Miao Yu

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EDUCATION

Doctor of Philosophy, Industrial and Operations Engineering — April 2020
University of Michigan, Ann Arbor, MI
Dissertation Title: Optimization Approaches of Mobility and Service Sharing
Advisor: Dr. Siqian Shen and Dr. Viswanath Nagarajan

Master of Science, Industrial and Operations Engineering — December 2015
University of Michigan, Ann Arbor, MI

Bachelor of Science, Mathematics — May 2014
Bachelor of Science, Statistics
University of Minnesota, Minneapolis, MN

RESEARCH INTERESTS

- Theories: stochastic programming, integer programming, approximation algorithm
- Applications: vehicle routing, shared mobility, power system

HONOR AND AWARD

- Rackham Travel Grant, University of Michigan 2016, 2018, 2019
- Department Fellowship, Department of Industrial and Operations Engineering, University of Michigan, 2016
- Hans H Dalaker Fund, Department of Mathematics, University of Minnesota, 2013-2014

JOURNAL PUBLICATION

J1. **Miao Yu**, Siqian Shen, "An integrated car-and-ride sharing system for mobilizing heterogeneous travelers with application in underserved communities," *IISE Transactions*, 52(2), 151-165, 2019 [link]

J2. **Miao Yu**, Viswanath Nagarajan, Siqian Shen, "An approximation algorithm for vehicle routing with compatibility constraints," *Operations Research Letters*, 46(6), 579–584, 2018 [link]

J3. Joy Chang, **Miao Yu**, Siqian Shen, Ming Xu, "Carsharing fleet location design with mixed vehicle types for CO2 emission reduction," *Service Science*, 9(3), 205–218, 2017

CONFERENCE PROCEEDING

C1. **Miao Yu**, Viswanath Nagarajan, Siqian Shen, "Minimum makespan vehicle routing problem with compatibility constraints," in the Proceeding of International Conference on AI and OR Techniques in Constraint Programming for Combinatorial Optimization Problems (CPAIOR), 244–253. Springer, Cham, 2017

REFERRED CONFERENCE ABSTRACT

A1. **Miao Yu**, Siqian Shen, "Self-sustained car-and-ride sharing design and optimization for improving the mobility of underserved communities," 2017 INFORMS Transportation Science and Logistics Conference, Chicago, IL, July 2017

PAPER UNDER REVIEW

R1. **Miao Yu**, Viswanath Nagarajan, Siqian Shen, "Improving column generation via random coloring and parallelization for vehicle routing problems," under revision, 2020

WORKING PAPER

W1. **Miao Yu**, Siqian Shen, "Multi-stage transmission expansion planning with stochastic wind generation and load, " working paper, 2019

CONFERENCE PRESENTATION

CP1. "An integrated car-and-ride sharing system for mobilizing heterogeneous travelers with application in underserved communities," 2019 INFORMS Annual Conference, Seattle, WA, October 2019

CP2. "Improving column generation via random coloring and parallelization for vehicle routing problems," 2019 INFORMS Annual Conference, Seattle, WA, October 2019

CP3. "Designing and Optimizing an integrated car-and-ride sharing system for mobilizing underserved populations," 2018 INFORMS Optimization Society Conference, Denver, CO, March 2018

CP4. "Minimum makespan vehicle routing problem with compatibility constraints," CPAIOR, Padova, Italy, June 2017

CP5. "Routing shared vehicle with matching constraints for medical home care delivery," INFORMS Annual Conference, Nashville, TN, November 2016

POSTER PRESENTATION

PP1. "Designing and optimizing an integrated car-and-ride sharing system for mobilizing underserved populations," MIDAS Data Science for Transportation Research Challenge Symposium, Ann Arbor, MI, May 2018

PP2. "Self-sustained car-and-ride sharing design and optimization for improving the mobility of underserved communities," Midwest Big Data Hub Transportation Symposium, Ann Arbor, MI, June 2017

TEACHING/ MENTORING

Primary Instructor

IOE 316 Introduction to Markov Processes, Fall 2019

- Review: 4.4/5
- Class size: 105 undergraduate/graduate students
- Responsibilities: designing and providing two weekly lectures to discuss the theory and applications of Markov Process, holding office hours twice a week, designing and grading exams

Graduate Student Instructor

IOE 316 Introduction to Markov Processes, Winter 2019

- Class size: 120 undergraduate/graduate students
- Responsibilities: designing and providing five lab sessions, holding office hours, designing and grading homework and exams

IOE 310 Introduction to Optimizations, Winter/Fall 2018

- Class size: 120 undergraduate students

- Responsibilities: holding office hours to discuss the lecture content and problems, designing homework and exams

Mentoring

IOE Ph.D. Mentoring Program, Fall 2017–Present

- Weiyu Li, IOE Ph.D. student
- Haoming Shen, IOE Ph.D. student
- Kati Moug, IOE Ph.D. student

PROFESSIONAL ACTIVITY

Journal Reviewer

- Transportation Research Part E: Logistics and Transportation
- Omega: The International Journal of Management Science

COURSEWORK

University of Michigan, Ann Arbor

- IOE 600 Functional Space Methods
- IOE 610 Linear Programming
- IOE 611 Nonlinear Programming
- IOE 612 Network flows
- IOE 614 Integer Programming
- IOE 691 Special Topics in Stochastic Programming and Robust Optimization
- IOE 691 Special Topics in Approximation Algorithm
- IOE 512 Dynamic Programming
- IOE 515/516 Stochastic Process
- EECS 545 Machine Learning
- EECS 591 Computational Data Science

*IOE = Industrial and Operations Engineering
*EECS = Electrical Engineering and Computer Science

SKILL

- Programming Language: C/C++, Java, Julia, Python
- Data Analytic: Matlab, Python, R, SQL
- Optimization Software: Gurobi, Cplex
- Technical Skill: Modeling, Optimization, Machine Learning, Deep Learning, Statistics