Parshan Pakiman

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EDUCATION

University of Illinois Chicago (UIC), Chicago, IL — Spring 2017 - (Expected) Fall 2022

Ph.D. in Information and Decision Sciences

Thesis title: Mitigating Model Risk in Reinforcement Learning: Self-adapting Methods with Applications to Operations and Finance

Co-advisors: Professors Selva Nadarajah and Negar Soheili

University of Illinois Chicago, Chicago, IL — Spring 2017 - (Expected) Fall 2022

M.Sc. in Business Analytics

University of Tehran, Tehran, Iran — Fall 2012 - Fall 2016

B.Sc. in Applied Mathematics

RESEARCH INTERESTS

- Off-the-shelf reinforcement learning (RL) algorithms: Mitigating the burden of model selection and parameter hand-engineering to broaden the use of RL in business applications (i.e., dynamic pricing with demand learning, options pricing, marketing campaign optimization, inventory control) and making it accessible to non-experts.
- Learning from sequential decisions: Uncovering unknown parameters of an optimization problem used to make historical decisions via inverse RL to enhance past decisions.
- Technical expertise: Advancing the above themes by developing methods and theory based on approximate linear programming, random features, information relaxations and duality, and online convex programs.

INDUSTRY EXPERIENCES AND COLLABORATIONS

- Research intern in the Advanced Solutions team at Guidehouse (**Link**): Developed an RL algorithm for a workflow scheduling problem, and a related research paper is currently in progress. — Fall 2021
- Research collaboration with a major e-commerce company: Designed a framework that reduces waste in e-commerce by learning warehouse worker behavior and accounting for it in decision making. — Since Spring 2021
- Research collaboration with Foresight ROI (**Link**): Developed an inverse RL method for mining past marketing data and optimizing future marketing campaigns (**Link** to the resulting paper published in *KDD 2019*). — Fall 2017 - Summer 2019

AWARDS AND HONORS

BGS[1] membership:	College of Business, University of Illinois at Chicago	Since Spring 2021
Doctoral fellowship:	Department of Information and Decision Sciences, University of Illinois at Chicago	Since Spring 2017
Best student scholarship:	Department of Mathematics, Statistics and Computer Science, University of Tehran	Fall 2016
Technical qualification:	RoboCup Iran open (**Link**), soccer simulation league	Fall 2016
Technical qualification:	Khwarizmi international award, soccer simulation league	Fall 2010

TECHNICAL SKILLS

Programming language:	Python, R, C++, C, Java, HTML, JavaScript
Python package:	PyTorch, Scikit-learn, Autograd, NumPy, SciPy, Numba, Pandas, Matplotlib, etc
Optimization solver:	Gurobi, Nevergrad, CVXPY, Pyomo, OR-Tools
Operating systems:	Linux, MacOS, Windows

PUBLICATIONS

Journal Paper

- P. Pakiman, S. Nadarajah, N. Soheili, Q. Lin. *Self-guided Approximate Linear Programs* (**Link**). Under revision for third round review at **Management Science**.
- B. Chen, S. Nadarajah, P. Pakiman, S. Jasin. *Self-adapting Robustness in Demand Learning* (**Link**). Under revision for resubmission to **Operations Research**.

[1]Beta Gamma Sigma (BGS) is an International Business Honor Society (**Link**).

Conference Paper

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

Working Paper

- P. Pakiman, S. Nadarajah, Y. F. Lim. *Menu Optimization with Decision Learning: Application to Sustainable Warehousing.* In preparation for submission to **Management Science**.
- P. Pakiman, S. Nadarajah. *Self-guided Approximate Linear Programs for Average-Cost Markov Decision Processes.* In preparation for submission to **INFORMS Journal on Computing**.
- S. Nadarajah, P. Pakiman. *Self-guided Least Squares Monte Carlo for Financial and Real Options.* Work in progress.
- P. Pakiman, C. Landau, B.Haidar, S. Nadarajah. *A Simulation-based Reinforcement Learning Approach to Workflow Scheduling.* Work in progress.

Workshop Paper

- P. Pakiman, S. Nadarajah, N. Soheili, Q. Lin. *Self-guided Approximate Linear Programs* (**Link**). Accepted in **NeurIPS Workshop on Self-Supervised Learning – Theory and Practice**, 2020.

INVITED TALKS

Decision Learning with Menu Optimization

- INFORMS Annual Meeting, Indianapolis, IN — Fall 2022
- POMS 32nd Annual Conference, Virtual — Spring 2022
- POMS 31st Annual Conference, Virtual — Spring 2021

Self-guided Approximate Linear Programs

- International Conference on Continuous Optimization (ICCOPT), Bethlehem, PA — Summer 2022
- INFORMS Optimization Society (IOS) Conference, Greenville, SC — Spring 2022
- INFORMS Annual Meeting, Anaheim, CA — Fall 2021
- POMS 30th Annual Conference, Washington D.C. — Spring 2019
- INFORMS Annual Meeting, Phoenix, AZ — Fall 2018
- POMS 29th Annual Conference, Houston, TX — Spring 2018

Self-adapting Robustness in Demand Learning

- INFORMS Annual Meeting, Virtual — Fall 2020
- INFORMS Revenue Management and Pricing Student Live Paper Series, **Link**, Virtual — Fall 2020

Self-guided Least Squares Monte Carlo for Financial and Real Options

- POMS 32nd Annual Conference, Virtual — Spring 2022

SMOILE: A Shopper Marketing Optimization and Inverse Learning Engine

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

POSTER PRESENTATIONS

Self-guided Approximate Linear Programs

- NeurIPS 2020, Workshop on Self-Supervised Learning – Theory and Practice, **Link**, Virtual — Fall 2020

SMOILE: A Shopper Marketing Optimization and Inverse Learning Engine

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

TEACHING EXPERIENCES

Guest Lecturer, University of Illinois Chicago — Since Spring 2019

- Optimization for Analytics (IDS 435), *Linear Regression and Subset Selection in Gurobi*, **session 1**, **session 2**.
- Business data mining (IDS 472), three-week refresher on *coding in R*, slides for **session 1**, **session 2**, and **session 3**.

- Statistical models and methods for business analytics (IDS 575), *refresher series on linear algebra, calculus, and probability theory.*
- Statistical models and methods for business analytics (IDS 575), *applications of regression, classification and likelihood maximization*, **slides**.

Teaching Assistant, University of Illinois Chicago Since Spring 2017

- Advanced text analytics for business (IDS 566)
- Business data mining (IDS 472)
- Business forecasting (IDS 476)
- Optimization for analytics (IDS 435)
- Data science for online customer analytics (IDS 594)
- Introduction to operations management (IDS 532)
- Statistical models and methods for business analytics (IDS 575)

Teaching Assistant, University of Tehran Spring 2014 - Spring 2016

- Introduction to numerical analysis and scientific computing
- Numerical linear algebra

SERVICE

Reviewer

- Information Systems Research (ISR) Since Spring 2022
- International Conference on Learning Representations (ICLR) Since Fall 2021
- Annals of Operations Research Since Fall 2020
- Computers & Operations Research Since Spring 2019
- Electronic Commerce Research Since Spring 2018
- Information Systems and Operational Research Since Fall 2018

Conference Organization

- Session co-chair, *Learning and Sequential Decision Making*, INFORMS Annual Meeting Fall 2022
- Session co-chair, *Large-scale Linear Programs and Applications*, INFORMS Optimization Society Conference Spring 2022
- Session chair, *Recent Advances in Reinforcement Learning*, INFORMS Annual Meeting Fall 2021
- Session co-chair, *Social Responsibility and Risk in Supply Chains*, INFORMS Annual Meeting Fall 2021

Membership

- INFORMS Chicago Chapter Ambassador Since Spring 2022
- Beta Gamma Sigma (BGS) society Since Spring 2021
- Institute for Operations Research and the Management Sciences (INFORMS) Since Fall 2018
- Production and Operations Management Society (POMS) Since Fall 2018