

## Thomas C. Sharkey

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### Academic Positions

- **Assistant Professor**, Department of Industrial and Systems Engineering (formerly known as Decision Sciences and Engineering Systems), Rensselaer Polytechnic Institute, August 2008-Present.

### Education

- **Ph.D.**, Department of Industrial and Systems Engineering, University of Florida, August 2008.  
Dissertation Title: *Approaches to nonlinear and infinite-dimensional network design problems in supply chain optimization.*
- **M.S.E.** in Mathematical Sciences, Department of Applied Mathematics and Statistics, Johns Hopkins University, May 2004.
- **B.S.** in Mathematical Sciences (with Honors), Department of Applied Mathematics and Statistics, Johns Hopkins University, May 2004.

### Awards

- **2010 IERC Best Paper Award**, Production Planning and Scheduling Track, June 2010.
- **National Science Foundation Graduate Research Fellowship**, August 2005-August 2008.
- **Graduate Student Award for Excellence in Research**, Department of Industrial and Systems Engineering, University of Florida, April 2007.
- **OEM Fellowship**, Department of Industrial and Systems Engineering, University of Florida, August 2004-August 2005.
- **Applied Mathematics Undergraduate Achievement Award**, Department of Applied Mathematics and Statistics, Johns Hopkins University, May 2004.

### Student Supervision

#### Current Ph.D. Students

- Sarah G. Nurre. Projected Graduation: Summer 2013.
- Jiaming Qiu. Projected Graduation: Summer 2012.

#### Graduated Ph.D. Students

- Ajay K. Malaviya. *Multi-Period Network Interdiction Problems with Applications to City-Level Drug Enforcement*, December 2010.

## Undergraduate Students

- Undergraduate Research Project: Melissa Licato, Fall 2011-Present, Title: The role of trust and existing social networks in humanitarian relief efforts.
- Undergraduate Research Project: Faith Michael, Spring 2010-Spring 2011, Title: Robust optimization and stochastic programming approaches for scheduling mitigation efforts against hurricanes in networked systems.
- Undergraduate Research Project: Brian Keating, Spring 2010, Title: Tax-aware portfolio optimization models.
- Undergraduate Research Project: Molly Margolis, Fall 2009, Title: An integer programming model for mitigation efforts in electric power systems.
- Academic Advisor for the 2012 class of Industrial and Management Engineering undergraduate students (25 students currently).

## Refereed Articles

1. B. Cavdaroglu, E. Hammel, J.E. Mitchell, T.C. Sharkey, and W.A. Wallace. Integrating restoration and scheduling decisions for disrupted interdependent infrastructure systems. Forthcoming in the *Annals of Operations Research*.
2. A.K. Malaviya<sup>†</sup>, C. Rainwater, and T.C. Sharkey. Multi-period network interdiction models with applications to city-level drug enforcement. Forthcoming in *IIE Transactions*.
3. T.C. Sharkey, J. Geunes, H.E. Romeijn, and Z.-J. Shen. Exact algorithms for integrated production planning and facility location problems. Forthcoming in *Naval Research Logistics*.
4. W. van den Heuvel, O.E. Kundakcioglu, J. Geunes, H.E. Romeijn, T.C. Sharkey, and A.P.M. Wagelmans. Integrated market selection and production planning: Complexity and solution approaches. Forthcoming in *Mathematical Programming*.
5. T.C. Sharkey. Infinite linear programs. Forthcoming in the *Encyclopedia of Operations Research and Management Science*.
6. T.C. Sharkey. Network flow problems with pricing decisions. *Optimization Letters*, 5(1): 71-83, 2011.
7. T.C. Sharkey, H.E. Romeijn, and J. Geunes. A class of nonlinear nonseparable continuous knapsack and multiple-choice knapsack problems. *Mathematical Programming*, 126(1): 69-96, 2011.
8. M.H. Dinitz, J.M. Gold, T.C. Sharkey, and L. Traldi. Graphical representations of clutters. *Ars Combinatoria*, 94: 303-320, 2010.
9. T.C. Sharkey and H.E. Romeijn. Greedy approaches for a class of nonlinear Generalized Assignment Problems. *Discrete Applied Mathematics*, 158(5): 559-572, 2010.
10. H.E. Romeijn, T.C. Sharkey, Z.-J. Shen, and J. Zhang. Integrating facility location and production planning decisions. *Networks*, 55(2): 78-89, 2010.
11. T.C. Sharkey and H.E. Romeijn. Simplex-inspired algorithms for solving a class of convex programming problems. *Optimization Letters*, 2(4): 455-481, 2008.

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<sup>†</sup>Denotes one of my students.

12. T.C. Sharkey and H.E. Romeijn. A simplex algorithm for minimum-cost network-flow problems in infinite networks. *Networks*, 52(1): 14-31, 2008.

### Submitted Articles

1. S.G. Nurre<sup>†</sup>, B. Cavdaroglu, J.E. Mitchell, T.C. Sharkey, and W.A. Wallace. Restoring infrastructure systems: An integrated network design and scheduling problem.
2. J. Qiu<sup>†</sup> and T.C. Sharkey. Integrated dynamic single facility location and inventory planning problems.

### Selected Working Papers

1. J. Qiu<sup>†</sup>, X. Ban and T.C. Sharkey. Locating control sensors in traffic systems during emergency evacuations.
2. S.G. Nurre<sup>†</sup> and T.C. Sharkey. Parallel resource network-based scheduling: Complexity analysis and dispatching rules.

### Conference Proceedings

1. F. Michael<sup>†</sup> and T.C. Sharkey. Generator location problems for mitigating unmet demand in local power infrastructure systems. *Proceedings of the West Point Critical Infrastructure Symposium*, Newark, NJ, 2011.
2. B. Cavdaroglu, S.G. Nurre<sup>†</sup>, J.E. Mitchell, T.C. Sharkey, and W.A. Wallace. Decomposition methods for restoring infrastructure systems. *Proceedings of the International Conference on Vulnerability and Risk Analysis and Management*, Hyattsville, MD, 2011.
3. S.G. Nurre<sup>†</sup> and T.C. Sharkey. Restoring infrastructure systems: An integrated network design and scheduling problem. *Proceedings of the Industrial Engineering Research Conference*, Cancun, Mexico, 2010.
4. A.K. Malaviya<sup>†</sup>, C. Rainwater, and T.C. Sharkey. Multi-period network interdiction models with applications to city-level drug enforcement. *Proceedings of the Industrial Engineering Research Conference*, Cancun, Mexico, 2010. Recipient of the Best Paper Award in the Production Planning and Scheduling track.
5. T.C. Sharkey, H.E. Romeijn, and J. Geunes. Analysis of a class of nonlinear knapsack problems. *Proceedings of the Industrial Engineering Research Conference*, Orlando, FL, 2006.

### Scholarly Presentations

1. *Network-based scheduling problems: Complexity analysis and dispatching rules*. Invited Presentation, IIE Annual Conference (IERC), Reno, Nevada, May 2011.
2. *Integrated network design and scheduling problems*. Invited Presentation, INFORMS Northeast Conference, Amherst, MA, May 2011.
3. *Network-based scheduling problems: Complexity analysis and dispatching rules*. Contributed Presentation, ICS (INFORMS Computing Society) Conference, Monterey, CA, January 2011.

4. *Restoring infrastructure systems: An integrated network design and scheduling problem.* Invited Presentation, INFORMS Annual Meeting, Austin, TX, November 2010.
5. *Restoring infrastructure systems: An integrated network design and scheduling problem.* Invited Presentation, Workshop on OR for the Public Interest, Stanford, CA, June 2010.
6. *Restoring infrastructure systems: An integrated network design and scheduling problem.* Invited Presentation, IIE Annual Conference (IERC), Cancun, Mexico, June 2010.
7. *Integrated mobile single facility location and inventory planning problems.* Invited Presentation, INFORMS Annual Meeting, San Diego, CA, October 2009.
8. *Exact algorithms for integrated production planning and facility location problems.* Invited Presentation, IIE Annual Conference (IERC), Miami, FL, May 2009.
9. *A class of nonlinear nonseparable knapsack problems.* Invited Presentation, ICS (INFORMS Computing Society) Conference, Charleston, SC, January 2009.
10. *Integrating facility location and production planning decisions.* Invited Presentation, INFORMS Annual Meeting, Washington D.C., October 2008.
11. *A class of nonlinear generalized assignment problems.* Invited Presentation, INFORMS Annual Meeting, Seattle, WA, November 2007.
12. *New approaches to nonlinear network design problems in supply chain optimization.* Interactive Presentation, INFORMS Annual Meeting, Seattle, WA, November 2007.
13. *Integrating facility location and production planning.* Invited Presentation, INFORMS International Puerto Rico, Rio Grande, PR, July 2007.
14. *A branch and price algorithm for solving an integrated production planning and facility location problem.* Contributed Presentation, Sixth Annual Florida SCALE Conference, Gainesville, FL, February 2007.
15. *Solving a class of parallel machine scheduling problems with nonlinear cost functions.* Invited Presentation, INFORMS Annual Meeting, Pittsburgh, PA, November 2006.
16. *Facility location problems with production planning considerations.* Invited Presentation, International Symposium on Mathematical Programming, Rio de Janeiro, Brazil, August 2006.
17. *Analysis of a class of nonlinear knapsack problems.* Invited Presentation, IIE Annual Conference (IERC), Orlando, FL, May 2006.
18. *A class of nonlinear continuous knapsack problems with applications in supply chain optimization.* Invited Presentation, Fifth Annual Florida SCALE Conference, Gainesville, FL, February 2006.
19. *A network simplex algorithm for a class of infinite-dimensional network flow problems.* Contributed Presentation, INFORMS Annual Meeting, San Francisco, CA, November 2005.

## Professional Activities

- Member of the Undergraduate Advisory Committee, Department of Industrial and Systems Engineering, Rensselaer Polytechnic Institute, August 2008-Present.
- Editorial Board Member, *Journal of Global Optimization*, July 2009-Present.
- Invited Session Chair, *Network Interdiction and Restoration Problems*, Computing Society Cluster, 2010 INFORMS Annual Meeting.
- Invited Session Chair, *Network-Based Models and Problems in Production Planning and Scheduling*, Production Planning and Scheduling Track, 2010 IERC-Cancun.
- Invited Session Chair, *Methods for Optimization Problems in Networks*, Computational Optimization and Software Cluster, 2009 INFORMS Annual Meeting.
- Invited Session Chair, *Sourcing Models with Production and Inventory Considerations*, Logistics and Inventory Track, 2009 IERC-Miami.
- Invited Session Chair, *Nonlinear Programming: Theory and Applications*, Computational Optimization and Software Cluster, 2008 INFORMS Annual Meeting.
- Invited Session Chair, *Supply Chain Optimization*, Optimization Cluster, 2007 INFORMS Annual Meeting.
- Session Chair, *Network Design and Optimization*, ISMP 2006.
- Participant, New Faculty Colloquium, 2009 IIE Annual Meeting.
- Participant, Future Academician Colloquium, 2007 INFORMS Annual Meeting.
- Grant proposal reviewer for the Air Force Office of Scientific Research.
- Referee for *Operations Research*, *Naval Research Logistics*, *European Journal of Operational Research*, *Networks*, *Discrete Applied Mathematics*, *Journal of Global Optimization*, *Annals of Operations Research*, *Computers and Industrial Engineering*, *Optimization Letters*, *Journal of the Operational Research Society*, *Omega* the *Encyclopedia of Operations Research and Management Science*, and *Applications and Applied Mathematics*.
- Member of INFORMS (2005-Present), IIE (2006-Present), and MPS (2006-Present).

## Teaching Experience

- **Instructor**, ISYE 4963/6210: Theory of Production Scheduling, Department of Industrial and Systems Engineering, Rensselaer Polytechnic Institute, Spring 2011.
- **Instructor**, ISYE 4220/6961: Optimization Algorithms and Applications, Department of Industrial and Systems Engineering, Rensselaer Polytechnic Institute, Fall 2010.
- **Instructor**, DSES 4963/6210: Theory of Production Scheduling, Department of Industrial and Systems Engineering, Rensselaer Polytechnic Institute, Spring 2009, 2010.
- **Instructor**, DSES 4961/6961: Optimization Algorithms and Applications, Department of Industrial and Systems Engineering, Rensselaer Polytechnic Institute, Fall 2008, 2009.

– This course was designed and taught for the first time in Fall 2008 in order to expose undergraduate Industrial Engineering majors to important concepts at the intersection of Operations Research and Computer Science. It has been accepted into the curriculum of the School of Engineering as ISYE-4220.

- **Instructor**, ESI 4312: Operations Research 1, Department of Industrial and Systems Engineering, University of Florida, Fall 2007.
- **Instructor**, EIN 4343: Inventory and Supply Chain Systems, Department of Industrial and Systems Engineering, University of Florida, Spring 2007.
- **Teaching Assistant**, EIN 4343: Inventory and Supply Chain Systems, Department of Industrial and Systems Engineering, University of Florida, Fall 2006.
- **Teaching Assistant**, 550.112: Statistical Analysis II, Department of Applied Mathematics and Statistics, Johns Hopkins University, Spring 2004.
- **Grader**, 550.112: Statistical Analysis II, Department of Applied Mathematics and Statistics, Johns Hopkins University, Fall 2004.

#### **Relevant Work Experience**

- **Information Assurance Intern**, Equal Employment Opportunity and Diversity Directorate, Department of Defense, Summer 2007.
- **Research Experience for Undergraduates** sponsored by the National Science Foundation, Lafayette College, Summer 2003.