

# Peng Shi

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Peng Shi is an operations management scholar whose research advances the design of matching markets in both private and public sectors. His work integrates theoretical and empirical methods to improve digital platforms and public resource allocation. His research has shaped policy and earned multiple best paper and impact awards, including the 2024 INFORMS Lanchester Prize.

<b>Academic Positions</b>	<b>USC Marshall School of Business</b> , Los Angeles, CA	
	<i>Assistant Professor, Operations Management Group, DSO Department</i>	2017—Present
	– Parental leaves in Fall 2018, Spring 2021, and Spring 2023	
	<i>Robert R. Dockson Assistant Professor in Business Administration</i>	2023—Present
	<b>Microsoft Research New England</b> , Cambridge, MA	
	<i>Postdoctoral Researcher, Algorithmic Game Theory Group</i>	2016—2017
	<b>Massachusetts Institute of Technology</b> , Cambridge, MA	
	<i>Ph.D. in Operations Research</i>	2011—2016
	– Advisor: Itai Ashlagi	
	– Thesis: <a href="#">Prediction and Optimization in School Choice</a>	
	<b>Duke University</b> , Durham, NC	
	<i>B.S. in Mathematics and Computer Science (double major)</i>	2006—2010
	– Angier B. Duke Memorial Scholarship.	
<b>Area of Research</b>	Design and analysis of matching markets, with applications in: <ul style="list-style-type: none"><li>– Digital platforms connecting customers with providers of goods or services;</li><li>– Public resource allocation (e.g., school choice, affordable housing).</li></ul> Methodologies: optimization; game theory; stylized modeling; empirical analysis.	
<b>Honors and Awards</b>	<ul style="list-style-type: none"><li>– Exemplary Applied Modeling Track Paper (EC 2025).</li><li>– Jagdish Sheth Impact on Practice Award, USC Marshall (2025).</li><li>– Frederick W. Lanchester Prize, INFORMS (2024).</li><li>– Best Paper (WINE 2022).</li><li>– Responsible Research in OM Award, MSOM Society (2020).</li><li>– Service Management SIG Best Paper, MSOM Society (2017).</li><li>– Doctoral Dissertation Award, ACM SIGecom (2017).</li><li>– Best Student Paper, MIT ORC (2014).</li><li>– Public Sector OR Best Paper, INFORMS (2013).</li><li>– Doing Good with Good OR Best Student Paper, INFORMS (2013).</li><li>– Golden Apple Teaching Award, USC Marshall (2025 and 2021).</li><li>– Excellence in Teaching Award, DSO Department (2019).</li><li>– Silver Medal in the 2006 International Olympiad of Informatics (IOI).</li><li>– Silver Medals in the 2005 and 2006 International Mathematics Olympiad (IMO).</li><li>– 3<sup>rd</sup> place in North America in the 2005 USA Mathematics Olympiad (USAMO).</li></ul>	

## Journal Publications

(Author names are all in alphabetical order, which is the convention in this field.)

1. P. Shi. (2024) "[Optimal match recommendations in two-sided marketplaces with endogenous prices.](#)" *Management Science*, Forthcoming.
  - An earlier version appeared in the Conference on Economics and Computation (EC), 2022.
2. P. Shi. (2022) "[Optimal matchmaking strategy in two-sided marketplaces.](#)" (Lead article) *Management Science* 69(3): 1323–1340.
  - [Highlighted by the editor-in-chief](#) as an example of a paper that is "theoretically elegant and practically insightful."
  - [Blog commentary](#) at *Management Science Review* by Fuhito Kojima, Federico Echenique and Peter Doe.
  - An earlier version was titled "Efficient matchmaking in assignment games with application to online platforms," and appeared in EC 2020.
3. P. Shi. (2021) "[Optimal priority-based allocation mechanisms.](#)" *Management Science* 68(1): 171–188.
4. P. Pathak and P. Shi. (2021) "[How well do structural demand models work? Counterfactual predictions in school choice.](#)" *Journal of Econometrics* 222(1A): 161–195.
5. N. Arnosti and P. Shi. (2020) "[Design of lotteries and waitlists for affordable housing allocation.](#)" (Lead article) *Management Science* 66(6): 2291–2307.
  - [Blog commentary](#) at *Management Science Review* by Paul Milgrom, Mitchell Watt, and Martin Lariviere.
  - An earlier version appeared in EC 2017.
6. Ashlagi, M. Braverman, Y. Kanoria and P. Shi. (2019) "[Clearing matching markets efficiently: informative signals and match recommendations.](#)" *Management Science* 66(5): 2163–2193.
  - Shared the INFORMS Frederick W. Lanchester Prize for "the best contribution to operations research and the management sciences published in English in the past five years" (2024).
  - An earlier version appeared in EC 2017.
7. Ashlagi and P. Shi. (2015) "[Optimal allocation without money: an engineering approach.](#)" *Management Science* 62(4): 1078–1097.
  - MSOM Responsible Research in Operations Management Award (2020).
  - MSOM Service Management SIG Best Paper (2017).
  - Public Sector Operations Research Best Paper (2013).
  - MIT ORC Best Student Paper (2014).
  - An earlier version appeared in EC 2014.
8. P. Shi. (2015) "[Guiding school-choice reform through novel application of Operations Research.](#)" *Interfaces* 45(2): 117–132.
  - Doing Good with Good OR Best Student Paper (2013).

9. Ashlagi and P. Shi. (2014) "[Improving community cohesion in school choice via correlated-lottery implementation](#)." *Operations Research*, 62(6): 1247–1264.
10. S. Guha, K. Munagala and P. Shi. (2010) "[Approximation algorithms for restless bandit problems](#)." *Journal of the ACM (JACM)* 58(1), Article 3, 1–50.
  - An earlier version appeared in the Symposium on Discrete Algorithms (SODA), 2009.

## Working Papers

(Author names are all in alphabetical order, which is the convention in this field.)

- P. Shi. (2025) "[Welfare-optimal policies for sponsored advertising in a two-sided marketplace](#)." Submitted to *Operations Research*.
- An earlier version appeared in EC 2025 and won the Exemplary Applied Modeling Track Paper Award.
- P. Shi. (2025) "[The welfare effects of selling leads in a two-sided marketplace](#)." Major Revision at *Management Science*.
- An earlier version appeared EC 2024.
- P. Shi and J. Yin.\* (2022) "[Eliminating waste in cadaveric organ allocation](#)." Targeting *Manufacturing & Service Operations Management (MSOM)*.
- An earlier version appeared in the Conference in Web and Internet Economics (WINE 2022) and won the Best Paper Award.
- \* denotes a PhD student supervised by me.

## Work in Progress

(Author names are all in alphabetical order, which is the convention in this field.)

- M. Alyakoob and P. Shi. "Estimating the quality of general contractors using city inspection data." (Data collection in progress.)
- M. Alyakoob and P. Shi. "On the adoption of digital platforms in the US home improvement industry." (Data collection in progress.)
- P. Shi. "On the Pareto optimality of wasteful allocation mechanisms." (Have preliminary results.)

## Refereed Conference Proceedings

- P. Shi, V. Conitzer and M. Guo. "[Prediction mechanisms that do not incentivize undesirable actions](#)." *Workshop on Internet & Network Economics (WINE)*, 89–100, 2009.
- This is the only paper in this CV with a non-alphabetical order of authorship.
- K. Munagala and P. Shi. "[The stochastic machine replenishment problem](#)." *Integer Programming & Combinatorial Optimization (IPCO)*, 163–183, 2008.

## Teaching Experience

### USC Marshall School of Business

DSO-577 Optimization Modeling for Prescriptive Analytics	2025—Present
DSO-576 Algorithmic Thinking with Python	2025—Present
DSO-570 The Analytics Edge: Data Models and Effective Decisions	2017—2024
DSO-599 Introduction to Python for Business Analytics	2019—2021

<b>Doctoral Students Supervised</b>	Junxiong Yin (Operations Management, Graduated 2024)	
	– Primary PhD advisor.	
	– First position after graduation: Uber.	
	Liron Cohen (Computer Science, Graduated 2020)	
	– Member of dissertation committee.	
	– First position after graduation: Waymo.	
	Hao Sun (Operations Management, Visiting student in 2018)	
	– Primary advisor during one-year visit.	
<b>Service to School</b>	Operations Management (OM) PhD Program Coordinator	2025—Present
	Co-Chair of Hiring Committee for the OM group	2022—Present
	OM Seminar Co-Coordinator	2020—2022
	USC Marshall Course Match System Implementation Team	2018—2019
<b>Service to Community</b>	Associate Editor at Management Science	2023—Present
	Senior Program Committee (SPC) for the EC Conference	2019, 2022, 2024
	Cluster chair at the CORS/INFORMS International Conference	2022
	Reviewer for major journals and conferences in OM, economics and computation: Management Science (MS); Operations Research (OPRE); Manufacturing & Service Operations Management (M&SOM); Math of Operations Research (MOR); Productions and Operations Management (POM); Stochastic Systems; Transportation Research Part B (TRB); American Economic Review (AER); American Economic Journal (AEJ); Games and Economic Behavior (GEB); Journal of Machine Learning Research (JMLR); Journal of the ACM (JACM); ACM Transactions on Economics and Computation (TEAC); Conference on Internet and Network Economics (WINE); Conference on Economics and Computation (EC); Web Conference (WWW).	
<b>Invited Presentations</b>	<b>Welfare-Optimal Policies for Sponsored Advertising in a Two-Sided Marketplace</b>	
	ACM Conference on Economics and Computation (EC)	2025
	Google Research Algorithms Seminar	2025
	Marketplace Innovation Workshop	2025
	Boston University Operations and Technology Management Seminar	2025
	<b>The Welfare Effects of Selling Leads in a Two-Sided Marketplace</b>	
	INFORMS Annual Meeting	2024
	UCLA DOTM Seminar	2024
	INFORMS Revenue Management and Pricing Conference	2024
	ACM Conference on Economics and Computation (EC)	2024
	MSOM Service Management Special Interest Group (SIG)	2024
	Marketplace Innovation Workshop	2024
	USC Marshall Junior Faculty Seminar	2023

### **Optimal Match Recommendations in Two-Sided Marketplaces with Endogenous Prices**

SoCal OM Day (UCLA)	2024
Queens's University Smith School of Business OM Seminar	2022
Berkeley Haas OITM Seminar	2022
Duke Fuqua DS Seminar	2022
Cornel Johnson OTIM Seminar	2022
UIUC Gies OM Seminar	2022
Chicago Booth OM Seminar	2022
Shanghai JiaoTong Antai College OM Seminar	2022
Michigan Ross Technology and Operations Seminar	2022
CMU Tepper OM Seminar	2022
Columbia DRO-IEOR Seminar	2022
INFORMS Conference on Service Systems	2022
ACM Conference on Economics and Computation (EC)	2022
Marketplace Innovation Workshop (Plenary Talk)	2022

### **Optimal Matchmaking Strategy in Two-Sided Marketplaces**

NYU Stern OM Seminar	2022
Cornell ORIE Colloquium	2022
University of Toronto Rotman Young Scholar Seminar	2022
Meta Data Science Seminar	2022
University of Tokyo Microeconomics Workshop	2022
MIT Data Science Lab Seminar	2022
University of Maryland Robert H. Smith School of Business DO&IT Seminar	2021
INFORMS Annual Meeting	2021
University of Southern California OM Seminar	2021
Wutong Forum at the Chinese University of Hong Kong, Shen Zhen	2021
Marketplace Innovation Workshop	2021
London Business School MSO Seminar	2021

### **Efficient Matchmaking in Assignment Games with Application to Online Platforms**

Chicago Booth Applied Economics Workshop	2020
Marketplace Algorithms and Design Seminar	2020
ACM Conference on Economics and Computation (EC)	2020

### **Optimal Priority-Based Allocation Mechanisms**

Global Challenges in Economics and Computation (GCEC) Workshop	2020
Stanford RAIN Seminar	2019
INFORMS Annual Meeting	2019

### **Clearing Matching Markets Efficiently**

Simon's Institute Workshop on Platform Markets	2019
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### **Design of Lotteries and Waitlists for Affordable Housing Allocation**

INFORMS Annual Meeting	2018, 2019
Caltech Bray Social Sciences Seminar Series	2018
UCI Paul Merage School of Business ODT Colloquium	2018
SoCal OM Day	2018

### **Optimal Forecast Disclosure in Ride-Sharing Platforms**

INFORMS Annual Meeting	2018
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### **How (Not) to Allocate Affordable Housing**

INFORMS Annual Meeting	2017
Mechanism Design for Social Good Workshop	2017
MIT Data Science Lab Seminar	2017

### **Communication Requirements and Informative Signaling in Matching Markets**

ACM Conference on Economics and Computation (EC)	2017
MATCH-UP Conference	2017

### **Forecasting and Counterfactuals in School Choice**

National Bureau of Economic Research (NBER) Market Design Workshop	2017
USC Conference in Honor of Daniel McFadden	2017
MIT Industrial Organizations Lunch	2017

### **Assortment Planning in School Choice**

Mechanism Design for Social Good Workshop	2017
MATCH-UP Conference	2017
INFORMS Annual Meeting	2015, 2016, and 2017
MSOM Conference	2016

### **Prediction and Optimization in School Choice**

USC Center for AI and Society Seminar	2017
ACM Conference on Economics and Computation (EC)	2017
USC Marshall School of Business	2016
Stanford Graduate School of Business	2016
Harvard Business School	2016
Columbia Business School	2016
Microsoft Research New England	2016
University of Toronto	2016
Chicago Booth School of Business	2015
Northwestern Kellogg School of Business	2015
Georgia Tech School of Industrial and Systems Engineering	2015

### **Optimal Allocation without Money: an Engineering Approach**

MIT ORC Seminar	2014
MIT Sloan Operations Management Seminar	2014
MSOM Conference	2014
ACM Conference on Economics and Computation (EC)	2014

INFORMS Annual Meeting 2013

**Guiding School Choice Reform through Novel Applications of OR**

POMS Conference 2015

Gordon College 2014

INFORMS Annual Meeting 2013

**Improving Community Cohesion in School Choice**

INFORMS Annual Meeting 2013

**Approximation Algorithms for Restless Bandit Problems**

ACM-SIAM Symposium on Discrete Algorithms (SODA) 2009

**Industry  
Experience**

**Akamai Technologies**, Cambridge, MA

*Big Data Analytic Intern*

**Summer, 2014**

Used Hadoop to quickly mine insights from multiple terabytes of router log files.

Used visualization and descriptive analytics to identify botnets and malicious port scanners. Designed and implemented an automated method to detect Distributed Denial of Service (DDoS) attacks using Brownian motion approximations.

**Bless China International**, Kunming, China

*Social Enterprise Analyst*

**2010–2011**

Explored and evaluated business plans that helped poor and marginalized people groups in a financially self-sustaining way. Conducted surveys and focus groups to estimate market segments. Helped to launch a handicraft business and a restaurant. Supported the operations of the handicraft business by developing a point-of-sale system and a web store.

**D. E. Shaw Group**, New York, NY

*Quantitative Analyst Intern*

**Summer, 2008**

Used microsecond-level data of the US stock market to develop a predictive model for intraday trading volume. Developed software to use hundreds of machines in parallel to quickly process terabytes of data.

**Personal  
Information**

Citizenship: Canada

Languages: English and Chinese (Mandarin).

Hobbies: badminton, cooking, kayaking/canoeing, salsa dance, studying the Bible.