Jackie Baek

CONTACT INFORMATION

baek@stern.nyu.edu
(415) 996-4275
https://jwbaek.github.io

EMPLOYMENT

New York University, Stern School of Business 2023 -
Assistant Professor, Technology, Operations & Statistics

Simons Institute for the Theory of Computing, UC Berkeley Fall 2022
Research Fellow in the program *Data-Driven Decision Processes*

EDUCATION

Massachusetts Institute of Technology 2016 - 2022
Ph.D. in Operations Research, GPA: 5.0/5.0
Thesis: Decision-Making Under Uncertainty: From Theory to Practice
Advisor: Vivek Farias

University of Waterloo 2011 - 2016
Bachelor of Mathematics, GPA: 93.0/100.0
Joint Honours Computer Science & Combinatorics and Optimization

INTERESTS

Online decision-making, algorithmic fairness, machine learning, data-driven analytics

PAPERS

1. **Fair Exploration via Axiomatic Bargaining**
with Vivek Farias
Preliminary version: *NeurIPS 2021* **(Spotlight, top 3% of submissions)**
⋆ Second Place, *MSOM Student Paper Competition 2022*
⋆ Finalist, *George Nicholson Student Paper Competition 2021*
⋆ Finalist, *RMP Jeff McGill Student Paper Award 2021*
⋆ Honorable Mention, *MIT ORC Best Student Paper Competition 2021*
⋆ Oral presentation, *1st ACM Conference on Equity & Access in Algorithms, Mechanisms, & Optimization, 2021*

2. **The Limits to Learning a Diffusion Model**
with Vivek Farias, Andreea Georgescu, Retsef Levi, Tianyi Peng, Deeksha Sinha, Joshua Wilde, Andrew Zheng
Preliminary version: *22nd ACM conference on Economics and Computation, 2021*
⋆ Finalist, *Post-Pandemic Supply Chain and Healthcare Management Best Paper Competition 2021*

3. **Evaluation of individual and ensemble probabilistic forecasts of COVID-19 mortality in the US**
with COVID-19 Forecast Hub
Proceedings of the National Academy of Sciences, 2022
- This paper resulted from contributing COVID-19 forecasts (from the paper "The Limits to Learning a Diffusion Model") to the COVID-19 Forecast Hub.

4. **TS-UCB: Improving on Thompson Sampling With Little to No Additional Computation**
with Vivek Farias
Submitted

5. **Bifurcating Constraints to Improve Approximation Ratios for Network Revenue Management with Reusable Resources**

with Will Ma
Operations Research, 2022 (Articles in Advance)
Preliminary version: *12th International Symposium on Algorithmic Game Theory, 2019*

6. **A Game-Theoretic Analysis of Reallocation Mechanisms for Airport Landing Slots**
with Hamsa Balakrishnan
IEEE Transactions on Intelligent Transportation Systems, 2020

Teaching Experience

Operations Management (15.778)
Teaching Assistant for Sloan Fellows MBA Students — Summer 2020

The Analytics Edge (15.071)
Teaching Assistant for MBA Students — Spring 2018

Computing in Optimization and Statistics (15.S60)
Instructor for a 3-hour lecture on computing tools for PhD students — 2017, 2018

Work Experience

GRAIL — Palo Alto, CA
Machine Learning Engineer Intern — Summer 2018
Investigated genomic features on its ability to improve detecting early-stage cancer

Snap — Venice, CA
Software Engineer Intern — Fall 2014, Summer 2016
Improved app startup performance by implementing incremental updates

Bloomberg — London, UK
Software Engineer Intern — Fall 2015
Optimized a financial dashboard using a dependency graph to minimize redundant function calls

Dropbox — San Francisco, CA
Software Engineer Intern — Fall 2013, Spring 2014
Optimized sync by implementing delta compression using finite-state machines

LogicBlox — Atlanta, GA
Software Engineer Intern — Spring 2013

Axentra — Ottawa, Canada
Software Engineer Intern — Summer 2012

Service

Reviewer for Journals: *Operations Research, Management Science, Manufacturing & Service Operations Management, Operations Research Letters, European Journal of Operational Research, Journal of Machine Learning Research, IEEE Control Systems Letters, IEEE Transactions on Intelligent Transportation Systems, INFORMS Journal on Computing*
Program Committee/Reviewer for Conferences: *FAccT 2022/2023, WINE 2022, ALT 2023, The Web Conference 2023, AISTATS 2023*
Session Chair, INFORMS Annual Meeting — 2021, 2022
Student Coordinator, MIT ORC Seminar Series — Fall 2020
Student Coordinator, MIT OM Seminar Series — Spring 2020

Talks

Fair Exploration via Axiomatic Bargaining
Northwestern Kellogg, Columbia IEOR, USC Marshall, Johns Hopkins Carey, NYU Stern, Stanford GSB, Duke Fuqua, Yale SOM, Michigan Ross, Chicago Booth, Rotman Young Scholar Seminar, Caltech RSRG — 2022
UPenn Wharton, UBC Sauder, UNC Kenan-Flagler, Cornell ORIE, MIT OM Seminar, MIT Data Science Lab Seminar, Cornell Young Researchers Workshop, Marketplace Innovation Workshop, MSOM Conference, RMP Conference — 2021

The Limits to Learning a Diffusion Model
Healthcare Operations SIG Meeting — 2021
ACM conference on Economics and Computation — 2021

TS-UCB: Improving on Thompson Sampling With Little to No Additional Computation
INFORMS Annual Meeting — 2020

Bifurcating Constraints to Improve Approximation Ratios for (Reusable) Network Revenue Management
INFORMS Annual Meeting — 2019
Revenue Management and Pricing — 2019
POMS Annual Conference — 2019

Mechanism Design for Airport Landing Slot Exchange
LIDS Student Conference — 2018
⋆ Runner-up, *Best Presentation Award*
INFORMS Annual Meeting — 2018

Honors and Awards

Second Place, MSOM Student Paper Competition — 2022
Finalist, George Nicholson Student Paper Competition — 2021
Finalist, RMP Jeff McGill Student Paper Award — 2021
Honorable Mention, MIT ORC Best Student Paper Competition — 2021
Finalist, Post-Pandemic Supply Chain and Healthcare Management Best Paper Competition — 2021
Runner-up, MIT LIDS Student Conference Best Presentation — 2018
NSERC Undergraduate Student Research Award — 2015
Professional Education Foundation Scholarship, University of Waterloo — 2014
Mathematics National Scholarship, University of Waterloo — 2011 - 2016

Volunteer Experience

COVID-19 Alliance Senior Support Team of New Hampshire
Data Scientist — 2020 - 2021
Built and deployed an automated communication system (SMS and email) with all senior residential facilities in NH, used daily from April 2020 to June 2021

Sidney-Pacific Graduate Student Residence (MIT)
Brunch Chair — 2016 - 2018
Led a group of ∼50 volunteers every month to cook brunch for 300+ residents

Other

Citizenship: Canadian
Hobbies: squash, running, snowboarding, basketball