

Parshan Pakiman

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OVERVIEW

I am a Ph.D. candidate in Information and Decision Sciences at the University of Illinois at Chicago. My research focuses on developing self-adapting Reinforcement Learning (RL) algorithms to simplify the implementation and hand-engineering needed to solve sequential decision-making problems. My research advances RL, inverse RL, machine learning, approximate dynamic programming, online learning, and high-dimensional sampling. I employ state-of-the-art platforms such as Gurobi, TensorFlow, Nevergrad, and OpenAI Gym to test my RL algorithms on real-world applications.

EDUCATION

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

Ph.D. in: Information and Decision Sciences
Areas of research: Reinforcement Learning and Optimization
Co-advisors: Professors Selva Nadarajah and Negar Soheili

Spring 2017 -
(Expected) Fall 2021

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

M.Sc. in: Business Analytics

Spring 2017 -
(Expected) Fall 2021

University of Tehran, Tehran, Iran

B.Sc. in: Applied Mathematics

Fall 2012 - Fall 2016

EXPERIENCES

- Working with a major tech provider in fast-fashion sector to adaptively learn changing customer demand and modify pricing strategies to maximize revenue ([Link](#) to the resulting research paper). Since Spring 2019
- Collaborated with Foresight ROI to design a framework for mining past marketing data and for optimizing future marketing campaigns ([Link](#) to the resulting paper). Fall 2017 - Summer 2019
- Teaching and implementation experience in graduate classes with data mining, statistical learning, machine learning, and operations management. Since Fall 2014
- Collaborator on a multi-university and industry initiative to develop an open-source reinforcement learning and approximate dynamic programming platform to solve business problems. Fall 2019
- Reviewing research articles for multiple journals in the areas of Operations Research and E-commerce. Since Fall 2019

RESEARCH INTERESTS

- Solving large-scale sequential decision making problems by combining reinforcement learning, approximate dynamic programming, randomized and high-dimensional sampling, and optimization techniques.
- Studying reinforcement learning problems that the available data is generated from a decision making process and is useful to uncover the dynamics of the data generation process.
- Developing data-driven algorithms with online and offline data availability that leverage forecasts to compute robust decisions in application domains such as pricing, retailing, e-commerce, and marketing.

PUBLICATIONS

Journal Papers

- Self-adapting Robustness in Demand Learning*. Coauthors: Boxiao Chen, Selvaprabu Nadarajah, Stefanus Jasin. Submitted to *Operations Research*. [Link](#). Fall 2020
- Self-guided Approximate Linear Programs*. Coauthors: Selvaprabu Nadarajah, Negar Soheili, Qihang Lin. **First round major revision at Management Science**. [Link](#). Spring 2020

Conference or Workshop Papers

- SMOILE: A Shopper Marketing Optimization and Inverse Learning Engine*. Coauthors: Abhilash Reddy Chenreddy, Selvaprabu Nadarajah, Ranganathan Chandrasekaran, Rick Abens. **Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining**. Acceptance rate is 6.4%. [Link](#). Summer 2019
- Self-guided Approximate Linear Programs*. Coauthors: Selvaprabu Nadarajah, Negar Soheili, Qihang Lin. **Workshop on Self-Supervised Learning – Theory and Practice, NeurIPS 2020**. [Link](#). Spring 2020

Work in Progress

- A Menu Optimization Framework for Semi-autonomous Agents*. Coauthors: Selvaprabu Nadarajah, Yun Fong Lim. Present
- Convex Optimization using Random Features*. Coauthors: Selva Nadarajah, Negar Soheili. Present

TECHNICAL SKILLS

Programming language: Python, C++, C, R, Java, HTML, JavaScript
Python package: NumPy, SciPy, Pandas, Matplotlib, SciKitLearn, PyTorch, GurobiPy, Nevergrad, Pyomo
Software: Matlab, Tableau, Microsoft/Libre Office, RapidMiner
Operating systems: Linux, Windows, MacOS

AWARDS AND HONORS

Doctoral fellowship:	Department of Information and Decision Sciences, University of Illinois at Chicago	Since Spring 2017
Top student award:	Department of Mathematics, Statistics and Computer Science, University of Tehran	Fall 2016
Technical qualification:	RoboCup Iran open, soccer 2D simulation league	Fall 2016
Technical qualification:	Khwarizmi international award, soccer 2D simulation league	Fall 2010

INVITED TALK

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 Approximate Linear Programs

- POMS 30th Annual Conference, Washington D.C. Spring 2019
- INFORMS Annual Meeting, Phoenix, AZ Fall 2018
- POMS 29th Annual Conference, Houston, TX Spring 2018

SMOILE: A Shopper Marketing Optimization and Inverse Learning Engine

- ACM SIGKDD, International Conference on Knowledge Discovery & Data Mining, [Link](#), Anchorage, AK Summer 2019

POSTER PRESENTATION

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

SERVICE

Reviewer

- 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

TEACHING EXPERIENCES

Lecturer for statistical models and methods for business analytics

- Applications of regression, classification and likelihood maximization, [Link](#). Spring 2019 - Fall 2019

Teaching Assistant, University of Illinois at Chicago

- Advanced text analytics for Business (IDS 566) Since Spring 2017
- Business data mining (IDS 472)
- Business forecasting (IDS 476)
- 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

- Advanced text analytics for Business (IDS 566) Spring 2014 - 2016
- Introduction to numerical analysis and scientific computing
- Numerical linear algebra