give professional engineers training in stochastic methods in Operations Research.

ESI6420 Fundamentals of Mathematical Programming **@UF**
This new class was first taught in the fall of 2008. It was designed to give incoming Ph.D. students the basic mathematical knowledge they need to pursue research in Operations Research.

ESI6449 Advanced Integer Programming **@UF**
This class was introduced in the spring of 2009. It was designed to supplement the knowledge that UF Ph.D. students received from existing classes with more advanced topics.

IE690R Topics in Linear Programming **@Purdue**
This new class was first taught in the spring of 2004. It was designed to provide a smoother transition between the linear (IE535) and integer (IE634) programming classes by strengthening students' background in advanced and computational optimization techniques.

■ *H.3. TEACHING EVALUATIONS SCORES*

[University of Minnesota]
Students at UMN are asked to fill anonymous questionnaires towards the end of every semester to evaluate the content of the classes they attended and the teaching skills of their instructors. They are asked to answer the questions by (6) Strongly Agree, (5) Agree, (4) Somewhat Agree, (3) Somewhat Disagree, (2) Disagree, (1) Strongly Disagree. The outcome of this survey is presented next:

Course	Name	Sem.	Resp/Enrl	Xpln	L'rn	Motv	Help	Crse	Inst
IE3011	OMM	Fa23	41/65	5.10	4.98	4.68	4.78	4.69	5.31
		Fa22	42/58	5.48	5.52	5.02	5.26	5.16	5.56

	Opt1	Fa21 Fa20 Fa19	40/68 34/82 50/80	5.25 4.65 4.90	5.40 5.03 5.22	4.95 4.53 4.86	4.98 5.06 5.00	4.97 4.70 4.87	5.37 5.11 5.22
IE3012	Opt2	Sp21 Sp20	38/80 50/81	4.24 *	4.59 *	4.03 *	4.92 *	4.41 *	4.97 *
IE5080	SC	Sp22	2/5	5.50	5.50	5.50	5.50	5.57	5.67
IE5531	EO	Fa18	31/45	5.28	5.31	5.06	5.22	5.07	5.52
IE5541	PM	Fa23	11/27	4.91	5.45	4.27	4.55	4.49	4.92
IE8531	DO	Fa24 Sp19	11/18 18/19	5.91 6.00	5.45 5.67	5.45 5.83	5.89 5.83	5.73 5.76	6.00 5.94

In this table, the following abbreviations are used:

- ▷ [Xpln:] "The instructor presented the subject matter clearly."
- ▷ [L'rn:] "I have a deeper understanding of the subject matter as a result of this course."
- ▷ [Motv:] "My interest in the subject matter was stimulated by this course."
- ▷ [Help:] "The instructor provided feedback intended to improve my course performance."
- ▷ [Crse:] "Overall course rating."
- ▷ [Inst:] "Overall instructor rating."

∗ Note that student feedback was collected in a different form during the spring semester 2020 because of COVID19.

[University of Florida]

Students at UF are asked to fill anonymous questionnaires towards the end of every semester to evaluate the content of the classes they attended and the teaching skills of their instructors. They are asked to answer the questions by (5) Excellent, (4) Good, (3) Fair, (2) Poor, (1) Very Poor. The outcome of this survey is presented next:

Course	Name	Sem.	Resp/Enrl	Thnk	L'rn	Motv	Help	Crse	Inst
ESI4312	OR1	Sp18 Fa17 Sp14 Fa12 Sp10	33/57 43/63 24/79 15/54 40/42	4.48 4.70 3.87 4.73 4.10	4.24 4.60 3.58 4.00 4.00	4.52 4.53 3.33 3.87 3.72	4.52 4.68 4.05 4.27 4.13	4.33 4.58 3.91 4.47 3.80	4.40 4.70 3.46 4.33 4.11
ESI4313	OR2	Sp12	20/59	3.90	3.35	3.55	4.00	3.40	3.55
ESI6314	DMOR	Fa17 Fa16 Fa15 Fa14	23/39 18/42 21/48 31/53	4.24 4.71 4.35 3.71	4.13 4.22 4.33 3.13	4.46 4.33 4.67 3.35	4.80 4.72 4.67 3.67	NA 4.11 NA 3.32	4.50 4.61 4.67 3.53
ESI6417	LPNO	Sp17 Sp16	8/11 7/14	5.00 5.00	5.00 5.00	5.00 5.00	5.00 5.00	5.00 5.00	5.00 5.00
ESI6420	FMP	Fa17 Fa16 Fa15 Fa13 Fa12 Fa11 Fa10 Fa09 Fa08	19/22 8/8 10/20 11/12 10/13 8/17 21/23 17/17 11/12	4.68 4.88 4.80 4.91 4.83 4.88 4.70 4.94 4.55	4.84 4.88 4.80 4.91 4.75 4.88 4.85 4.88 4.64	4.58 4.75 4.60 4.91 4.83 4.63 4.65 4.88 4.40	4.63 4.75 4.70 4.91 4.83 4.38 4.70 4.88 4.55	4.63 5.00 4.80 4.91 4.90 4.71 4.71 4.76 4.55	4.84 4.88 4.80 4.91 4.92 4.75 4.86 4.88 4.73

ESI6912	DMUU	Sp 13	3/55	4.47	4.33	4.67	4.53	NA	4.53
		Sp12	16/54	3.69	3.50	3.69	4.38	3.63	3.89
		Sp11	13/28	4.15	3.54	4.08	4.33	4.00	3.92
		Sp10	36/42	4.19	4.14	3.89	4.66	4.17	4.33
		Sp09	45/51	3.45	3.05	3.09	4.30	3.28	3.36
IE6449	AIP	Sp11	11/13	4.91	5.00	5.00	5.00	4.91	5.00
		Sp09	9/10	4.67	4.67	4.78	4.89	4.89	5.00

In this table, the following abbreviations are used:

- [Thnk:] "Encouragement of independent, creative, and critical thinking."
- [L'rn:] "Communications of ideas and information."
- [Motv:] "Stimulation of interest in course."
- [Help:] "Availability to assist students in or out of class."
- [Crse:] "Overall the value of the course was."
- [Inst:] "Overall rating of the instructor."

Note that UF switched to online evaluations in the Spring 2011. Response rates were lower after this change.

[Purdue]

Students at Purdue were asked to fill anonymous questionnaires towards the end of every semester to evaluate the content of the classes they attended and the teaching skills of their instructors. They were asked to answer the questions by (5) Strongly Agree - Excellent, (4) Agree - Good, (3) Undecided - Fair, (2) Disagree - Poor, (1) Strongly Disagree - Very Poor. The outcome of this survey is presented next:

Course	Name	Sem.	Resp/Enrl	Thnk	L'rn	Motv	Help	Crse	Inst
IE535	Linear Program.	Fa05	44/(47+3)	4.7	4.2	4.2	4.3	4.3	4.5
IE537	Discrete Optimz.	Sp05	28/(31+2)	4.9	4.8	4.6	4.9	4.8	4.9
IE690R	Lg Scale LP	Sp04	11/(8+5)	4.9	4.8	4.8	4.8	4.7	4.9
IE335	OR Optimz.	Sp08	NA/(88+0)	NA	NA	NA	NA	NA	NA
		Fa07	94/(118+0)	4.5	4.3	4.0	4.4	4.0	4.3
		Sp07	59/(67+0)	4.4	4.1	4.0	4.5	4.0	4.4
		Fa06	56/(89+0)	4.6	4.5	4.2	4.3	4.2	4.6
		Sp06	51/(101+0)	4.5	4.2	4.0	4.4	4.0	4.5
		Fa05	76/(96+5)	4.4	4.4	4.0	4.2	4.2	4.4
		Fa04	72/(100+0)	4.2	4.1	3.8	4.0	3.9	3.9
		Fa03	58/(118+0)	4.2	4.2	3.7	4.2	3.9	3.7
IE639	Comb. Optimz.	Sp03	5/(5+0)	4.3	NA	4.0	5.0	4.5	4.8
IE634	Integer Program.	Fa07	6/(6+2)	4.9	4.0	4.3	4.9	4.9	4.9
		Fa06	19/(17+4)	4.9	4.6	4.5	4.8	4.7	4.9
		Fa04	12/(14+1)	5.0	4.3	4.2	4.5	4.6	4.6
		Fa02	16/(18+0)	4.8	4.6	4.5	4.8	4.5	4.7

In this table, the following abbreviations are used:
- ▷ [Thnk:] "This course effectively challenges me to think."
- ▷ [L'rn:] "I can apply information/skills learned in this class."
- ▷ [Motv:] "My instructor motivates me to do my by work."
- ▷ [Help:] "My instructor is readily available for consultation."
- ▷ [Crse:] "Overall, I would rate this course as" (core question).
- ▷ [Inst:] "Overall, I would rate this instructor as" (core question).

Note that, in the "resp/enrollment" column, the first number in the denominator represents the number of students registered for the class while the second number represents the number of students not registered that attended the class during the whole semester.

I. SERVICE

■ *I.1. ASSIGNMENTS IN THE DEPARTMENT, COLLEGE, AND/OR UNIVERSITY*

[Department Committees]

2024-2025	Faculty Search Committee chair	**@UMN**
2023 & 2024	Ph.D. Qualifying Exam (Optimization), exam designer	**@UMN**
2021-2022	Faculty Search Committee chair	**@UMN**
2020-2021	Faculty Search Committee chair	**@UMN**
2019-2020	Faculty Search Committee chair	**@UMN**
2018-Present	Undergraduate Education Committee member	**@UMN**
2018-Present	Faculty and Academic Affairs Committee chair	**@UMN**
2018-2019	Faculty Search Committee member	**@UMN**
2016-2017	Faculty Search Committee member	**@UF**
2015-2016	Faculty Search Committee (REEF) chair	**@UF**
2015-2016	Faculty Search Committee member	**@UF**
2013-2014	Faculty Search Committee chair	**@UF**
2013-2018	Graduate Committee chair	**@UF**
2012-2013	Faculty Search Committee member	**@UF**
2011-2012	Undergraduate OR Curriculum Redesign Committee chair	**@UF**
2011-2018	Ph.D. General Exam (Optimization), exam designer	**@UF**
2011-2012	Faculty Search Committee member	**@UF**
2009-2010	Faculty Search Committee member	**@UF**
2008-2013	Graduate Committee member	**@UF**
2005-2007	Computer Usage Committee member	**@Purdue**
2005	Grissom Hall Academic Plan Committee member	**@Purdue**
Spring 2004	Yearly Assignment of Classes to Faculty Members, code designer	**@Purdue**
2003-2005	Undergraduate Curriculum Committee member	**@Purdue**
Spring 2003	Junior-Senior Faculty Primary Committee Assignment, code designer	**@Purdue**
2003-2008	Purdue INFORMS Student Chapter, academic advisor	**@Purdue**

[College Committees]

2023-Present	CSE Promotion & Tenure Committee member	**@UMN**
2022-2023	Faculty Search Committee member (Transportation, Civil Engineering)	**@UMN**
2022	Moore Inventor Fellows UMN Selection Committee reviewer	**@UMN**
2022-Present	CSE Research Advisory Committee member	**@UMN**
2016-2018	Research Advancement Committee member	**@UF**
2013-2018	Engineering Graduate Advisory Council	**@UF**
Fall 2002	Gator Engineering @ Santa Fe Committee member	**@UF**

■ *I.2. SERVICE TO GOVERNMENT OR PROFESSIONAL ORGANIZATIONS*

[Award Committees]

2024	Committee member for INFORMS' George Nicholson student paper competition	**@UMN**
2020	Committee member for IISE transactions (OE & Analytics) best paper award.	**@UMN**
2020	Judge for INFORMS' Junior Faculty Interest Group (JFIG) paper competition.	**@UMN**
2020	Committee member for Optimization Letters best paper award.	**@UMN**
2019	Committee member for JOGO best paper award.	**@UMN**
2019	Committee member for Optimization Letters best paper award.	**@UMN**
2018	Committee member for JOGO best paper award.	**@UMN**
2018	Committee member for Optimization Letters best paper award.	**@UMN**
2018	Committee member for INFORMS' Junior Faculty Interest Group (JFIG) paper competition.	**@UMN**
2018	Committee member for INFORMS' George Nicholson student paper competition.	**@UMN**
2017	Committee member for Optimization Letters best paper award.	**@UF**
2017	Committee member for INFORMS' George Nicholson student paper competition.	**@UF**
2017	Committee member for INFORMS' Junior Faculty Interest Group (JFIG) paper competition.	**@UF**
2016	Committee member for Optimization Letters best paper award.	**@UF**
2015	Committee member for IIE Transactions best paper award.	**@UF**
2015	Committee member for Optimization Letters best paper award.	**@UF**
2014	Committee member for INFORMS' Optimization Society young researcher award.	**@UF**
2011	Committee member for INFORMS' Optimization Society student paper competition.	**@UF**
2010	Committee member for INFORMS' George Nicholson student paper competition.	**@UF**
2009	Committee member for SIAM's SIAG/Optimization prize.	**@UF**
2009	Committee member for INFORMS' George Nicholson student paper competition.	**@UF**

[Proposal review]

2023	NSF proposal ad-hoc review (1).	**@UMN**
2023	NSF AI4OPT site review.	**@UMN**
2023	NSF review panel member.	**@UMN**
2022	AFOSR proposal reviews (2).	**@UMN**
2021	NSF review panel member.	**@UMN**
2020	NSF review panel member.	**@UMN**
2017	NSF review panel member.	**@UF**
2016	Austrian Science Fund (FWF) proposal reviewer (1).	**@UF**
2015	NSF review panel member.	**@UF**
2015	Research Foundation of Flanders (FWO) proposal reviewer.	**@UF**
2013	NSF review panel member.	**@UF**
2009	NSF review panel member.	**@UF**
2007	NSF review panel member.	**@Purdue**
2006	NSF review panel member.	**@Purdue**

[Profesionnal Society Involvement]

2006-2008	Vice-president (for Integer Programming) of INFORMS' optimization society.. ▷ Organized IP cluster at annual INFORMS conferences ($\simeq$ 10 sessions each). ▷ Organized IP session at the INFORMS International conference (Puerto Rico 2007). ▷ Organized IP session at the INFORMS Optimization Society Conference (Atlanta 2008).	**@Purdue**

[Service to Schools]

2013	Introduction to IE and OR, Williams Elementary 2nd Grade Magnet Program (Mrs Ewards).	**@UF**
2012	Introduction to IE and OR, Williams Elementary 2nd Grade Magnet Program (Mrs Ewards & Davies).	**@UF**

■ *I.3. CONFERENCE & WORKSHOP ORGANIZATION*

[Conference/workshop organization]

2018	Program committee member, LeGO 2018, Leiden, Netherlands.	**@UMN**
2017-2018	Cluster organizer (with J. Linderoth and A. Lodi), MINLP, ISMP 2018, Bordeaux	**@UF**
2014-2015	Cluster organizer (with M. Tawarmalani), Global Optimization, ISMP 2015, Pittsburgh.	**@UF**
2013-2014	Program committee member, IPCO 2014, Bonn, Germany.	**@UF**
2007-2008	Program committee member for the Mixed Integer Programming Workshop 2008, New York.	**@Purdue**
2006-2007	Program committee member for the Mixed Integer Programming Workshop 2007, Montreal, Canada.	**@Purdue**

[Session organization]

2022	MIP session (1) at the INFORMS Annual Meeting, Phoenix.	**@UMN**
2020	MIP session (1) at the INFORMS Annual Meeting, (Online).	**@UMN**
2018	MINLP session (1) at the INFORMS Annual Meeting, Phoenix.	**@UMN**
2014	MINLP session (1) at the INFORMS Annual Meeting, San Francisco.	**@UF**
2013	MIP session (1) at the INFORMS Annual Meeting, Minneapolis.	**@UF**
2012	MIP session (1) and MINLP session (1) at the INFORMS Annual Meeting in Phoenix.	**@UF**
2011	MIP sessions (2) at the INFORMS Annual Meeting in Charlotte.	**@UF**
2010	MIP session (1) at the INFORMS Annual Meeting in Austin.	**@UF**
2009	MIP session (1) at the INFORMS Annual Meeting in San Diego.	**@UF**
2008	MIP session (1) at the INFORMS Optimization Society Meeting in Atlanta.	**@UF**
2008	MIP session (1) at the INFORMS Annual Meeting in Washington.	**@UF**
2007	MIP session (1) at the INFORMS International Meeting in Puerto Rico.	**@Purdue**
2007	MIP sessions (2) at the INFORMS Annual Meeting in Seattle.	**@Purdue**
2006	MIP session (1) at the INFORMS Annual Meeting in Pittsburgh.	**@Purdue**
2005	MIP sessions (2) at the INFORMS Annual Meeting in San Francisco.	**@Purdue**

■ *I.4. EDITORIAL ACTIVITIES*

[Editorial Advisory Boards]

From 2023	Associate Editor, Mathematics of Operations Research.
From 2019	Associate Editor, OR Forum.
From 2017	Associate Editor, Journal on Global Optimization.
From 2013	Associate Editor, II(S)E Transactions - Optimization.
From 2013	Associate Editor, Optimization Letters.
From 2011	Associate Editor, IMA Journal of Management Mathematics.

[Technical referee for conference proceedings/awards]

2017	Integer Programming and Combinatorial Optimization 19, Waterloo.
2014	Integer Programming and Combinatorial Optimization 17, Bonn.
2013	Integer Programming and Combinatorial Optimization 16, Chile.
2012	Ad-hoc reviewer for the INFORMS Nicholson student paper award.
2001	Fifth Combinatorial Optimization Workshop, Aussois.

[Technical referee scientific journals]

- ▶ Mathematical Programming.
- ▶ Mathematics of Operations Research.
- ▶ Journal of Global Optimization.
- ▶ SIAM Journal on Optimization.
- ▶ Discrete Optimization.
- ▶ SIAM Journal on Discrete Mathematics.
- ▶ Mathematical Programming Computation.
- ▶ European Journal on Operations Research.
- ▶ Operations Research.
- ▶ SIAM Journal on Discrete Mathematics.
- ▶ Annals of Operations Research.
- ▶ Optimization Methods and Software.
- ▶ Surveys in Operations Research and Management Science.
- ▶ Networks.
- ▶ IISE Transactions.
- ▶ Informs Journal on Computing.
- ▶ EURO Journal on Transportation and Logistics.
- ▶ Transportmetrica.
- ▶ Computer-Aided Civil and Infrastructure Engineering.
- ▶ Journal of Scheduling.
- ▶ Computers & Operations Research.

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