

# 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 (Advisor: Subramanian Raghavan), <b>Robert H. Smith School of Business, University of Maryland</b>	August 2016 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

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

## Publications

### Refereed Journal Papers:

7. "A Branch-and-Cut Approach for the Weighted Target Set Selection Problem on Social Networks" (with S. Raghavan), accepted by *INFORMS Journal on Optimization*.
6. "Least Cost Influence Maximization on Social Networks" (with D. Güneç and S. Raghavan), accepted by *INFORMS Journal on Computing*.
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.
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.

## Publications - Cont'd

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. "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.
1. "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.

### Papers Under Review:

2. "The Paired Mail Carrier Problem" (with P. Stefan, B. Golden and E. Wasil), submitted.
1. "Influence Maximization with Latency Requirements on Social Networks" (with S. Raghavan), submitted.

### Working Papers:

7. "A Branch-and-Cut Approach for the Least Cost Influence Problem on Social Networks" (with D. Günneç and S. Raghavan).
6. "Weighted Target Set Selection on Trees and Cycles" (with S. Raghavan).
5. "Rapid Influence Maximization on Social Networks: The Positive Influence Dominating Set Problem" (with S. Raghavan).
4. "First-order Methods for Finding Weighted Graphs with Maximum Algebraic Connectivity" (with M. Lewis and D. Phillips).
3. "Profitable Windy Rural Postman Problem with Multiple Visits and a Zigzag option" (with J. Nossack, B. Golden and E. Pesch).
2. "An Origin-Destination Decomposition Method for Network Revenue Management." (with D. Zhang).
1. "Approximate Dynamic Programming Approaches for the Multidimensional Knapsack Problem." (with T. Vossen and F. You).

## 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

## Awards and Honors - Cont'd

- 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

### Instructor

University of Colorado

"Supply Chain Analytics" (MBA level)

– Spring 2017 (18 students)

Teaching Evaluation: 4.7/6.0

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

– Spring 2017 (3 students)

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

### Teaching Assistant

University of Maryland

September 2012 - May 2016

"Introduction to Mathematical Programming" (Ph.D. level) –3 sections

College of William & Mary

September 2009 - May 2010

"Calculus I" Lab (Freshman level) –3 sections

Bowling Green State University

September 2007 - May 2009

"Introduction to Management Science" (Junior level) –2 sections

"Computer Basics" (Freshman level) –1 section

## Invited Seminars/Workshops

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

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

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

“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.

“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.

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

“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.

“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.

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

“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

Session chair for INFORMS Optimization 2018, INFORMS 2017, POMS 2017

Journal reviewer

*INFORMS Journal on Computing, Networks, IIE Transactions, Journal of Global Optimization, Algorithms*

## 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