Home Page: https://faculty.marshall.usc.edu/Peng-Shi/
Google Scholar: https://scholar.google.com/citations?user=sRk9x_0AAAAJ

Peng Shi

Academic Positions

USC Marshall School of Business, Los Angeles, CA
Assistant Professor, Department of Data Science and Operations 2017—Present
- Operations Management Group
- Parental leaves in Fall 2018, Spring 2021 and Spring 2023

Robert R. Dockson Assistant Professor in Business Administration 2023—Present

Microsoft Research New England, Cambridge, MA
Postdoctoral Researcher, Algorithmic Game Theory Group 2016—2017

Massachusetts Institute of Technology, Cambridge, MA
Ph.D. in Operations Research 2011—2016
- Advisor: Itai Ashlagi
- Thesis: Prediction and Optimization in School Choice

Duke University, Durham, NC
B.S. in Mathematics and Computer Science (double major) 2006—2010
- Angier B. Duke Memorial Scholarship.

Area of Research

Design of matching markets, including:
- Digital platforms that match customers with providers of goods or services;
- Matchmaking mechanisms for public resources: school seats, subsidized housing, cadaveric organs, etc.

Methodologies: optimization; game theory; algorithms; empirical analysis.

Honors and Awards

- Shared the Frederick W. Lanchester Prize for "the best contribution to operations research and the management sciences published in English in the past five years." (2024)
- Best Paper Award at the 18th Conference on Web and Internet Economics (WINE 2022).
- Golden Apple Teaching Award for the Best MSBA Core Instructor (2021).
- MSOM Responsible Research in OM Award (2020).
- Department Excellence in Teaching Award (2019).
- MSOM Service Management SIG Best Paper Award (2017).
- ACM SIGecom Doctoral Dissertation Award (2017).
- MIT Operations Research Center Best Student Paper (2014).
- INFORMS Public Sector Operations Research Best Paper (2013).
- INFORMS Doing Good with Good OR Best Student Paper (2013).
- Phi Beta Kappa Honor Society.
- Silver Medals in the 2005 and 2006 International Mathematics Olympiad (IMO).
- Silver Medal in the 2006 International Olympiad of Informatics (IOI).
- 3rd place in North America in the 2005 USA Mathematics Olympiad (USAMO).

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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."
   – Click here for a blog article at Management Science Review with commentaries 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.
   – Click here for a blog article at Management Science Review with commentaries 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

P. Shi. (2025) "Welfare-optimal policies for sponsored advertising in a two-sided marketplace." Submitted to Management Science.

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

P. Shi. (2024) "The welfare effects of selling leads in a two-sided marketplace." Major Revision at Management Science.
- An earlier version appeared in the ACM conference on Economics and Computation (EC), 2024.

P. Shi and J. Yin.* (2022) "Eliminating waste in cadaveric organ allocation." Targeting Management Science.
- An earlier version appeared in the 18th Conference in Web and Internet Economics (WINE 2022) and won the Best Paper Award.

* denotes a PhD student supervised by me.

Work in Progress

M. Alyakoob and P. Shi. "Estimating the quality of general contractors using city inspection data." (Data collection in progress.)

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

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	**2018—2024**
DSO-599 Introduction to Python for Business Analytics	**2019—2020**

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Doctoral Students Supervised

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.

Service to School

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

Service to Community

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

Paper Reviewer:

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).

Invited Presentations

Welfare-Optimal Policies for Sponsored Advertising in a Two-Sided Marketplace

Boston University Operations and Technology Management Seminar	2025

The Welfare Effects of Selling Leads in a Two-Sided Marketplace

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

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

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 Series 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

Invited Talk, 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 identity 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.