

Rui Zhang



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Research Interests

Applications:

Optimization Problems on Social Networks, Logistics, Revenue Management, and Marketing.

Methodologies:

Integer Programming, Network Optimization and Approximate Dynamic Programming.

Education

Ph.D. in Management Science,	August 2016
Robert H. Smith School of Business, University of Maryland	College Park, Maryland
M.S. in Computational Operations Research, College of William & Mary	May 2011
M.S. in Computer Science, Bowling Green State University	August 2009
B.B.A. in Information Systems, Huazhong University of Science and Technology	August 2006

Academic Experience

Leeds School of Business, University of Colorado	Boulder, Colorado
<i>Assistant Professor</i> of Operations Management	June 2016 - present
Robert H. Smith School of Business, University of Maryland	College Park, Maryland
<i>Instructor</i> of Operations Management & Business Analytics	January 2015 - May 2016

Publications

Refereed Journal Papers:

9. "Weighted Target Set Selection on Trees and Cycles" (with S. Raghavan), accepted by *Networks*, DOI:10.1002/net.21972.
8. "A Branch-and-Cut Approach for the Least Cost Influence Problem on Social Networks" (with D. Günneç and S. Raghavan), *Networks*, **76**(1):84-105, 2020.
7. "Least Cost Influence Maximization on Social Networks" (with D. Günneç and S. Raghavan), *INFORMS Journal on Computing*, **32**(2):289-302, 2020.
6. "A Branch-and-Cut Approach for the Weighted Target Set Selection Problem on Social Networks" (with S. Raghavan), *INFORMS Journal on Optimization*, **1**(4):304-322, 2019.
5. "A Hybrid Heuristic Procedure for the Windy Rural Postman Problem with Zigzag Time Windows" (with O. Lum, B. Golden and E. Wasil), *Computers & Operations Research*, **88**, 247-257, 2017.

Publications - Cont'd

4. "The Windy Rural Postman Problem with a Time-Dependent Zigzag Option" (with J. Nossack, B. Golden and E. Pesch), *European Journal of Operational Research*, **258**(3), 1131-1142, 2017.
3. "The Min-Max Split Delivery Multi-Depot Vehicle Routing Problem with Minimum Service Time Requirement" (with X. Wang, B. Golden and E. Wasil), *Computers & Operations Research*, **71**, 110-126, 2016.
2. "Robust Optimization Model for Runway Configuration Management" (with R. Kincaid), *International Journal of Operations Research and Information Systems*, **5**(3), 1-26, 2014.
1. "Rectangles Algorithm for Generating Normal Variates" (with L. Leemis), *Naval Research Logistics (NRL)*, **59**(1), 52-57, 2012.

Refereed Conference Proceedings:

2. "Routing problems with time dependencies or how different are trash collection or newspaper delivery from street sweeping or winter gritting?" (with J. Nossack, B. Golden and E. Pesch), *7th International Conference on Engineering, Project, and Production Management*, 21 - 23 September 2016, Bialystok, Poland.
1. "Robust Optimization Model for Runway Configuration Management" (with R. Kincaid), *the Proceedings of the 11th AIAA Aviation Technology, Integration, and Operations (ATIO) Conference*, September 20-22 2011, Virginia Beach, VA, AIAA.

Papers Under Review:

3. "Product-based Approximate Linear Programs for Network Revenue Management" (with S. Samiedaluie and D. Zhang).
2. "Rapid Influence Maximization on Social Networks: The Positive Influence Dominating Set Problem" (with S. Raghavan).
1. "Influence Maximization with Latency Requirements on Social Networks" (with S. Raghavan).

Working Papers:

6. "Approximate Linear Programming for a Queueing Control Problem" (with S. Samiedaluie and D. Zhang).
5. "Higher Order Approximations for Network Revenue Management" (with S. Samiedaluie and D. Zhang).
4. "The Driver Helper Problem: Coordinated Logistics with a Truck and a Driver Helper" (with S. Raghavan).
3. "Finite-Horizon Decomposition for an Infinite-Horizon Dynamic Capacity Allocation Problem" (with T. Vossen)
2. "Approximate Dynamic Programming Approaches for the Multidimensional Knapsack Problem" (with T. Vossen and F. You).
1. "The Paired Mail Carrier Problem" (with P. Stefan, B. Golden and E. Wasil).

Awards and Honors

- 2016 Finalist for the INFORMS Social Media Analytics Best Student Paper Award, INFORMS
 Frank T. Paine Award for Academic Achievement, University of Maryland
 2nd Prize for WINFORMS Student Excellence Award Competition, INFORMS
 Abraham Golub Memorial Dissertation Proposal Prize, University of Maryland
 International Conference Student Support Award, University of Maryland
- 2015 National Science Foundation Travel Grant
 Dean's Fellowship, Robert H. Smith School of Business
 Outstanding Graduate Assistant Award, University of Maryland
- 2014 INFORMS Doctoral Colloquium Participant, INFORMS
 Dean's Fellowship, Robert H. Smith School of Business
- 2013 Dean's Fellowship, Robert H. Smith School of Business
 The Jeremiah Golden Prize, Robert H. Smith School of Business
- 2012 Dean's Fellowship, Robert H. Smith School of Business
- 2008 Professional Development Grant, Bowling Green State University
- 2006 Distinctive Graduate Award, Huazhong University of Science and Technology
- 2004 Outstanding Academic Performance Award, Huazhong University of Science and Technology

Teaching Experience

University of Colorado

"Managing Business Process" (Junior/Senior level)

- | | |
|----------------------------|--|
| – Spring 2020 (2 sections) | Teaching Evaluation: N/A Due to COVID-19 |
| – Spring 2019 (2 sections) | Teaching Evaluation: 4.9/6.0 and 5.0/6.0 |
| – Spring 2018 (2 sections) | Teaching Evaluation: 4.9/6.0 and 5.6/6.0 |

"Supply Chain Analytics" (MBA/MS level)

- | | |
|---------------|--|
| – Spring 2020 | Teaching Evaluation: N/A Due to COVID-19 |
| – Spring 2019 | Teaching Evaluation: 4.6/6.0 |
| – Spring 2018 | Teaching Evaluation: 4.5/6.0 |
| – Spring 2017 | Teaching Evaluation: 4.7/6.0 |

"Large-Scale Optimization" (Ph.D. level)

- | | |
|---------------|------------------------------|
| – Spring 2017 | Teaching Evaluation: 6.0/6.0 |
|---------------|------------------------------|

University of Maryland

"Introduction to Optimization" (Senior level)

- | | |
|-----------------------------|--------------------------------|
| – Spring 2016 (28 students) | Teaching Evaluation: 3.49/4.00 |
| – Spring 2015 (32 students) | Teaching Evaluation: 3.56/4.00 |

Invited Seminars/Workshops

Nebraska College of Business, University of Nebraska-Lincoln, September 2020
(Postponed Due to COVID-19)

Paul Merage School Of Business, University of California-Irvine, November 2020
(Postponed Due to COVID-19)

CU Denver Business School, University of Colorado Denver
(Postponed Due to COVID-19)

Rocky Mountain Chapter Seminar, INFORMS, January 2020

Department of Mathematics, College of William & Mary, April 2017

Leeds School of Business, University of Colorado Boulder, January 2016

Seminars Attended

Leeds training Seminars

Conference Presentations (*: as the presenting author, •: presented by co-authors)

“Rapid Influence Maximization on Social Networks: The Positive Influence Dominating Set Problem”
(with S. Raghavan).

- * INFORMS Annual Meeting, National Harbor, MD, November 8-11, 2020 (Online Due to COVID-19).
- 15th INFORMS Telecommunications and Network Analytics Conference, Berlin, Germany, October 20-21, 2020 (Online Due to COVID-19).
- The Applied Optimisation Arena Seminar, the Department of Information Technology, Uppsala University, November 25, 2020.

“Finite-Horizon Decomposition for an Infinite-Horizon Dynamic Capacity Allocation Problem” (with T. Vossen)

- * The POMS 30th Annual Conference, Washington D.C., May 2-6, 2019.
- * INFORMS Annual Meeting, Seattle, WA, October 20-23, 2019.

“Weighted Target Set Selection Problem on Cycles” (with S. Raghavan)

- * INFORMS Annual Meeting, Phoenix, AZ, November 3-7, 2018.
- * INFORMS Optimization Society Conference, University of Colorado, Denver, CO, March 23-25, 2018.

“Origin-Destination Based Approximations for Network Revenue Management ” (with D. Zhang)

- * INFORMS Annual Meeting, Houston, TX, October 22-25, 2017.
- * The POMS 28th Annual Conference, Seattle, WA, May 5-8, 2017.

“The One Time Period Least Cost Influence Maximization Problem on Social Networks ” (with S. Raghavan)

- * INFORMS Annual Meeting, Houston, TX, October 22-25, 2017.
- 8th International Network Optimization Conference, Lisboa, Portugal, Feb 26-28, 2017.

“Least Cost Influence Maximization on Trees and Cycles ” (with S. Raghavan)

- * 15th INFORMS Computing Society Conference, Austin, TX, January 15-17, 2017.

Conference Presentations - Cont'd (*: as the presenting author, •: presented by co-authors)

“A Hybrid Heuristic Procedure for the Windy Rural Postman Problem with Time-Dependent Zigzag Service” (with O. Lum, B. Golden and E. Wasil)

- INFORMS Annual Meeting, Nashville, TE, November 13-16, 2016.
- 2nd Workshop on Arc Routing Problems, Lisbon, Portuggal, May 22-26, 2016.

“Mathematical Programming Approaches to Influence Maximization Problems on Social Networks” (with S. Raghavan)

- * Summer Brown-Bag Seminar, Leeds School of Business, University of Colorado Boulder, 2017.
- * INFORMS Annual Meeting, Nashville, TE, November 13-16, 2016.
- * **WINFORMS Student Excellence Award Competition**, INFORMS, DC, April 19, 2016.
- **Plenary Talk**, INFORMS Telecommunications Conference, Boca Raton, FL, March 20-22, 2016.

“Weighted Target Set Selection on Social Networks” (with S. Raghavan)

- * **INFORMS Social Media Analytics Best Student Paper Award**, Nashville, TE, November 13-16, 2016.
- * INFORMS Optimization Society Conference, Princeton University, Princeton, NJ, March 17-19, 2016.
- * 22nd International Symposium on Mathematical Programming, Pittsburgh, PA, July 12-17, 2015.
- * 14th INFORMS Computing Society Conference, Richmond, VA, January 11-13, 2015.
- * INFORMS Annual Meeting, San Francisco, CA, November 9-12, 2014.

“Generalizations of the Dominating Set Problem on Social Networks” (with S. Raghavan)

- * 16th INFORMS Computing Society Conference, Knoxville, Tennessee, January 6-8, 2019.
- * INFORMS Annual Meeting, Phoenix, AZ, November 3-7, 2018.
- * INFORMS Optimization Society Conference, University of Colorado, Denver, CO, March 23-25, 2018.
- 21st Conference of the International Federation of Operational Research Societies, Quebec City, Canada, July 17-21, 2017.
- * INFORMS Annual Meeting, Philadelphia, PA, November 1-4, 2015.

“Tailored Incentives and Least Cost Influence Maximization on Social Networks” (with S. Raghavan)

- * INFORMS Annual Meeting, Philadelphia, PA, November 1-4, 2015.

“The Positive Influence Dominating Set Polytope” (with S. Raghavan)

- 22nd International Symposium on Mathematical Programming, Pittsburgh, PA, July 12-17, 2015.
- 7th International Network Optimization Conference, Warsaw, Poland, May 18-20, 2015.

Conference Presentations - Cont'd (*: as the presenting author, •: presented by co-authors)

“The Windy Rural Postman Problem with a Time-Dependent Zigzag Option” (with J. Nossack, B. Golden, E. Pesch)

- * INFORMS Annual Meeting, Philadelphia, PA, November 1-4, 2015.
- The IEEE SSCI 2015, Cape Town, South Africa, December 7-10, 2015.
- Logistikmanagement 2015, Braunschweig, Germany, September 16-18, 2015.
- OR2015, Vienna, Austria, September 1-4, 2015.
- 3rd VeRoLog, Oslo, Norway, June 22-25, 2014.

“Solving Semidefinite Programs over Symmetric, Diagonally Dominant Matrices” (with M. Lewis, D. Phillips)

- INFORMS Annual Meeting, San Francisco, CA, November 9-12, 2014.

“A Tight Extended Formulation for the Weighted Target Set Selection Problem on Trees” (with S. Raghavan)

- 3rd International Symposium on Combinatorial Optimization, Lisbon, Portugal, 2014.

“Engineering Diffusion on a Social Network at Minimum Cost” (with S. Raghavan)

- * 3rd International Symposium on Combinatorial Optimization, Lisbon, Portugal, 2014.

“Weighted and Fractional Versions of the Target Set Selection Problem on Trees” (with S. Raghavan)

- Capital Area Theory Seminar, Department of Computer Science, University of Maryland, April 2014.

“The Least Cost Influence Problem” (with D. Günneç, S. Raghavan)

- * 20th IFORS Conference, Barcelona, Spain, July 13-18, 2014.
- EURO/INFORMS Joint International Meeting, Rome, Italy, July 1-4, 2013.
- 6th International Network Optimization Conference, Tenerife, Spain, May 20-22, 2013.
- * 13th INFORMS Computing Society Conference, Santa Fe, NM, January, 2013.
- Intelligent Automation, Inc. Colloquia Series, Institute for Systems Research, University of Maryland, November, 2012.

“Robust Optimization Models for Runway Configuration Management” (with R. Kincaid)

- AIAA-ATIO conference, Virginia Beach, VA, September 20-22, 2011.
- * 12th INFORMS Computing Society Conference, Monterey, CA, January, 2011.
- * 10th Graduate Research Symposium, College of William & Mary, Williamsburg, VA, March, 2011.

“First-order Methods for Maximizing Algebraic Connectivity of Weighted Graphs” (with A. Papir, D. Phillips)

- * Modeling and Optimization: Theory and Applications (MOPTA) 2011, Lehigh University, Bethlehem, PA, August, 2011.
- * 12th INFORMS Computing Society Conference, Monterey, CA, January, 2011.
- Discrete Math Seminar, Columbia University. December 2010. New York, NY.

Professional Service

External Service

Editorial

Associate Editor, *Networks*, November 2020 – present.

Session Chair

Production and Operations Management Society Meeting 2019,
INFORMS Computing Society Conference 2019, INFORMS Optimization Society Conference 2018,
INFORMS Annual Meeting 2017, Production and Operations Management Society Meeting 2017.

Journal Reviewer

Operations Research, Production and Operations Management, INFORMS Journal on Computing, Networks, IIE Transactions, Transportation Research Part E, Journal of Global Optimization, Omega: The International Journal of Management Science, Algorithms.

Internal Service

Leeds School of Business, University of Colorado

PhD Director, the PhD program in operations management, Fall 2017 – Present.

Doctoral Curriculum and Policy Committee, Fall 2017 – Present.

Organizer, Operations seminar series, 2018 – present.

Leeds Executive Committee, 2018 – 2020.

Engineering Collaboration Committee, 2018 – 2020.

Primary Unit Evaluation Committee

Reappointment of Keith Stockton, Fall 2017

Reappointment of Tim Rodger, Fall 2018 (Chair)

Reappointment of Gregg Macaluso, Fall 2019

Operations management faculty search committee, 2017, 2018 (chair), 2019.

Languages

English(Proficient), Mandarin Chinese (Native Speaker).

Professional Affiliations

Institute for Operations Research and the Management Sciences (INFORMS)

Manufacturing and Service Operations Management Society (MSOM)

Mathematical Optimization Society

INFORMS Computing Society

INFORMS Social Media Analytics Society