Parshan Pakiman

⌂ ParshanPakiman.github.io   in LinkedIn.com/in/Parshan-Pakiman   Github.com/ParshanPakiman   ✉ Parshan.Pakiman@ChicagoBooth.edu   ⟳ Aug, 2024

Academic Employment

Booth School of Business, University of Chicago, USA   2023 - Present

Position	Postdoctoral Researcher
Mentor	Dan Adelman

Education

College of Business Administration, University of Illinois Chicago, USA   2017 - 2023

Thesis title	Self-guided Approximate Linear Programs: Randomized Multi-shot Approximation of Markov Decision Processes (**Link**)
Committee	Selva Nadarajah (Advisor and Chair), Beryl Chen, Negar Soheili, Dan Adelman, Itai Gurvich

College of Business Administration, University of Illinois Chicago, USA   2017 - 2023

M.Sc.	Business Analytics

College of Science, University of Tehran, Iran   2012 - 2016

B.Sc.	Applied Mathematics

Research Interests

— Studying impactful healthcare and retail operations problems by designing new algorithms using data-driven optimization, machine learning, and approximate dynamic programming techniques.

— Developing general-purpose and easy-to-implement algorithms that guarantee near-optimal control policies for large-scale Markov decision processes and require minimal human intervention during implementation.

Working Papers

— D. Adelman, A. J. Mersereau, P. Pakiman. *Dynamic Assignment of Jobs to Workers with Learning Curves.* In preparation for submission to **Operations Research**.

— P. Pakiman, S. Nadarajah. *Back to the Future: Revisiting a Pioneering Approximation of Average Cost Markov Decision Processes Using a Multi-Shot Perspective.* In preparation for submission to **Operations Research**.

— P. Pakiman, B. Chen, S. Nadarajah, S. Jasin. *Self-adapting Risk Management in Dynamic Pricing with Demand Learning.* In preparation for re-submission to **Manufacturing & Service Operations Management** (Earlier version available at **Link**).

Published Papers

— P. Pakiman, S. Nadarajah, N. Soheili, Q. Lin. *Self-Guided Approximate Linear Programs: Randomized Multi-Shot Approximation of Discounted Cost Markov Decision Processes.* Published in **Management Science** (**Link**).

— A. Chenreddy, P. Pakiman, S. Nadarajah, R. Chandrasekaran, R. Abens. *SMOILE: A Shopper Marketing Optimization and Inverse Learning Engine.* **Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining**, 2019 (Acceptance rate 6.4%, **Link**).

Work In-Progress

— D. Adelman, C. Keceli, P. Pakiman. *Equitable and Data-driven Dynamic Matching.*

— D. Adelman, P. Pakiman. *Retrospective Approximate Dynamic Programming.*

— S. Nadarajah, P. Pakiman. *Randomized Multi-Shot Least Squares Monte Carlo for Option Exercise.*

Industry Collaborations

— Interned with the Advanced Solutions team at *Guidehouse:* Developed an approximate dynamic programming algorithm based on simulation to address a workflow scheduling problem.   2021

— Collaborated with *Foresight ROI*: Developed an inverse optimization method using Markov decision processes to model historical data trajectories and optimize future marketing campaigns. (**Link** to the research paper).   2017 - 2019

Teaching Experiences

Note: All teaching materials are available at ParshanPakiman.github.io/Teaching.

Teaching Assistant, University of Chicago 2023 - 2024
— Approximate Dynamic Programming (BUS 36905)

Course Co-Designer, University of Illinois Chicago 2021 - 2023
— Engaged in the development of a new data science course, Optimization for Analytics (IDS 435), by designing curriculum, delivering guest lectures, creating assignments with Python templates, and developing the final project for graduate students.

Guest Instructor, University of Illinois Chicago 2019 - 2023
— Supply Chain Management (IDS 552). Taught two sessions on warehouse management.
— Business Data Mining (IDS 472). Taught multiple refresher sessions on introduction to programming in R.
— Business Analytics (IDS 575). Taught refresher classes on linear algebra, calculus, and probability.
— Business Analytics (IDS 575). Taught sessions on regression, classification and likelihood maximization.

Teaching Assistant, University of Illinois Chicago 2019 - 2023
— Business Analytics (IDS 575)
— Introduction to Operations Management (IDS 532)
— Online Customer Analytics (IDS 594)
— Text Analytics for Business (IDS 566)
— Business Forecasting (IDS 476)
— Business Data Mining (IDS 472)
— Optimization for Analytics (IDS 435)

Teaching Assistant, University of Tehran 2014 - 2016
— Scientific Computing
— Numerical Linear Algebra

Honors and Awards

Doctoral fellowship:	College of Business Administration, University of Illinois Chicago, USA	2017 - 2023
BGS membership (honor society):	College of Business Administration, University of Illinois Chicago, USA	2021
Direct master's recipient:	College of Science, University of Tehran, Iran	2016
Technical qualification:	Soccer Simulation League, RoboCup Iran open, Iran (**Link**)	2016
Technical qualification:	Soccer Simulation League, Khwarizmi International Award, Iran (**Link**)	2010

Computational Skills

Programming languages:	Python, R, C++, C, Java, Matlab, HTML, JavaScript
Data analytics libraries:	Scikit-learn, Gymnasium, Numba, NumPy, Matplotlib, SciPy, Pandas
Optimization libraries:	Gurobi, CVXPY, Nevergrad, Autograd, PyTorch, Pyomo, OR-Tools
Operating systems:	Linux, MacOS

Invited Talks and Presentations

Dynamic Assignment of Jobs to Workers with Learning Curves
— INFORMS Annual Meeting, Seattle, WA 2024
— Purdue Operations Conference, West Lafayette, IN 2024
— MSOM Conference (Healthcare SIG), Minneapolis, MN 2024
— Chicago Booth Principal Researcher Workshop, Chicago, IL 2024

Self-Adapting Risk Management in Demand Learning
— INFORMS Annual Meeting, Phoenix, AZ 2023
— INFORMS Annual Meeting, Virtual 2020
— INFORMS Revenue Management and Pricing Student Live Paper Series, Virtual (**Link**) 2020

Randomized Multi-Shot Least Squares Monte Carlo for Option Exercise

— INFORMS Annual Meeting, Phoenix, AZ   2023
— POMS 32nd Annual Conference, Virtual   2022

Self-Guided Approximate Linear Programs: Randomized Multi-Shot Approximation of Discounted Cost Markov Decision Processes

— Tuck School of Business, Dartmouth College, Hanover, NH   2022
— International Conference on Continuous Optimization (ICCOPT), Bethlehem, PA   2022
— INFORMS Optimization Society (IOS) Conference, Greenville, SC   2022
— INFORMS Annual Meeting, Anaheim, CA   2021
— POMS 30th Annual Conference, Washington D.C.   2019
— INFORMS Annual Meeting, Phoenix, AZ   2018
— POMS 29th Annual Conference, Houston, TX   2018

SMOILE: A Shopper Marketing Optimization and Inverse Learning Engine

— ACM SIGKDD, International Conference on Knowledge Discovery & Data Mining, Anchorage, AK (**Link**)   2019

SERVICE

Conference Organization

— Session co-chair, *New Topics in Dynamic Assignment*, INFORMS Annual Meeting   2024
— Session co-chair, *Recent Advances in Approximate Dynamic Programming*, INFORMS Annual Meeting   2024
— Session co-chair, *Risk Management in Reinforcement Learning*, INFORMS Annual Meeting   2023
— Session co-chair, *Learning and Sequential Decision Making*, INFORMS Annual Meeting   2022
— Session co-chair, *Large-scale Linear Programs and Applications*, INFORMS Optimization Society Conference   2022
— Session chair, *Recent Advances in Reinforcement Learning*, INFORMS Annual Meeting   2021
— Session co-chair, *Social Responsibility and Risk in Supply Chains*, INFORMS Annual Meeting   2021

Reviewer

— Production and Operations Management   2024
— INFORMS Journal on Computing   2022
— Information Systems Research   2022
— International Conference on Learning Representations   2021
— Annals of Operations Research   2019 - 2021
— Computers & Operations Research   2019 - 2021
— Electronic Commerce Research   2018 - 2021
— Information Systems and Operational Research   2018

Membership

— Beta Gamma Sigma (BGS) Society   2021 - Present
— Production and Operations Management Society (POMS)   2018 - Present
— Institute for Operations Research and the Management Sciences (INFORMS)   2017 - Present
— INFORMS Chicago Chapter Ambassador   2022

REFERENCES

— **Dan Adelman**, Charles I. Clough, Jr. Professor of Operations Management, Booth School of Business, University of Chicago. *Email:* dan.adelman@chicagobooth.edu. *Homepage:* faculty.chicagobooth.edu/daniel-adelman.

— **Adam J. Mersereau**, Professor and Area Chair of Operations, Kenan-Flagler Business School, University of North Carolina. *Email:* ajm@unc.edu. *Homepage:* ajmersereau.github.io.

— **Selva Nadarajah**, Associate Professor of Operations Management, College of Business Administration, University of Illinois Chicago. *Email:* selvan@uic.edu. *Homepage:* selvan.people.uic.edu.

— **Negar Soheili**, Associate Professor of Business Analytics, College of Business Administration, University of Illinois Chicago. *Email:* nazad@uic.edu. *Homepage:* nazad.people.uic.edu.