



Parshan Pakiman

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EDUCATION

University of Illinois at Chicago (UIC), Chicago, IL

Ph.D. in: Information and Decision Sciences

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

Co-advisors: Professors Selva Nadarajah and Negar Soheili

Spring 2017 -
(Expected) Fall 2022

University of Illinois at Chicago, Chicago, IL

M.Sc. in: Business Analytics

Spring 2017 -
(Expected) Fall 2022

University of Tehran, Tehran, Iran

B.Sc. in: Mathematics and Applications

Fall 2012 - Fall 2016

RESEARCH INTERESTS

- Working towards off-the-shelf reinforcement learning (RL) algorithms that mitigate model selection and parameter hand-engineering, making RL accessible to non-experts.
- Modeling sequences of decisions made by a human agent via inverse RL and data-driven optimization and then embedding these models in downstream optimization problems for computing decisions that either maximize a reward or balance competing objectives.
- Tackling real-world problems arising in finance and operations such as dynamic pricing with demand learning, options pricing, marketing campaign optimization, inventory control, and balancing financial and social objectives for e-commerce.

WORK EXPERIENCES

- Worked in the Advanced Solutions team at Guidehouse ([Link](#)) as a research intern and developed an RL algorithm for workflow scheduling problem (a related research paper in preparation). Fall 2021
- Collaborated with a major e-commerce company to design a framework that learns the behavior of packaging workers from the cardboard boxes they select to pack customer orders and then uses the model of worker behavior to reduce packaging waste while maintaining high worker throughput. Since Spring 2021
- Worked with Foresight ROI ([Link](#)) to design a framework for mining past marketing data via inverse RL and for optimizing future marketing campaigns using RL ([Link](#) to the resulting paper published in *KDD 2019*). Fall 2017 - Summer 2019
- Collaborator on a multi-university and industry initiative to develop an open-source reinforcement learning and approximate dynamic programming platform for operations and finance applications. Fall 2019
- Teaching experience in graduate classes such as Optimization for Analytics, Statistical Learning, Intro to Machine Learning, Business Data Mining, and Intro to Operations Management. Since Fall 2017

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

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

PUBLICATIONS

Journal Paper

- P. Pakiman, S. Nadarajah, N. Soheili, Q. Lin. *Self-guided Approximate Linear Programs* ([Link](#)). Under 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**.

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, N. Soheili. *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

- 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

Lecturer, University of Illinois at 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 at 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, *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
- IDS committee for organizing curriculum of *programming in R* Spring 2021
- 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