

# Yehua Wei

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## Academic Employment

- Fuqua School of Business, Duke University**, Durham, NC  
Associate Professor in Decision Sciences (tenured in 2022) **July 2019 –**
- Carroll School of Management, Boston College**, Chestnut Hill, MA  
Assistant Professor in Operations Management **August 2016 – June 2019**
- Fuqua School of Business, Duke University**, Durham, NC  
Assistant Professor in Decision Sciences **July 2013 – July 2016**

## Education

- Massachusetts Institute of Technology**, Cambridge, MA  
*Sloan School of Management – Operations Research Center*  
Ph.D in Operations Research **September 2008 – June 2013**
- Thesis Title: Effectiveness and Design of Sparse Process Flexibilities
  - Advisor: David Simchi-Levi
- University of Waterloo**, Waterloo, Ontario, Canada  
*Faculty of Mathematics*  
Bachelor of Mathematics **September 2004 - June 2008**
- Majors: Pure Math, Combinatorics & Optimization (Double Majors)
  - Graduated on Dean's Honours List, with distinction.

## Publications

1. “Approximate Submodularity in Network Design Problems” (L. DeValve, A. Pekec, and Y. Wei), *Operations Research*, forthcoming.
2. “A New Approach for Vehicle Routing with Stochastic Demand: Combining Route Assignment with Process Flexibility” (K. Ledvina, H. Qin, D. Simchi-Levi, and Y. Wei), *Operations Research*, 70(5), pp. 2655-2673, 2022.
3. “Assemble-to-Order Systems” (L. DeValve, J. Song, and Y. Wei), book chapter in *Research Handbook on Inventory Management*, forthcoming
4. “Understanding the Value of Fulfillment Flexibility in an Online Retailing Environment” (L. DeValve, Y. Wei, D. Wu, and R. Yuan), *M&SOM*, forthcoming. **Finalist in 2019 M&SOM Practice-based Research Competition.**
5. “A Primal-Dual Approach to Analyzing ATO Systems” (L. DeValve, A. Pekec, and Y. Wei), *Management Science*, 66(11), pp. 5389-5407, 2020.

6. "Process Flexibility for Multi-Period Production Systems" (C. Shi, Y. Wei, and Y. Zhong), *Operations Research*, 67(5), 1300-1320, 2019.
7. "Constraint Generation for Two-Stage Robust Network Flow Problem" (D. Simchi-Levi, H. Wang, and Y. Wei), *INFORMS Journal on Optimization*, 1(1), 49-70, 2019.
8. "Increasing Supply Chain Robustness through Process Flexibility and Inventory" (D. Simchi-Levi, H. Wang, and Y. Wei), *Production and Operations Management*, 27(8), 1476-1491, 2018. **Second place winner in 2013 CSAMSE Best Paper Award.**
9. "Strategic Open Routing in Service Networks" (A. Arlotto, A. Frazelle, and Y. Wei), *Management Science*, 65 (2), 735-750, 2019. **Finalist in 2016 MSOM Student Paper Competition. Entrant: A. Frazelle.**
10. "A  $O(\log n)$ -optimal policy for the online selection of a monotone subsequence from a random sample" (A. Arlotto, Y. Wei, and X. Xie), *Random Structures & Algorithms*, 52(1), pp. 41-53, 2018.
11. "Analyzing Process Flexibility: A Distribution-free Approach with Partial Expectations" (H. Bidkhorji, D. Simchi-Levi, and Y. Wei), *Operations Research Letters*, 44(3), pp. 291-296, 2016.
12. "Sparse Process Flexibility Designs: Is Long Chain Really Optimal?" (A. Desir, V. Goyal, Y. Wei, and J. Zhang), *Operations Research*, 64(2), pp.416-431, 2016. **Finalist in 2014 George Nicholson Student Paper Competition and 2014 MSOM Student Paper Competition. Entrant: A. Desir.**
13. "Identifying Risks and Mitigating Disruptions in the Automotive Supply Chain" (D. Simchi-Levi, W. Schmidt, Y. Wei, P. Zhang, K. Combs, Y. Ge, O. Gusikhin, M. Sander, and D. Zhang), *Interfaces*, 45(5), pp. 375-390, 2015. **2014 Daniel H. Wagner Prize for Excellence in Operations Research Practice.**
14. "Worst-case Analysis of Process Flexibility Designs" (D. Simchi-Levi and Y. Wei), *Operations Research*, 63(1), pp. 166-185, 2015.
15. "From Superstorms to Factory Fires: Managing Unpredictable Supply-Chain Disruptions" (D. Simchi-Levi, W. Schmidt, and Y. Wei), *Harvard Business Review*, 92(1-2), 2014.
16. "Understanding the Performance of the Long Chain and Sparse Designs in Process Flexibility" (D. Simchi-Levi and Y. Wei), *Operations Research*, 60(5), pp. 1125-1141, 2012. **Second place winner in 2011 George Nicholson Student Paper Competition.**
17. "Belief Propagation for Min-cost Network Flow: Convergence and Correctness" (D. Gamarnik, D. Shah, and Y. Wei), *Operations Research*, 60(2), pp. 410-428, 2012. (Conference version appeared in Proceedings of *ACM-SIAM Symposium on Discrete Algorithms*, 2010.)
18. "A Criterion for the Half-plane Property" (D. Wagner and Y. Wei), *Discrete Mathematics* 309(3-4), pp. 1385-1390, 2009.

## Working Papers

19. “Constant Regret Primal-Dual Policy for Multi-way Dynamic Matching” (Y. Wei, J. Xu, and S. Yu).
20. “Multi-Item Order Fulfillment Revisited: LP Formulation and Prophet Inequality” (A. Amil, A. Makhdoumi, and Y. Wei).
21. “Retailing with Opaque Products” (A. Elmachtoub, Y. Wei, and Y. Zhou).
22. “Bounded Rationality in Service Networks with Open Routing” (A. Frazelle, T. Huang, and Y. Wei).
23. “Data-Driven Scalable E-commerce Transportation Network Design with Unknown Flow Response” (S. Chen, J. Song and Y. Wei).

## Selected Conferences Presentations

*Constant Regret Primal-Dual Policy for Multi-way Dynamic Matching*

- INFORMS Annual Meeting, October 2022

*Managing Online Fulfillment Systems*

- INFORMS Annual Meeting, October 2021

*A New Approach for Vehicle Routing with Stochastic Demand: Combining Route Assignment with Process Flexibility*

- CORS Annual Conference, June 2021

*Reinforcement Learning For Flexibility Design Problems*

- INFORMS Annual Meeting, November 2020

*A Primal-Dual Approach to Analyzing ATO Systems*

- INFORMS Annual Meeting, Phoenix, AZ, November 2019

*Analyzing Policies in Dynamic Robust Optimization*

- BIRS Workshop on Models and Algorithms for Sequential Decision Problems under Uncertainty, Banff, AB, Canada, January, 2019

*Understanding the Value of Fulfillment Flexibility in an Online Retailing Environment*

- INFORMS Annual Meeting, Phoenix, AZ, November 2018
- MSOM, Singapore, July 2019
- CORS Annual Conference, June 2021

*Constraint Generation for Two-Stage Robust Network Flow Problem*

- INFORMS Annual Meeting, Houston, TX, October 2017

*Tutorial: Process Flexibility: Theoretical Performance of Sparse Designs*

- International Conference, Waikoloa Village, Hawaii, USA, June 2016

*Process Flexibility for Multi-Period Production Systems*

- INFORMS Applied Probability Conference, Istanbul, Turkey, July 2015
- INFORMS Annual Meeting, Philadelphia, PA, October 2015

*Retailing with Opaque Products*

- INFORMS International Conference, Waikoloa Village, Hawaii, USA, June 2016
- Production and Operations Management Society (POMS) Annual Conference, Atlanta, Georgia, USA, May 2014

*Worst-case Analysis of Process Flexibility Designs*

- Manufacturing & Service Operations Management (MSOM) Conference, INSEAD, France, July 2013

*Increasing Supply Chain Robustness Through Process Flexibility and Inventory*

- 22nd International Symposium on Mathematical Programming (ISMP), Pittsburgh, Pennsylvania, July 2015
- Production and Operations Management Society (POMS) Annual Conference, Washington DC, May 2015
- INFORMS Annual Meeting, San Francisco, CA, October 2014
- The Chinese scholars Association for Management Science and Engineering (CSAMSE), Beijing, China, July 2013

*Understanding the Effectiveness of Sparse Flexibilities*

- INFORMS Annual Meeting, Phoenix, AZ, October 2012
- 21st International Symposium on Mathematical Programming (ISMP), Berlin, Germany, August 2012
- Manufacturing & Service Operations Management (MSOM) Conference, New York, NY, USA, June 2012
- INFORMS Annual Meeting, Charlotte, NC, November 2011

*Belief Propagation for Min-cost Network Flow: Convergence and Correctness*

- ACM-SIAM Symposium on Discrete Algorithms (SODA), Austin, TX, USA, January 2010
- LIDS Student Conference, Cambridge, MA, USA, January 2010
- Applied Probability Society Conference, Ithaca, NY, USA, July 2009

## Invited Seminars

- University of Rochester, Simon Business School, October 2022
- University of Chicago Workshop on E-Commerce and Logistics, August 2022
- Georgetown University, McDonough School of Business, February 2022
- National University of Singapore, NUS Business School, February 2022
- Amazon, Modeling and Optimization (MOP) group, February 2022
- University of Maryland, Robert H. Smith School of Business, April 2021
- McGill University, Desautels Faculty of Management, October 2020
- Georgia Tech, H. Milton Stewart School of Industrial and Systems Engineering, October 2020
- The Hong Kong University of Science and Technology, Business School, July 2019
- Duke University, Fuqua School of Business, December 2018
- JD.com, San Francisco, CA, July 2018
- University of Michigan, Ross School of Business, April 2018
- University of Toronto, Rotman School of Management, February 2018
- Columbia University, Industrial Engineering and Operations Research department and the Decision, Risk & Operations Division at Columbia Business School, December 2017
- Mostly OM Workshop at Tsinghua University, May 2017
- Sun Yat-sen University, Department of Business Management at Lingnan College, May 2017
- University of Illinois at Urbana-Champaign, Industrial and Enterprise Systems Engineering, November 2016
- Boston University, Questrom School of Business, March 2016
- Duke University, Fuqua School of Business, January 2016
- Boston College, Carroll School of Management, January 2016
- North Carolina State University, Industrial and System Engineering, January 2016
- University of British Columbia, Sauder School of Business, October 2015
- Tsinghua University, School of Economics and Management, May 2015
- The Chinese University of Hong Kong, Business School, April 2015
- City University of Hong Kong, Department of Management Sciences, April 2015
- South China University of Technology, School of Business Administration, April 2015
- Shanghai Jiao Tong University, Antai College of Economics and Management, April, 2015
- SAS Institute, Operations Research Department, December, 2014
- University of Chicago, Booth School of Business, November, 2014
- National University of Singapore, NUS Business School, April, 2013
- Columbia University, Columbia Business School, February, 2013

- Cornell University, School of Operations Research and Information Engineering, February, 2013
- New York University, Stern School of Business, February 2013
- University of Southern California, Marshall School of Business, February 2013
- Duke University, Fuqua School of Business, January, 2013
- UNC Chapel Hill, Kenan-Flagler Business School, January, 2013
- UT Austin, McCombs School of Business, January, 2013
- Stanford University, Management Science and Engineering, January 2013
- UC Irvine, Paul Merage School of Business, January 2013
- University of Rochester, Simon Graduate School of Business, January 2013
- University of Waterloo, Department of Management Science, December 2012

### **Editorial Activities**

Associate editor for *Management Science*, 2017 -

*Operations Research, Management Science, Manufacturing & Service Operations Management, Mathematics of Operations Research, INFORMS Journal on Optimization, Production & Operations Management, Naval Research Logistics, Operations Research Letters, IIE Transactions, Annals of Operations Research, SIAM Journal on Discrete Mathematics, IEEE Transactions on Automation Science and Engineering, International Journal of Production Research, Flexible Services and Manufacturing, Journal of Graph Algorithms and Applications*

### **Selected Honors and Awards**

2019 MSOM Service SIG Best Paper Award  
 2019 MSOM Practice Based Research Competition (Finalist)  
 2015 Engineering Excellence Award @ Ford Research & Advanced Engineering  
 2014 Daniel H. Wagner Prize for Excellence in Operations Research Practice  
 2013 CSAMSE Best Paper Award (2nd place winner)  
 2011 George Nicholson Student Paper Competition (2nd place winner)  
 NSERC Postgraduate Scholarship (PGS-M and PGS-D), 2008-2012  
 NSERC Undergraduate Student Research Award, 2006, 2007, 2008 Summer  
 W.T. Tutte Rene Descartes National Scholarship 2004-2008

### **Ph.D. Students Mentored**

Kai Wang, 2014, role: Ph.D. dissertation committee member,  
 First Placement: EA Sports

Andrew Frazelle, 2018, role: co-advisor (with Alessandro Arlotto),  
 First Placement: assistant professor at Naveen Jindal School of Management, The University of Texas at Dallas

Levi Devalve, 2019, role: co-advisor (with Saša Pekeč),  
First Placement: assistant professor at Booth School of Business, University of Chicago

Xinchang Xie, 2020, role: Ph.D. dissertation committee member,  
First Placement: post-doc at Cornell Tech

Yeqing Zhou, 2021, role: Ph.D. dissertation committee member,  
First Placement: assistant professor at Industrial Engineering and Innovation Sciences, Eindhoven University of Technology

Shuyu Chen, 2022, role: co-advisor (with Jeannette Song)  
First Placement: American Airlines

Yuexing Li, 2022, role: Ph.D. dissertation committee member  
First Placement: assistant professor at Johns Hopkins Carey Business School

Jingwei Zhang, 2022, role: Ph.D. dissertation committee member  
First Placement: assistant professor at School of Data Science, Chinese University of Hong Kong, Shenzhen

Sophie Yu, 2023 (expected), co-advisor (with Jiaming Xu)  
First Placement: assistant professor at Wharton School, University of Pennsylvania

Yuan Guo, 2023 (expected), role: Ph.D. dissertation committee member  
First Placement: assistant professor at the George Washington University School of Business

Ayoub Amil, 2024 (expected), co-advisor (with Ali Makhdoumi)

### **Other Academic Service Works**

Judge for 2023 George Nicholson Student Paper Competition Judge for 2022 CSAMSE Best Paper Competition

Judge for 2022 George Nicholson Student Paper Competition

Session chair for the Applied Probability Society cluster at 2021 INFORMS Annual Meeting

Judge for MSOM Student Paper Competition 2017-present

Cluster chair for the Supply Chain cluster at 2020 INFORMS Annual Meeting

Session chair for the Supply Chain cluster at 2020 INFORMS Annual Meeting

Judge for 2020 George Nicholson Student Paper Competition

Referee for MSOM Supply Chain Management SIG 2020 Conference

Judge for 2019 George Nicholson Student Paper Competition

Referee for MSOM Service SIG 2019 Conference

Judge for 2018 CSAMSE Best Paper Competition

Referee for MSOM Supply Chain Management SIG 2018 Conference

Referee for MSOM Service SIG 2018 Conference

Session chair for the Inventory track at 2018 POMS Annual Meeting

Session chair for 2017 INFORMS Annual Meeting

Session chair for the INFORMS Applied Probability Society Conference 2017

Cluster chair for the MSOM Service Operations cluster at 2017 INFORMS Annual Meeting

Session chair for the Applied Probability cluster at 2016 INFORMS Annual Meeting  
Session chair for the Inventory track at 2016 INFORMS International Conference  
Session chair for the Inventory track at 2015 POMS Annual Meeting  
Member of the Fuqua Decision Sciences Ph.D. Admission Committee, 2014-2015  
Member of the Fuqua Decision Sciences Ph.D. Program Progress Committee, 2014-2015  
Session chair for the Applied Probability cluster at 2014 INFORMS Annual Meeting  
Session chair at 2013 INFORMS Annual Meeting  
Session chair at 2012 INFORMS Annual Meeting

### **Funding Grants**

*JD.com, Inc.*, Gift Fund, amount: \$25,000, 2018-2019.

### **Courses Taught**

- Decision analytics and Modeling (at Duke University), Spring 2023
- Spreadsheet modeling and decision analysis (at Duke University), Spring 2022, Fall 2015, Spring 2015, Spring 2014
- Decision Models (at Duke University), Spring 2021
- Dynamic Programming (at Duke University), Fall 2020, Spring 2023
- Probability & Statistics (at Duke University), Fall 2019
- Business Statistics (at Boston College), Spring 2017, Spring 2018, Spring 2019
- Spreadsheet modeling and decision analysis (at Duke Kunshan University), Spring 2015