



OPERATIONS
RESEARCH
CENTER

Operations Research Center

Massachusetts Institute of Technology

GRADUATE STUDENT DIRECTORY

November 2025

Bonnie Akhavan

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Education

Massachusetts Institute of Technology, Operations Research, Ph.D., Expected Graduation: May 2027, GPA: 5.0/5.0
Cornell University College of Engineering, Computer Science and Operations Research, B.S., GPA: 4.1/4

Relevant Coursework

Machine Learning, Natural Language Processing, Computer Vision, Probability, Statistics, Algorithms, Stochastic Processes, Networks, Functional Programming, Simulation, Optimization, Operations Management

Relevant Experience

Graduate Researcher, Massachusetts Institute of Technology

September 2022 - Present

- Lead researcher in two collaborations between MIT and a leading pharmaceutical company
- Set weekly goals for each team to advance publications while producing usable assistive tools
- Assist collaborators in implementing novel machine learning and GenAI solutions within their teams
- Present research updates in multiple weekly meetings to technical and non-technical audiences
- Coordinate data aggregation efforts across more than five product teams simultaneously

Operations Management Head TA, MIT Sloan

September 2024 - December 2024 and May 2025 - September 2025

- Responsible for recitations, enrollment, grading, office hours, and materials for up to 120 EMBA and MBA students
- Spearheaded the integration of new teaching platforms (Gradescope, Piazza) into the course
- Maintained an overall instructor rating of 6.8/7 based on student feedback surveys

Quantitative Strategy Summer Analyst, Goldman Sachs

June 2021 - August 2021 and June 2022 - August 2022

- Rotated between the Synthetic Products and Commodities Strats desks in 2021
- Rotated between the Structured Finance & Lending Strats desk and Marquee Data Analytics team in 2022
- Constructed a new averaging swap tradable using forward starting executions
- Designed architecture for a new auto-quoting system to price credit valuation adjustments on oil derivatives
- Created an updating forecast to balance funding costs with expected loan withdrawals given historical data
- Integrated Marquee Screens and Screeners REST APIs into gs_quant, Goldman's open-source Python library

Research Assistant, Cornell University

September 2021 - June 2022

- Employed as a member of the Cornell COVID-19 Modeling Team under Professor Peter Frazier
- Studied, simulated, and forecasted the progression of COVID-19 within Cornell University's community
- Created live visualizations in Tableau for the Cornell administration to monitor infections on campus
- Performed regression analysis on transmission rates based on symptom status for the NYC Health Dept.
- Developed simulation parameters to accurately estimate infection rates across campus

Software Development Intern, Bandwidth

May 2020 - August 2020

- Designed and performance tested a new international least cost routing engine concept
- Deployed applications using DevOps tools such as OpenShift (Kubernetes), Jenkins, Docker, and Maven
- Presented a SQL-based cost routing system with a 2.3 millisecond average response time

Additional Experience

MedDRA Classification Tool and Drug Label Dataset

September 2022 - Present

- Designed and web scraped a novel FDA prescription label dataset to analyze postmarketing drug side effects
- Designed an LLM-based annotation and standardization tool for drug adverse event entity recognition in FDA prescription labeling with preliminary accuracy of over 90% (annotation) and over 80% (standardization)
- Presented at INFORMS 2024

Estimating Impact of Manufacturing Variability on Biologic Drug Adverse Events

January 2024 - Present

- Analyzes the impact of manufacturing variability in biologic drugs on population-level adverse event rates
- Leverages hidden markov models and time series analysis to assess serial correlation in adverse events reported for product batches

Skills

Highlighted Skills: Generative AI, Retrieval-augmented generation, Prompt engineering

Computing Skills: Python, Java, MATLAB, C, Unix/Linux, SQL, Tableau, TensorFlow, Keras, PyTorch, Gurobi, Databricks, OpenShift, OCaml, Julia, High performance computing

Languages: English (native), German (fluent), Spanish (basic)

Matthew Brun

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Education

Massachusetts Institute of Technology, Cambridge, MA 2022 - present
PhD Student in the Operations Research Center, advised by Dr. Andy Sun
Research Focus: Large Scale Optimization, Nonconvex Optimization, Energy Systems Optimization

Rice University, Houston, TX 2018 - 2022
GPA: 3.96 / 4.0, Honors: Summa Cum Laude, Phi Beta Kappa, Distinction in Research and Creative Work
BA in Operations Research
Michael Ross Franko Award (Exemplary Student, Computational and Applied Math Department)

Relevant Coursework/Skills

Operations Research, Optimization, Simulation, Data Science/Machine Learning, Julia, Python, MATLAB, R, SQL

Work Experience

Lawrence Livermore National Lab, Houston, TX
Power Systems Intern, Cyber & Critical Infrastructure Summer Institute May 2024 - August 2024
• Investigated optimization-based methods for analyzing and mitigating the impact of wildfires on power infrastructure

ORTEC, Houston, TX
Optimization Consultant Intern, Data Science & Consulting May 2022 - August 2022
• Engaged external clients to design and implement end-to-end manufacturing optimization applications in AIMMS
• Engineered model formulation to provide provably optimal solutions within minutes
• Designed, recommended, and presented best practices for implementing AIMMS unit tests

Chevron, Houston, TX
Data Science Intern, Commodity Supply Chain Management May 2021 - August 2021
• Designed and implemented a linear programming optimization model for lubricant additive supply chains and manufacturing, solving operational problems in seconds
• Recommended a software framework for implementing future optimization projects
Data Science Intern, Chevron Pipeline & Power May 2020 - August 2020
• Trained a deep learning model to extract building footprints from satellite imagery near pipeline routes
• Predicted hot dog sales in gas stations, placed 2nd of 9 intern teams in model accuracy

Research Experience

Designing Optimal Wildfires for Adversarial Power Grid Outages May 2024 - present
• Formulated an optimization model to characterize the spread of wildfires
• Evaluated the impact of optimization-based wildfire models on power grid contingency analysis and mitigation

Optimal Investment Strategy for EV Battery Recycling Facilities September 2022 - present
• Implemented a two-stage nonconvex optimization model to identify optimal long term investment strategies in EV battery recycling facilities
• Designed new solution algorithms that improve solution time by 10x over standard algorithms, solving to global optimality in minutes

Alternating Methods for Large-Scale AC-OPF with Unit Commitment September 2022 - May 2025
• Implemented software to solve multiperiod security constrained AC power flow within 99% of optimality in hours
• Designed new heuristic methods to enable spatial and temporal decomposition of large scale (millions of variables) optimization problems
• Placed 2nd of 14 teams in the ARPA-E Grid Optimization Competition, receiving \$520k in prize money

Lagrangian Duality of Multiobjective Integer Programs January 2021 - January 2023
• Theoretical work which proved new results on dual strength in discrete multiobjective settings
• Extended concepts from single objective discrete optimization and identified new counterexamples
• Recipient of the INFORMS Undergraduate Operations Research Prize

YUBING CUI

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EDUCATION

Massachusetts Institute of Technology, Ph.D.

Sept.2023–May 2028(expected)

Major: Operations Research

Advised by Dimitris Bertsimas.

University of Michigan - Ann Arbor, B.Sc.

Sept.2019–Apr.2021, Aug.2022-Apr.2023

Major: Double major in Honors Mathematics and Computer Science

GPA: 3.99 Major GPA: 3.98

Gap year during the 2021-2022 academic year.

University of California San Diego

Sept.2018–June 2019

Major: Mathematics (honors sequence)

GPA: 3.88 Major GPA: 4.00

Transferred out.

PUBLICATION

Minimum Cost Adaptive Submodular Cover (with Viswanath Nagarajan). Accepted for publication at SIAM Symposium on Simplicity in Algorithms (SOSA23). <https://arxiv.org/abs/2208.08351>

RESEARCH EXPERIENCE

Approximation Algorithm: Minimum Cost Adaptive Submodular Cover

May 2022-Aug.2022

Summer Undergraduate Research in Engineering (SURE)

University of Michigan, College of Engineering

Research mentor(s): Associate Professor Viswanath Nagarajan, University of Michigan IOE and CSE.

- Worked on the stochastic optimization problem, focusing on *Minimum Cost Adaptive Submodular Cover*, and coauthored a paper with the same name, which was accepted for publication at the SIAM Symposium on Simplicity in Algorithms (SOSA 2023).
- Obtained a $4(\ln Q + 1)$ -approximation algorithm for the problem of minimum cost cover of adaptive-submodular functions, which is nearly the best possible (unless $P = NP$) and the first $O(\ln Q)$ -approximation algorithm for the general setting, and further extended the result to multiple adaptive-submodular cover problem, which is introduced for the first time.

Analysis of Partial Differential Equations: Wave Kinetic Equations

May 2021-future

NSF Math REU (Research Experiences for Undergraduates)

University of Michigan, Department of Mathematics

Research mentor(s): Professor Zaher Hani and Assistant Professor Ricardo Grande Izquierdo, University of Michigan Math department.

- Worked on wave turbulence theory under the guidance of mentors, focusing on Kolmogorov-Zakharov cascade spectra, which are some highly interesting solutions of the wave kinetic equations (WKE).
- Proved the main theorem by introducing a class of functions (more inclusive than some published works) over which the WKE converges, quantified general bounds on WKE, showed finer bounds for a subclass of nicely behaved functions, and utilized it to give a rigorous mathematical proof to interpret Kolmogorov-Zakharov solutions.

Machine Learning: Family-Wise Loss for Multi-Class SVM

Jan.2021-May 2021

Directed Study

University of Michigan, Electrical Engineering and Computer Science

Research mentor(s): Professor Clayton Scott, University of Michigan EECS and Statistics.

- Worked on the topic of multi-class support vector machine (SVM) with family-wise loss, which is one instance of entropic loss and Fenchel-Young loss and holds some promising properties: convex, classification-calibrated, and sum-to-zero-constraint-free.
- Explored to find an exact and/or fast solver by reforming family-wise loss into a maximization over $2^k - 1$ parameterized affine planes and using techniques including Primal-Dual, reparametrization, subproblems, and block coordinate descent.
- Arrived at exponential theoretical bounds and planned to tackle the problem with sparsity conjecture and minimax framework in later works.

Machine Learning: Generative Adversarial Network for Ray Tracing

June 2020-Aug.2020

NSF Math REU - Research in Industrial Projects for Students (RIPS)

UCLA Institute for Pure & Applied Mathematics (IPAM)

Research mentor(s): Dr.Paul Bauman, Advanced Micro Devices (AMD) and Dr.Qiujing Lu, UCLA.

- Worked in a group of four on the project sponsored by AMD to explore common frameworks and algorithms in generative modeling to automatically produce images that appear to have been rendered using ray tracing.
- Reproduced Super Resolution Generative Adversarial Network (SRGAN) paper results using PyTorch, generated a dataset with 10k+ images for our neural network model by Blender with Python Scripting, and introduced our modified Ray Tracing GAN (RTGAN), which accomplished the rendering task in the preliminary Blender setting 80+ times quicker than the Blender engine.
- Improved our RTGAN by U-NET with VGG22 loss, introduced shadow-loss, and solved the “checkerboard” problem with the help of Wasserstein GAN with gradient penalty.
- Presented our work in MAA Student Poster Session of Joint Mathematics Meetings 2021 and Southern California Math REU Conference 2020.

HONORS & AWARDS & SCHOLARSHIPS

41st Annual Virginia Tech Regional Mathematics Contest - 1st place of Univ. of Michigan	May 2020
Arthur Herbert Copeland, Sr. Memorial Award, University of Michigan Math Department	May 2021
Merit Scholarship (the maximal amount), University of Michigan Math Department	Aug. 2021
EECS Scholar, University of Michigan College of Engineering	Apr. 2021, Apr. 2022
James B. Angell Scholar, University of Michigan LSA	Mar. 2021, Mar. 2022, Mar. 2023
University Honors, University of Michigan LSA	Dec. 2019, Apr. 2020, Dec. 2020, Apr. 2021, Dec. 2022, Apr. 2023
Outstanding Achievement in Mathematics Award, University of Michigan Math Department	April 2023
Provost Honors, UC San Diego	Fall Qtr 2018, Winter Qtr 2019, Spring Qtr 2019

WORK EXPERIENCE

Meituan (Beijing)

Machine Learning Engineer Intern in the Operations Research Team

Mar.2022-May 2022

- Participated in designing and implementing demand forecasting and dynamic pricing system, which comprises product composition pattern modeling, analysis of price-volume relationship, etc., and applied primary techniques, including XGBoost and Double Machine Learning.
- Explored metrics to quantify the degree of shortage of each SKU on Meituan grocery platform with SQL and analyzed their correlations with prices, GMV, categories, etc., to explore new strategies for the demand forecasting system.

Tencent Holdings Ltd. (Shenzhen)

Product Manager Intern in the QQ Browser Search Group

Aug.2021-Nov.2021

SKILLS

Technical:

Proficient: C++, Python, SQL

Intermediate: MATLAB, Java

Basic: R, Pascal, STATA

Packages/others used: TensorFlow, PyTorch, Gurobi Optimizer for Linear Programming, LaTeX

Certificate:

C++ Programming for Financial Engineering offered by Baruch College, City University of New York (CUNY) and QuantNet
July 2019

YAN DAI

🏠 <https://yandaichn.github.io/>

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EDUCATION

Massachusetts Institute of Technology Operations Research Center 2024 — Now

PhD student in Operations Research co-advised by Prof. Patrick Jaillet and Prof. Negin Golrezaei.

Tsinghua University Andrew C. Yao Class 2020 — 2024

Bachelor of Engineering in Computer Science and Technology (*GPA: 3.99/4.00*).

Outstanding Graduate named by Beijing (5%), by Tsinghua (2%), and by Yao Class (10%).

RESEARCH EXPERIENCES

Massachusetts Institute of Technology ORC (Cambridge, MA) Sep. 2024 — Now

Research assistant of Prof. Patrick Jaillet and Prof. Negin Golrezaei.

Tsinghua University Andrew C. Yao Class (Beijing, China) Feb. — Jun. 2024

Beachelor's thesis advised by Prof. Longbo Huang.

University of Washington School of CSE (Seattle, WA) Jun. — Aug. 2023

Visiting student hosted by Prof. Simon S. Du.

Massachusetts Institute of Technology LIDS (Cambridge, MA) Feb. — May 2023

Visiting student hosted by Prof. Suvrit Sra.

University of Southern California CS Department (Remote) Feb. — Dec. 2022

Remote visitor of Prof. Haipeng Luo.

Tsinghua University Andrew C. Yao Class (Beijing, China) Jun. — Dec. 2021

Research assistant of Prof. Longbo Huang.

PUBLICATIONS

(* stands for equal contribution. Listed reverse chronologically.)

Journal Publications and Working Drafts

[12] **[NeurIPS'25]** [Yan Dai](#), Negin Golrezaei, and Patrick Jaillet. "Incentive-Aware Dynamic Resource Allocation under Long-Term Cost Constraints." [Preprint]

1st Place in ACM Student Research Competition (SRC) @ SIGMETRICS'25.

[11] **[COLT'25]** [Yan Dai](#), Moïse Blanchard, and Patrick Jaillet. "Non-Monetary Mechanism Design without Distributional Information: Using Scarce Audits Wisely." [Preprint] [Proceeding (Extended Abstract)]

[10] **[POMACS & SIGMETRICS'25]** [Yan Dai](#) and Longbo Huang. "Adversarial Network Optimization under Bandit Feedback: Maximizing Utility in Non-Stationary Multi-Hop Networks." [ACM Journal Page]

Best Paper Award of ACM SIGMETRICS'25.

Conference Publications

[9] **[ICLR'25]** Yu Chen*, Jiatai Huang*, [Yan Dai*](#), and Longbo Huang. "uniINF: Best-of-Both-Worlds Algorithm for Parameter-Free Heavy-Tailed MABs." *Spotlight* (5%). [Preprint] [OpenReview]

[8] **[COLT'24]** [Yan Dai](#), Qiwen Cui, and Simon S. Du. "Refined Sample Complexity for Markov Games with Independent Linear Function Approximation." [Preprint] [Proceeding (Extended Abstract)]

[7] **[ICML'24]** Kwangjun Ahn, Zhiyu Zhang, Yunbum Kook, and [Yan Dai](#). "Understanding Adam Optimizer via Online Learning of Updates: Adam is FTRL in Disguise." [Preprint] [Proceeding]

- [6] **[NeurIPS'23]** [Yan Dai*](#), Kwangjun Ahn*, and Suvrit Sra. "Curious Role of Normalization in Sharpness-Aware Minimization." [Preprint] [OpenReview] [Proceeding]
- [5] **[ICML'23]** [Yan Dai](#), Haipeng Luo, Chen-Yu Wei, and Julian Zimmert. "Refined Regret for Adversarial MDPs with Linear Function Approximation." [Preprint] [Proceeding]
- [4] **[ICML'23]** Jiatai Huang*, [Yan Dai*](#), and Longbo Huang. "Banker Online Mirror Descent: A Universal Approach for Delayed Online Bandit Learning." [Preprint] [Proceeding]
- [3] **[ICLR'23]** [Yan Dai](#), Ruosong Wang, and Simon S. Du. "Variance-Aware Sparse Linear Bandits." [Preprint] [OpenReview]
- [2] **[NeurIPS'22]** [Yan Dai](#), Haipeng Luo, and Liyu Chen. "Follow-the-Perturbed-Leader for Adversarial Markov Decision Processes with Bandit Feedback." [Preprint] [OpenReview] [Proceeding]
- [1] **[ICML'22]** Jiatai Huang*, [Yan Dai*](#), and Longbo Huang. "Adaptive Best-of-Both-Worlds Algorithm for Heavy-Tailed Multi-Armed Bandits." [Preprint] [Proceeding]

RESEARCH AWARDS AND SCHOLARSHIPS

Research Awards

- Best Paper Award (*1 paper per year*) of ACM SIGMETRICS'25. Jun. 2025
- 1st Place in ACM Student Research Competition (SRC) @ SIGMETRICS'25. Jun. 2025

Fellowship and Scholarship

- Outstanding Graduate named by Beijing (5%), by Tsinghua (2%), and by Yao Class (10%). Jun. 2024
- Presidential Scholarship (*top scholarship for Tsinghua undergrads; 10/16,000+*), Tsinghua. Nov. 2023
- Andrew C. Yao Award – Gold Medal (*top scholarship for seniors; 1 student*), Yao Class. Sep. 2023

Competitive Programming

- Gold Medal (*1st place with perfect score*), Asia-Pacific Informatics Olympiad (APIO). May 2019
- Gold Medal (*5th place*), Chinese National Olympiad in Informatics (NOI). Jul. 2018
- Gold Medal, Asia-Pacific Informatics Olympiad (APIO). May 2018
- Gold Medal, IOI China Team Selection Competition (CTSC). May 2018
- Gold Medal, Chinese Olympiad in Informatics Winter Camp (WC). Feb. 2018

Miscellaneous

- 1st Place, MIT Intramurals League on Water Polo. Apr. 2023
- 2nd Place, National Collegiate Water Polo Championships. Jun. 2021
- 1st Place, Tsinghua Swimming Competition on Men's 100m Butterfly. Nov. 2021
- 3rd Place, Tsinghua Swimming Competition on Men's 200m Medley. Nov. 2021

PROFESSIONAL SERVICES

Journal Reviewing. Journal of Machine Learning (JMLR), IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), Performance Evaluation.

Conference Reviewing. COLT 2025, ICML 2025 / 2023, NeurIPS 2025 / 2024 / 2023 / 2022, ICLR 2025 / 2024, AISTATS 2026 / 2025 / 2023 / 2022, AAAI 2026, ALT 2023.

THOMAS DAILLAK

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EDUCATION

Massachusetts Institute of Technology

- PhD in Operations Research expected Spring 2029
- Advised by Professor Joe Doyle

Swarthmore College- Class of 2022

GPA: 3.95/4.0

- Bachelor's of Arts in Mathematics with minors in Economics and Linguistics
- Graduated with High Honors, Phi Beta Kappa

Byram Hills High School

RESEARCH EXPERIENCE

MIT Operations Research Center

September 2025 - Present

Research Assistant (Advisor: Prof. Joe Doyle)

- Healthcare economics and personalized digital health interventions

MIT Operations Research Center

August 2024 - August 2025

Research Assistant (Advisor: Prof. Swati Gupta)

- Built high fidelity machine learning models for predicting deceased donor kidney placements using multimodal methods
- Collaborated with physicians to construct and validate interpretable approximations of those models to best communicate our insights
- Used an optimization approach to turn those models into prescriptive tools for augmenting the existing allocation framework while balancing efficacy and confidence

Swarthmore College Statistics Department

Summer 2021

Researcher (Advisor: Prof. Amanda Luby)

- Analyzed underexploited data on fingerprint examiners' decision making process
- Developed methods for clustering of marked minutiae and applications of Item Response Theory without an answer key to spatial data

Centre for Integrative Biology, University of Trento

Summer 2016

Researcher (Advisor: Prof. Giovanni Stefani)

- Designed and tested novel laboratory protocols for the study of the brain cancer Glioblastoma Multiforme

WORK EXPERIENCE

Senior Analyst, Analysis Group

May 2022 - June 2024

- Involved in the antitrust litigation practice with a focus on mergers and acquisitions, particularly in the health care space
- Responsible for work ranging from data cleaning to share and diversion ratio estimation to assistance drafting reports and the construction of graphics and interactive data dashboards depending on client needs
- Worked with US Census microdata and public and private health insurance claims data

Policy intern, The Movement Advancement Project

2020-2021 Academic Year

- Partnered with national charities to create content for educational and lobbying purposes in forms varying from blog posts to presentations and full length reports
- Collected and analyzed data on social service providers throughout the US to inform the discussion of equitable access and government policy
- Researched state and federal law to identify strategic targets for clients and partner agencies looking to take political action

Resident assistant, Swarthmore College

2019-2020 Academic Year (returned Fall 2021)

- One month of training in mediation, crisis response, and intervention
- Organized community events with attendance ranging from 15 to 150 people

Summer intern, Lebonson Actuarial Services*Summer 2017 and 2018*

- Managed an overhaul of company-wide billing procedures, including the design of new profitability and productivity reporting structures and the training of employees

TEACHING EXPERIENCE**Yoga Instructor***May 2025 - Present*

- Teach two weekly yoga classes of around 5-15 people for local gyms

R Trainer, Analysis Group*Summer 2023*

- Led two cohorts of 10 new hires each through a month long bootcamp focused on developing coding and statistical skills in R

Math clinician, Swarthmore College*Spring 2020 + 2020-2021 Academic Year*

- Led weekly 3 hour help sessions for students first in multivariate calculus and later in a similar role for all courses offered in the department
- Helped students of varying levels, individually and in groups, understand course material

Grader, Swarthmore College*2019-2020 + 2021-2022 Academic Years*

- Responsible for grading and providing feedback for 15-20 students in upper level modern algebra and theoretical probability courses

PUBLICATIONS

Luby, A., **Daillak, T.**, Huang, S. "Analyzing Spatial Responses: A Comparison of IRT-Based Approaches," *Quantitative Psychology*, March 2023

PRESENTATIONS

Daillak, T., Lee, J., Pollack, M., Gautam, P., Cron, D., Toner, M., Uygun, K., Yeh, H., Gupta, S. "Boosting Kidney Transplant Access: Interpretable AI to Discover Opportunities for Xenografted and Cryopreserved Organs," *2025 INFORMS Annual Meeting* (Forthcoming)

Daillak, T. "Clustering Techniques for Analyzing Fingerprint Minutiae Labels," *Swarthmore Summer Research Showcase Fall 2022*

AWARDS**Heinrich W. Brinkmann Prize***2022*

- Awarded to a student who has shown outstanding performance in the field and exemplary services to the Swarthmore Mathematics Department

Swarthmore College Summer Research Funding*Summer 2021*

- Sponsored funding for participation in undergraduate research

VOLUNTEERING

- Vice President of the MIT student INFORMS chapter (the leading society for academics in Operations Research and associated fields)
- Member of the Swarthmore Young Alumni Executive Steering Committee
- Served on the Analyst Recruiting Committee at Analysis Group, which is responsible for interviewing and selecting all analyst and summer intern hires
- Served on advisory committees throughout undergraduate education, including the Math/Stat Student Advisory Council, the COVID-19 Student Life Continuity Committee, the Title IX Policy Revision Committee, and the Library Advisory Board

SKILL PROFILE

- **Programs:** Python, R, STATA, SAS, Julia, Stan, MATLAB, Microsoft Suite, LaTeX, AMPL
- **Languages:** Highly proficient in Italian, proficient in Spanish, basic competency in modern standard Arabic and Mandarin

Adam Deng

77 Massachusetts Ave., Cambridge, MA 02139 • Website: AdamDeng.com • Email: adamdeng@mit.edu

Education

Massachusetts Institute of Technology Operations Research Center (MIT ORC)

Cambridge, MA

Doctor of Philosophy in Operations Research • Advised by Rahul Mazumder. GPA 4.8/5.0

Sep. '24 -

Research Fields: Sparsifying LLMs, High-Dimensional Statistics, Parallelizable Optimization Algorithms

Courses Include: *Nonlinear Optimization, Statistical Machine Learning, Discrete Probability and Stochastic Processes*

Massachusetts Institute of Technology (MIT)

Cambridge, MA

Bachelor of Science in Mathematics (course 18) & Artificial Intelligence (course 6-4). GPA 4.7/5.0

Sep. '20 - May '24

Courses Include: *Optimization Methods, Quantitative Methods in NLP, Advances in Computer Vision, Theory of Computation, Design & Analysis of Algorithms, Theory of Probability* (grad)

Academic Research with Published or Upcoming Papers

Parallelized Gradient Descent Algorithms for Sparsification

May '25 -

PhD Research Project with Prof. Rahul Mazumder

- Devise GPU-based algorithms for simultaneous/parallel computation of gradients for ML standard loss functions
- Create function-dependent warm starts and thresholds to accelerate non-convex functions past suboptimal descent

Generating Neural Collapse: Loss and Regularization Regimes under Theoretical and Computational Lenses

Nov. '24 -

Extension of Class Research Project • 3 people total

- Compared neural collapse metrics using square loss and cross-entropy loss: trajectories, final result, and layer dynamics
- Analyzed trajectory of metrics through both time (epoch training) and neural network layer through ablation studies
- Research paper to be published in computational machine learning journal

Modernizing Tukey Depth: Parallel Computation, Optimization Methods, and Data-Driven Applications

Sep. '24 -

PhD Research Project with Prof. Rahul Mazumder

- Designed and built Tukey Depth (TD) algorithm for GPUs, cutting runtime by over 95% in >10 dimensions, >250 points
- Bridged statistics and ML by demonstrating TD success in detecting adversarial attacks in computer vision deep models
- Research paper upcoming in computational statistics journal

Coordinating mobile network coverage and vehicle routing: a double column generation approach

Jan. '23 - Jan. '24

UROP for MIT Operations Research Center under Prof. Alexandre Jacquillat

- Created and implemented new algorithms for coordinated vehicle routing; expanded frontier from 35 jobs to 70+ jobs
- Solved joint jobs & coverage vehicle optimization using novel "double column generation" approach
- Devised and proved correctness of several acceleration techniques, cutting total runtime by 96.3%
- Research paper on arXiv: <https://arxiv.org/abs/2312.08341>

Projects

MapMeGPT

Jul. '25 - Aug. '25

ORC PhD Common Experience Project • 3 people total

- Implemented agentic tools for exclusion regions and GPT-based elaborations of user-described routes
- Integrated JavaScript and React functionality to serve Python/OpenAI-based backend on an HTML/CSS webpage
- Devised business plan and strategy, created website, and presented final product in Shark Tank-style competition

Reinforcement Capital

Dec. '23 - Nov. '24

Co-Founder and Analyst

- Modeled biotech stock movements on FDA drug approval documents and news sentiment using NLP and ML classification
- Designed and implemented pipeline for stock ratings using risk assessments from drug trial results and press releases

Shaping Geography with CV: Classification of Countries into Continents

Feb. '24 - May '24

Class Project for "Advances in Computer Vision"

- Designed and implemented multi-stack CNN model for classifying country outlines to their respective continents
- Achieved 86.28% accuracy, as well as 70.5% robustness accuracy against adversarial attacks

Skills

Programming: Python (+numpy/sklearn/matplotlib), optimization (Julia, Gurobi), bash

ML Frameworks: PyTorch, TensorFlow, Keras, JAX, Hugging Face

ML Fields: NLP, Computer Vision, LLMs, DNN sparsification and optimization

Mathematics: Optimization, probability and statistics, linear algebra, combinatorics, graph theory.

Tianjiao Li

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Email: tianjl@mit.edu | Phone: (470) 452-9327
Webpage: tli432.github.io | Google Scholar

RESEARCH INTERESTS

My research interests lie in the theory and methodology of *Nonlinear Optimization*, *Stochastic Optimization*, and *Dynamic Decision-Making*, with a central focus on bridging rigorous theoretical development with practical relevance, especially in data science and artificial intelligence. I am particularly interested in

- (i) Parameter-free methods for large-scale convex and nonconvex optimization
- (ii) Stochastic optimization for statistical learning and machine learning
- (iii) Policy optimization and policy evaluation in reinforcement learning
- (iv) Applications: AI for healthcare, E-commerce, finance, etc.

ACADEMIC POSITIONS

Aug 2025 - present **Massachusetts Institute of Technology**, Cambridge, MA, USA
Postdoctoral Associate & Lecturer, Sloan School of Management
- Supervisor: Swati Gupta
- Instructor of 15.081/6.7210: Introduction to Mathematical Programming (Doctoral-level course)

EDUCATION

Aug 2020 - Aug 2025 **Georgia Institute of Technology**, Atlanta, GA, USA
Ph.D. in Operations Research (Minor in Machine Learning)
- Advisor: Guanghui (George) Lan
- Co-advisor: Ashwin Pananjady
- Dissertation: New Accelerated Methods for Optimization and Reinforcement Learning

Aug 2019 - May 2021 **Georgia Institute of Technology**, Atlanta, GA, USA
M.S. in Quantitative and Computational Finance

Sep 2015 - Jun 2019 **Fudan University**, Shanghai, China
B.S. in Information and Computational Science

PUBLICATIONS

(α - β = alphabetical order)

- **A Simple Uniformly Optimal Method without Line Search for Convex Optimization**
Tianjiao Li, Guanghui Lan
Mathematical Programming Series A, 2025
- Finalist (winner to be announced), George Nicholson Student Paper Competition, 2025
- Second Place, INFORMS Optimization Society Student Paper Prize, 2025
- Winner, Alice and John Jarvis Best Student Paper Award, 2024
- **Accelerated Stochastic Approximation with State-Dependent Noise**
Sasila Ilandarideva, Anatoli Juditsky, Guanghui Lan, Tianjiao Li (α - β)
Mathematical Programming Series A, 2024
- Second Place, CMU YinzOR Poster Competition, 2024

- **Stochastic First-Order Methods for Average-Reward Markov Decision Processes**
Tianjiao Li, Feiyang Wu, Guanghui Lan
Mathematics of Operations Research, 2024
- **Faster Algorithm and Sharper Analysis for Constrained Markov Decision Process**
Tianjiao Li, Ziwei Guan, Shaofeng Zou, Tengyu Xu, Yingbin Liang, Guanghui Lan
Operations Research Letters, vol. 54, 107107, 2024
- **Accelerated and Instance-Optimal Policy Evaluation with Linear Function Approximation**
Tianjiao Li, Guanghui Lan, Ashwin Pananjady
SIAM Journal on Mathematics of Data Science, vol. 5, no. 1, pp. 174-200, 2023
- Winner, Georgia Statistics Day Best Poster Award, 2023
- **Simple and Optimal Methods for Stochastic Variational Inequalities, I: Operator Extrapolation**
Georgios Kotsalis, Guanghui Lan, Tianjiao Li (α - β)
SIAM Journal on Optimization, vol. 32, no. 3, pp. 2041-2073, 2022
- **Simple and Optimal Methods for Stochastic Variational Inequalities, II: Markovian Noise and Policy Evaluation in Reinforcement Learning**
Georgios Kotsalis, Guanghui Lan, Tianjiao Li (α - β)
SIAM Journal on Optimization, vol. 32, no. 2, pp. 1120-1155, 2022

PREPRINTS AND WORKING PAPERS

- **Projected Gradient Methods for Nonconvex and Stochastic Optimization: New Complexities and Auto-Conditioned Stepsizes**
Guanghui Lan, Tianjiao Li, Yangyang Xu (α - β)
Major revision, *Mathematical Programming Series A*. Initial version submitted in Dec 2024.
- **Auto-Conditioned Primal-Dual Hybrid Gradient Method and Alternating Direction Method of Multipliers**
Guanghui Lan, Tianjiao Li (α - β)
Preprint at arXiv:2410.01979. To be submitted to *SIAM Journal on Optimization*.
- **Multiscale Replay: A Robust Algorithm for Stochastic Variational Inequalities with a Markovian Buffer**
Milind Nakul, Tianjiao Li, Ashwin Pananjady
In preparation.
- **Novel Accuracy Certificates for Smooth Convex Optimization**
Sasila Ilendarideva, Anatoli Juditsky, Guanghui Lan, Tianjiao Li (α - β)
In preparation.

AWARDS AND HONORS

- **Finalist (winner to be announced), George Nicholson Student Paper Competition, 2025**
- **Second Place, INFORMS Optimization Society Student Paper Prize, 2025**
- **Alice and John Jarvis Best Student Paper Award, 2024**
- Awarded annually to one Ph.D. student in Georgia Tech ISyE across all disciplines
- **Second Place, Poster Competition, YinzOR Student Conference, 2024**
- **Shabbir Ahmed PhD Fellowship for Excellence in Research, 2023**
- Awarded annually to one Ph.D. student in Georgia Tech ISyE for research in optimization
- **First Place, Best Poster Award, Georgia Statistics Day, 2023**

TEACHING AND STUDENT MENTORING

- **Course Instructor, MIT, Fall 2025**
Introduction to Mathematical Programming (15.081/6.7210)
 - Description: MIT's doctoral-level linear optimization course for ORC and other MIT PhD programs
 - Class size: **49** (43 students + 6 listeners)
- **Course Instructor, Georgia Tech, Summer 2024**
Statistics and Applications (ISyE 3770)
 - Description: one-semester probability and statistics course for engineering students
 - Class size: **64** (26 on campus + 38 online)
 - Overall teaching evaluation: **4.8/5.0** (response rate: 56%)
- **Guest Lecturer, Georgia Tech, Fall 2024**
Computational Data Analysis / Machine Learning (ISyE 6740)
 - Description: general machine learning course for master and Ph.D. students
 - Instructor: Guanghui (George) Lan
 - Responsibility: 2 Lectures in machine learning and data science
- **Guest Lecturer, Georgia Tech, Spring 2024**
Optimization Methods for Reinforcement Learning (ISyE 8803)
 - Description: advanced topic in optimization for RL for ISyE Ph.D. students
 - Instructor: Guanghui (George) Lan
 - Responsibility: 8 Lectures in policy evaluation and average-reward MDPs
- **Student Mentoring:**
 - Milind Nakul, ISyE PhD Student, Georgia Tech
Research project: Experience replay for policy evaluation in reinforcement learning
 - Feiyang Wu, CS Master Student, Georgia Tech
Research project: Stochastic first-order methods for average-reward MDPs
 - ISyE PhD mentoring program, Georgia Tech

INDUSTRIAL EXPERIENCE

- May 2023 - Amazon, Seattle, WA, USA**
- Aug 2023** Position: Applied Scientist Intern
- Anomaly detection research for the Amazon Payment platform
 - The internal paper was accepted by 2023 Amazon Machine Learning Conference (AMLC)

VISITING EXPERIENCE

- Apr 2024 - Laboratoire Jean Kuntzmann, University Grenoble Alpes, Grenoble, France**
- May 2024** Visiting Graduate Student
- Host: Anatoli Juditsky
 - Project: Stochastic Optimization Algorithms for Machine Learning Applications
- Oct 2021 - Simons Institute for the Theory of Computing, UC Berkeley, Berkeley, CA**
- Nov 2021** Visiting Graduate Student
- Host: Ashwin Pananjady
 - Program: Computational Complexity of Statistical Inference

RESEARCH COLLABORATION

Nov 2023 - University of Louisville Health and Hospital

- Present** Project: reinforcement learning method for clinical decision making within surgical operations
- Realtime intra- and post-operative clinical recommendation for prevention and mitigation of cardiac surgery-associated acute kidney injury (CSA-AKI)
 - Realtime intra-operative treatment recommendation for management of hypotension during surgeries

Oct 2022 - AI Institute for Advances in Optimization (AI4OPT)

May 2023 Project: AI4OPT collaboration with Intel Corporation

- Implemented the factorial model and random forest to detect significant factors in a process control problem (targeting at reducing the variability of a time series) with limited and highly skewed data

TALKS AND PRESENTATIONS

■ A Simple Uniformly Optimal Method without Line Search for Convex Optimization

- (Upcoming) INFORMS Annual Meeting, Atlanta, GA, Oct 2025

Presentation I: Optimization Society Award Session II, Oct 26 (Sunday), 2:45 PM - 4:00 PM

Presentation II: George Nicholson Student Paper Competition, Oct 26 (Sunday), 4:15 PM - 5:30 PM

- INFORMS Annual Meeting, Seattle, WA, Oct 2024
- Cornell ORIE Young Researchers Workshop, Ithaca, NY, Oct 2024
- International Symposium on Mathematical Programming (ISMP 2024), Montreal, Canada, Jul 2024
- DAO Team Seminar at Laboratoire Jean Kuntzmann, Grenoble, France, May 2024
- INFORMS Optimization Society Conference, Houston, TX, Mar 2024

■ Accelerated Stochastic Approximation with State-Dependent Noise

- (Upcoming) INFORMS Annual Meeting, Atlanta, GA, Oct 2025

Session: Recent Advances in Stochastic and Nonlinear Optimization, Oct 28 (Tuesday), 11:00 AM - 12:15 PM

- International Conference on Continuous Optimization (ICCOPT 2025), Los Angeles, CA, Jul 2025
- YinZOR Student Conference (Poster), CMU Tepper School of Business, Pittsburgh, PA, Aug 2024
- SIAM Conference on Optimization, Seattle, WA, May 2023

■ Universal Parameter-Free Methods for Convex, Nonconvex, and Stochastic Optimization

- ORIE Colloquium, Cornell University, Ithaca, NY, Feb 2025
- STOR Colloquium, UNC Chapel Hill, Chapel Hill, NC, Jan 2025
- IMS Young Mathematical Scientists Forum (Applied Mathematics), Singapore, Jan 2025

■ Accelerated and Instance-Optimal Policy Evaluation with Linear Function Approximation

- INFORMS Annual Meeting, Phoenix, AZ, Oct 2023
- Georgia Statistics Day (Poster), Atlanta, GA, Oct 2023

■ Stochastic First-Order Methods for Average-Reward Markov Decision Processes

- INFORMS Annual Meeting, Indianapolis, IN, Oct 2022
- ISyE Ph.D. Student Seminar, Atlanta, GA, Sep 2022

■ Faster Algorithm and Sharper Analysis for Constrained Markov Decision Process

- Asilomar Conference on Signals, Systems, and Computers, Online, Nov 2021

■ Simple and Optimal Methods for Stochastic Variational Inequalities

- INFORMS Annual Meeting, Online, Oct 2021

SERVICES

■ Journal Reviewing:

- SIAM Journal on Optimization
- Mathematical Programming

- Annuals of Statistics
- Computational Optimization and Applications
- Journal of Optimization Theory and Applications
- Journal of Global Optimization
- Optimization Letters
- Operations Research Letters
- IEEE Transactions on Automatic Control
- **Conference Reviewing:**
 - Conference on Learning Theory (COLT) 2022-2025
- **Session Organization:**
 - **International Conference on Continuous Optimization (ICCOPT 2025)**, Los Angeles, CA, Jul 2025
Session: Recent Advances in Stochastic First-Order Methods
 - **INFORMS Annual Meeting 2024**, Seattle, WA, Oct 2024
Session: Advances in Continuous Optimization Algorithms
Session: Advances in Non-Smooth Optimization
 - **International Symposium on Mathematical Programming (ISMP 2024)**, Montreal, Canada, Jul 2024
Session: Advances in First-Order Methods for Stochastic and Continuous Optimization

REFERENCES

- **Guanghui (George) Lan (Professor)**
H. Milton Stewart School of Industrial and Systems Engineering, Georgia Tech
Email: george.lan@isye.gatech.edu
- **Ashwin Pananjady (Assistant Professor)**
H. Milton Stewart School of Industrial and Systems Engineering
& School of Electrical and Computer Engineering, Georgia Tech
Email: ashwinpm@gatech.edu
- **Arkadi Nemirovski (Professor)**
H. Milton Stewart School of Industrial and Systems Engineering, Georgia Tech
Email: arkadi.nemirovski@isye.gatech.edu
- **Anatoli Juditsky (Professor)**
Laboratoire Jean Kuntzmann, University Grenoble Alpes
Email: anatoli.juditsky@univ-grenoble-alpes.fr
- **Swati Gupta (Associate Professor)**
Sloan School of Management, MIT
Email: swatig@mit.edu

BRIAN LIU

briliu@mit.edu | brianliu97.github.io | 510-676-1131

EDUCATION

Massachusetts Institute of Technology
Ph.D. Candidate in Operations Research
Advised by Professor Rahul Mazumder

September 2021 – Present

Cornell University
B.S. in Operations Research | GPA: 4.1
Summa Cum Laude | Omega Rho Honor Society

May 2020

RESEARCH INTERESTS

Topics | Machine learning, operations research, interpretability, discrete and combinatorial optimization, statistics

Applications | Digital platforms, healthcare operations, clinical machine learning, public health, public policy

SELECTED AWARDS AND HONORS

- 2025 INFORMS Quality, Statistics and Reliability Section Best Student Paper Competition Finalist.
 - ❖ Winner to be announced.
- 2025 American Statistical Association Statistical Computing Section Best Student Paper Award.
- 2024 INFORMS Data Mining Society Best Student Competition 1st Place.
- 2025 MIT Health and Life Sciences (HEALS) Collaborative Graduate Fellowship.
 - ❖ 30 awarded out of 222 applicants.
- 2025 ISYE-MS&E-IOE Rising Star.

PUBLICATIONS AND WORKING PAPERS

Refereed Journals

- B. Liu**, R. Mazumder, and P. Radchenko. Extracting Interpretable Models from Tree Ensembles: Computational and Statistical Perspectives, 2025, Major Revision in the *Journal of the American Statistical Association*.
 - ❖ Accepted for presentation at the INFORMS 2025 Data Mining and Decision Analysis Workshop.
- B. Liu** and R. Mazumder. Locally Transparent Rule Sets for Explainable Machine Learning, 2025, R&R in *Operations Research*.
 - ❖ Accepted for presentation at the INFORMS 2025 Data Mining and Decision Analysis Workshop.
 - ❖ [2025 INFORMS Quality, Statistics and Reliability Section Best Student Paper Competition Finalist \(winner to be announced\)](#).
- B. Liu** and R. Mazumder. Randomization Can Reduce Both Bias and Variance: A Case Study in Random Forests, *Journal of Machine Learning Research*, 2025.
- B. Liu***, Y. Zhang*, S. Henderson, D. Shmoys, P. Frazier. Modeling the Risk of In-Person Instruction During the COVID-19 Pandemic. *INFORMS Journal on Applied Analytics*, 2024.
- P. Frazier, J. M. Cashore, N. Duan, S. Henderson, A. Janmohamed, **B. Liu**, D. Shmoys, J. Wan, Y. Zhang. Modeling for COVID-19 College Reopening Decisions: Cornell, A Case Study. *Proceedings of the National Academy of Sciences*, 2022.

Refereed Conferences:

- B. Liu** and R. Mazumder. Moss: Multi-Objective Optimization for Stable Rule Sets. *Proceedings of the 31st ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD research track)*, 2025.
 - ❖ 19% acceptance rate.
 - ❖ [2024 INFORMS Data Mining Society Best Student Paper Competition 1st Place](#).
- B. Liu** and R. Mazumder. Fast: An Optimization Framework for Fast Additive Segmentation. *Proceedings of the 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD research track)*, 2024.

- ❖ 20% acceptance rate.
- ❖ [2025 American Statistical Association Statistical Computing Student Paper Competition Winner.](#)

8. **B. Liu** and R. Mazumder. Fire: An Optimization Framework for Fast Interpretable Rule Extraction. *Proceedings of the 29th ACM SIGKDD Conference on Knowledge Discovery and Data Mining* (KDD research track), 2023.
 - ❖ 22% acceptance rate.
9. **B. Liu** and R. Mazumder. ForestPrune: Compact Depth-Pruned Tree Ensembles. *Proceedings of the 26th International Conference on Artificial Intelligence and Statistics* (AISTATS), 2023.
 - ❖ 29% acceptance rate.
10. **B. Liu**, M. Xie, and M. Udell. ControlBurn: Feature Selection by Sparse Forests. *Proceedings of the 27th ACM SIGKDD Conference on Knowledge Discovery and Data Mining* (KDD research track), 2021.
 - ❖ 15% acceptance rate.

Refereed Workshops:

11. **B. Liu** and R. Mazumder. TreePrompt: Distilling Boosted Tree Ensembles for In-Context Learning in Large Language Models, *The First Structured Knowledge for Large Language Models Workshop at KDD*, 2025.

Technical Reports:

12. **B. Liu** and M. Udell. Impact of accuracy on model interpretations, 2020, arxiv.org/abs/2011.09903.

TEACHING

Teaching Assistant (MIT) 15.071 Analytics Edge (MBA)	Spring 2025
Teaching Assistant (MIT) 15.072 Advanced Analytics Edge (Graduate Master of Business Analytics)	Fall 2024
Teaching Assistant (MIT) 15.075 Statistical Thinking and Data Analysis (Undergraduate)	Spring 2024
Teaching Assistant (MIT) 15.072 Advanced Analytics Edge (Graduate Master of Business Analytics)	Fall 2023
Teaching Assistant (MIT) 15.071 Analytics Edge (MBA)	Fall 2023
Teaching Assistant (MIT) 15.067 Engineering Statistics and Data Science (Graduate Master and MBA)	Summer 2023
Teaching Assistant (Cornell) ORIE 4740: Introduction to Statistical Learning.	Spring 2020
Teaching Assistant (Cornell) ORIE 3300: Optimization I	Fall 2018

ADDITIONAL AWARDS

1. KDD 2025 Student Travel Award
2. Invited to 2025 Tippie FutureBAProf Workshop

INDUSTRY EXPERIENCE AND COLLABORATIONS

Graduate Student Researcher SilverCloud Health Boston, MA Healthcare machine learning project to predict telehealth treatment outcomes for patients with anxiety and depression.	October 2023 – Present
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Graduate Student Researcher**July 2022 – May 2024**

Takeda | Cambridge, MA

Clinical machine learning project to improve eosinophilic esophagitis (EoE) diagnosis. Built survival models to improve the timely diagnosis of EoE and machine learning models to improve differential diagnosis.

Graduate Student Researcher**September 2021 – February 2022**

Hartford Healthcare | Hartford, CT

Analyzed patient and provider data to determine the impact of socio-economic factors on disparities in diabetes management.

Data and Applied Scientist**July 2020 – July 2021**

Microsoft (Bing Ads) | Bellevue, WA

Built and maintained machine learning models to forecast advertising account revenue and churn. Analyzed Bing demographic and interest data to optimize audience targeting for online search ads.

Data and Applied Science Intern**Summer 2019**

Microsoft (Devices) | Redmond, WA

Designed an inventory management plan to optimize the safety stock of spare parts in the supply chain.

Data Science Intern**Summer 2018 & Summer 2017**

Tesla (Global Service Operations) | Fremont, CA

TALKS

ACM SIGKDD International Conference on Knowledge Discovery and Data Mining**August 2025**

Multi-Objective Optimization for Stable Rule Sets

Joint Statistical Meeting**August 2025**

Additive Models for Transparent Machine Learning

MIT Industrial Liaison Program Webinar: Unlocking the Value of Employee Wellness**July 2025**

Explainable AI for Digital Mental Health

MIT Sloan Health Systems Initiative Annual Workshop**October 2024**

Interpretable Machine Learning Methods for Predicting Telemental Health Outcomes

INFORMS Annual Meeting**October 2024**

An Optimization Framework for Fast Additive Segmentation in Transparent ML

ACM SIGKDD International Conference on Knowledge Discovery and Data Mining**August 2024**

An Optimization Framework for Fast Additive Segmentation in Transparent ML

International Symposium on Mathematical Programming**July 2024**

An Optimization Framework for Fast Additive Segmentation in Transparent ML

US Census Bureau Center for Statistical Research and Methodology**July 2024**

Making Tree Ensembles Interpretable

ACM SIGKDD International Conference on Knowledge Discovery and Data Mining**August 2023**

Fast Interpretable Rule Extraction

INFORMS Annual Meeting**October 2022**

Depth-Pruning Tree Ensembles

ACM SIGKDD International Conference on Knowledge Discovery and Data Mining**August 2021**

Feature Selection with Sparse Forests

OTHER RESEARCH

Cornell Pandemic Modeling Group**March 2020 – December 2022**

Modeled classroom transmission using Monte Carlo simulation to assess student and instructor risk. Analyzed the impact of university reopening, weather, and compliance to shutdowns on pandemic spread. Presented various data analyses and visualizations to Cornell senior leadership to support decisions on COVID-19 interventions. (<https://datasciencecenter.cornell.edu/covid-19-modeling/>)

Cornell Pandemic Reopening Planning**March 2020 – September 2020**

Modeled student movement and behavior on campus using mobility and university internal data. Leveraged models to identify congested sidewalks and bus routes and predict potential hotspots for transmission. Tested various de-densification strategies using agent-based simulations and submitted the most effective methods to the provost. Assisted scheduling socially distanced classrooms. (<https://www.orie.cornell.edu/spotlights/unsung-engineering-behind-cornells-fall-2020-schedule>)

Public Transit Route Optimization**August 2019 – March 2020**

Developed predictive models using farebox and vehicle location data to estimate rider demand on bus routes in Tompkins County. Used demand estimates to redesign the county's second busiest bus route to improve efficiency. Changes were implemented by Tompkins County Area Transit (TCAT) in Fall 2020.

SERVICE

ORC IAP Seminar Coordinator

Spring 2024

ORC Student Seminar Coordinator

Spring 2024

ORC Student Seminar Coordinator

Fall 2023

Reviewer

Journal of the Royal Statistical Society, Series B

Reviewer

Journal of Machine Learning Research

Reviewer

ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)

Reviewer

International Conference on Artificial Intelligence and Statistics (AISTATS)**TECHNICAL SKILLS**

Python, Julia, R, SQL, Spark, Databricks, AMPL, JuMP, Gurobi, Tableau, LaTeX

Gagik Magakyan

Email: gagmag@mit.edu
Mobile: +16505319587

Cambridge, MA

Education

Massachusetts Institute of Technology

Sep 2023 - ongoing

PhD in Operations Research

Courses: Introduction to Linear Programming, Information Theory, Mathematical Statistics, Nonlinear Optimisation, Fundamentals of Probability, Diffusion models: From theory to practice, Statistical Reinforcement Learning.

GPA: 5.0/5.0

Advisors - Asuman Ozdaglar, Pablo Parrilo

University of Cambridge, Trinity College, UK

Oct 2019 - June 2022

BA in Mathematics

Courses: Probability and Measure, Mathematics of Machine Learning, Linear Algebra, Markov chains, Statistics, Functional Analysis, Linear Analysis, Algebraic Geometry, Galois Theory, Algebraic Topology, Riemann Surfaces, Complex Analysis, Groups Rings and Modules, Quantum Mechanics, Mathematical Methods, Optimisation, Variational Principles.

Specialised School in Physics and Mathematics, Armenia

Sep 2014 - June 2019

Publications

General framework for online-to-nonconvex conversion: Schedule-free SGD is also effective for nonconvex optimization. *ICML 2025 **oral*** - Kwangjun Ahn*, Gagik Magakyan*, Ashok Cutkosky.

Dion: Distributed Orthonormalized Updates. *Preprint at arXiv:2504.05295* - Kwangjun Ahn, Byron Xu, Natalie Abreu, Ying Fan, Gagik Magakyan, Pratyusha Sharma, Zheng Zhan, John Langford

Academic Awards

Aeropuertos Argentina 2000 Fellowship (MIT) 2025-2026

Full Scholarship for Bachelor's degree from Trinity College 2019 - 2022

International Mathematical Olympiad 2019 in United Kingdom - Silver medal

International Mathematical Olympiad 2018 in Romania - Bronze medal

International Mathematical Olympiad 2017 in Brazil - Silver medal

International Informatics Olympiad 2018 in Japan - Participant

International Informatics Olympiad 2019 in Iran - Participant

International Zhautikov Olympiad 2019 in Kazakhstan - Gold medal

International Zhautikov Olympiad 2018 in Kazakhstan - Gold medal

International Zhautikov Olympiad 2017 in Kazakhstan - Silver medal

Work Experience

Internship at Microsoft Research

June 2025 - Sep 2025

Researching on distributed optimization algorithms for pre-training Large Language Models.

AI residency at Google X

June 2022 - May 2023

Research on (i) optimising supply chains using Reinforcement Learning and (ii) improving biodiversity by using Graph Neural Networks (GNNs) on molecules.

Research Intern at the University of Cambridge

July 2021 - Sep 2021

Supervisors: Prof. Michael Bronstein, Prof. Pietro Lio

Research project on efficient training and inference message passing for Graph Neural Networks.

Machine Learning Engineer (Intern) at Robok Limited

June 2020 - Sep 2020

I researched the tradeoff between the performance and efficiency of hybrid convolutional neural networks for depth estimation and semantic segmentation.

Co-founder of Kapan Math Club

August 2020 - ongoing

I co-founded the club to prepare underprivileged students from Armenia for mathematical olympiads. We hold regular remote and in-person classes and organise seminars and various events. Starting from 50 students, the club has around 400 now.

Skills

Tech	Pytorch, Pytorch-geometric, Pytorch-distributed, C++, Julia, Algorithms and Data Structures
Languages	Armenian (native), English (fluent), Russian (advanced)

Gal Neria

POSTDOC ASSOCIATE, SLOAN SCHOOL OF MANAGEMENT AND THE OPERATIONS RESEARCH CENTER AT MIT

☎ 857-426-9920 | ✉ galneria@mit.edu | in gal-neria-67ba4810b | Homepage

Professional Activities

An MIT Postdoctoral Associate (Advisor: Prof. Alexandre Jaquillat)

Massachusetts Institute of Technology

SLOAN SCHOOL OF MANAGEMENT AND THE OPERATIONS RESEARCH CENTER (ORC)

2025-2027

A Joint Research project with Prof. Marlin Ulmer

Magdeburg, Germany

OTTO VON GUERICKE UNIVERSITY MAGDEBURG

October, 2024; August, 2022

The Campus Entrepreneurship Program (Entrepreneurship Center, Tel Aviv University)

Tel Aviv, Israel

2023

Education

PhD in Industrial Engineering (average- 97.3)

Tel Aviv, Israel

DEPARTMENT OF INDUSTRIAL ENGINEERING, TEL AVIV UNIVERSITY

2020 - 2025

- Thesis topic: Optimizing Dynamic Systems - From Effective and Equitable Distribution to Coordinated Two-Stage Order Fulfillment
- Advisor: Prof. Michal Tzur

M.Sc. in Industrial Engineering (Summa Cum Laude)

Tel Aviv, Israel

DEPARTMENT OF INDUSTRIAL ENGINEERING, TEL AVIV UNIVERSITY

2017 - 2019

- Direct Program for Excellent Students
- Thesis topic: The Dynamic and Stochastic Humanitarian Pickup and Distribution Problem
- Advisor: Prof. Michal Tzur

B.Sc. in Industrial Engineering (Cum Laude)

Tel Aviv, Israel

DEPARTMENT OF INDUSTRIAL ENGINEERING, TEL AVIV UNIVERSITY

2014 - 2018

Additional Education

Directors and Senior Executives Program by Lahav Executive Education (grade - 100)

Tel Aviv, Israel

LAHAV EXECUTIVE EDUCATION, COLLIER SCHOOL OF MANAGEMENT, TEL AVIV UNIVERSITY

2021 - 2022

Financial Advisory Course by Giza Zinger Even

Tel Aviv, Israel

COLLER CAPITAL MARKET CLUB, TEL AVIV UNIVERSITY

2021

Experience

Industrial Engineering department, Tel Aviv University

Tel Aviv, Israel

TEACHING ASSISTANT (FRONTAL)

2017 - PRESENT

- Tutoring graduate and undergraduate required courses: "Corporate Finance", "Applied Optimization for Engineers", "Analysis of Inventory Systems" and "Analysis of Production System".
- Dean's Award for Excellence in Teaching (2022)

Academic Honors

MIT-Kalanit Postdoctoral Fellowship

AWARDED BY MIT-KALANIT

September 2025-2027

A finalist in the TSL Dissertation Award

AWARDED BY INFORMS TRANSPORTATION SCIENCE AND LOGISTICS (TSL) DISSERTATION AWARD COMMITTEE

2025

Selected for the ISyE-MS&E-IOE Rising Stars Workshop

HOSTED BY GEORGIA TECH, STANFORD, AND UNIVERSITY OF MICHIGAN

2025

- Chosen for a prestigious workshop highlighting emerging scholars in industrial engineering and operations research;
- Did not attend due to scheduling conflict.

Best Refereed Paper Prize for PhD Student - 2nd Prize

AWARDED BY ISRAELI SMART TRANSPORTATION RESEARCH CENTER (ISTRIC)

2025

Scholarship for Outstanding women doctoral students in the hi-tech field

AWARDED BY THE COUNCIL FOR HIGHER EDUCATION IN ISRAEL (VATAT)

2022-2025

Scholarship for Excellent doctoral students	
AWARDED BY KLA	2023
Best Paper by a Graduate Student in Operations Research	
THE ABRAHAM MEHREZ PRIZE ON BEHALF OF ORSIS	2022
Excellence Scholarship	
AWARDED BY THE ISTRC	2021,2022,2023
Excellence Scholarship	
AWARDED BY THE SHLOMO SHMELTZER INSTITUTE FOR SMART TRANSPORTATION	2021, 2022, 2023
First prize in the Modeling Challenge of The EURO-Hope	
EURO HOPE SUMMER SCHOOL ON HUMANITARIAN LOGISTICS	2021
• A competition held by the EURO Working Group on Humanitarian Operations (Euro-Hope) • Topic: Propositioning of Scarce Relief Aid in Brazil. • The competition included modeling and solving the problem, given real-world data that was provided.	
Best Student Paper (1st prize)	
THE 22ND INDUSTRIAL ENGINEERING AND MANAGEMENT NATIONAL CONFERENCE	2021
Scholarship for Excellent Achievements (M.Sc. studies)	
AWARDED BY THE FACULTY OF ENGINEERING, TEL AVIV UNIVERSITY	2019
Excellence Scholarship (M.Sc. studies)	
AWARDED BY THE SHLOMO SHMELTZER INSTITUTE FOR SMART TRANSPORTATION	2018
Dean's Honor List - 3rd and 4th year of B.Sc.	
	2017-2018
Workshops and Conferences	
Learning on Graphs (LOG) 2025 Conference	<i>Virtual</i>
	December, 2025
The Informs Annual Meeting on Operations Research (Invited session, presenter)	<i>Atlanta, Georgia, USA</i>
PRESENTATION TITLE: A GENERAL OPTIMIZATION FRAMEWORK FOR DYNAMIC TWO-STAGE ORDER FULFILLMENT PROBLEMS	October, 2025
Graph Learning Meets Theoretical Computer Science	<i>UC Berkeley</i>
SIMONS INSTITUTE FOR THE THEORY OF COMPUTING	August, 2025
The 12th Triennial Symposium on Transportation Analysis conference (TRISTAN XII) (acceptance rate - 30%) (presenter)	<i>Okinawa, Japan</i>
PRESENTATION TITLE: A GENERAL OPTIMIZATION FRAMEWORK FOR DYNAMIC TWO-STAGE ORDER FULFILLMENT PROBLEMS	June, 2025
ORSIS (Operations Research Society of Israel) annual conference (presenter)	<i>Tel Aviv, Israel</i>
PRESENTATION TITLE: A GENERAL OPTIMIZATION FRAMEWORK FOR DYNAMIC TWO-STAGE ORDER FULFILLMENT PROBLEMS	May, 2025
Learning on Graphs (LOG) 2024 Conference	<i>Virtual</i>
	November, 2024
The INFORMS Transportation Science and Logistics Society Workshop (presenter)	<i>Nantes, France</i>
PRESENTATION TITLE: ANTICIPATORY REAL TIME OPERATIONS OF GHOST KITCHENS	September, 2024
Advanced Course on Data Science and Machine Learning	<i>Tuscany, Italy</i>
	June, 2024
The Informs Transportation Science and Logistics Society Conference (presenter)	<i>Chicago, Illinois, USA</i>
PRESENTATION TITLE: THE RESTAURANT MEAL DELIVERY PROBLEM WITH GHOST KITCHENS	July, 2023
The 3rd ISTRC Students Conference (presenter)	<i>Ruppin Academic Center, Israel</i>
PRESENTATION TITLE: THE RESTAURANT MEAL DELIVERY PROBLEM WITH GHOST KITCHENS	June, 2023
The Informs Annual Meeting on Operations Research (Invited session, presenter)	<i>Indianapolis, IN, United States</i>
PRESENTATION TITLE: THE DYNAMIC PICKUP AND ALLOCATION WITH FAIRNESS PROBLEM	October, 2022

The ODYSSEUS workshop on Logistics and Freight Transportation (presenter)

PRESENTATION TITLE: THE DYNAMIC PICKUP AND ALLOCATION WITH FAIRNESS PROBLEM

[Tangier, Morocco](#)

May, 2022

ORSIS (Operations Research Society of Israel) annual conference (presenter)

PRESENTATION TITLE: THE DYNAMIC PICKUP AND ALLOCATION WITH FAIRNESS PROBLEM

[Jerusalem, Israel](#)

May, 2022

The EURO PhD School on Data Driven Decision Making and Optimization

INSTITUTO DE MATEMÁTICAS DE LA UNIVERSIDAD DE SEVILLA-IMUS (SPAIN)

[Sevilla, Spain](#)

June, 2022

The 2nd ISTRC Students Conference (presenter and session chair)

PRESENTATION TITLE: DYNAMIC ROUTING TO ACHIEVE EFFICIENT AND FAIR DISTRIBUTION

[Jerusalem, Israel](#)

December, 2021

The 1st ISTRC Annual Conference (presenter)

PRESENTATION TITLE: DYNAMIC ROUTING TO ACHIEVE EFFICIENT AND FAIR DISTRIBUTION

[Tel Aviv, Israel](#)

June, 2021

Summer Camp on Smart cars and autonomous vehicles for international students

[Beijing Institute of Technology](#)

July-August, 2018

Publications

Gal Neria, Michal Tzur, Marlin Ulmer (2025). A General Decomposition Framework for Dynamic Two-Stage Order Fulfillment Problems. Submitted.

Gal Neria, Florentin Hildebrandt, Michal Tzur, Marlin Ulmer (2025). The Restaurant Meal Delivery Problem with Ghost Kitchens. [Transportation Science](#), 59(2):433-450.

Gal Neria, Michal Tzur (2024). The Dynamic Pickup and Allocation with Fairness Problem. [Transportation Science](#), 58(4):821-840.

Gal Neria, Michal Tzur (2025). The Dynamic Fair Resource Allocation with Suppliers Problem. Submitted.

Rany Zeidan, Gal Neria, Joachim Meyer (2025). When Fake News Fakes: Foiling Feature-Based Attacks on Algorithmic Fake News Detection. Submitted.

M.Sc. thesis - The Dynamic and Stochastic Humanitarian Pickup and Distribution Problem , 2019

Community Service

Paamonim

VOLUNTEER FINANCIAL ASSISTANT

[Israel](#)

2024 - present

- Provide financial guidance to families in need, helping them to manage budgets, reduce debt, and improve financial literacy.
- Offered online financial consultations to families affected by the recent war, empowering them to regain financial stability.

Learning on Graphs (LOG) 2025 Conference

REVIEWER

[Arizona State University, Phoenix](#)

2025

Transportation Science Journal

REVIEWER

[Global](#)

2021 - present

Department of Industrial Engineering, Tel Aviv University

WORKSHOP ORGANIZER AND LEADER

[Israel](#)

2021, 2024

- Organized and led two workshops on using Machine Learning in Combinatorial Optimization.
- Provided hands-on tutorials for graduate students and researchers, enhancing their understanding of ML applications in operations research.

Meduyakot Program

MENTOR

[Israel](#)

2022 - 2025

- Mentorship program aimed at supporting female STEM students in navigating academic and personal challenges.

Dean Students Mentorship Programs

EDUCATIONAL MENTOR

[Israel](#)

2017 - 2025

- Mentored a bachelor's student from the Ethiopian community, helping him excel in his studies.
- Guided a M.Sc.'s student with hearing and vision impairments in writing and completing his thesis successfully.

A Financial Blog for Social Good

A FINANCIAL BLOG FOUNDER

[Israel](#)

2020 - 2023

- Established and managed a financial blog aimed at increasing financial literacy and empowering readers to make informed financial decisions.
- Published practical financial advice articles, reaching more than 10,000 readers across Israel.

Catherine Ning

+1 (617) 233-6817 • cat2510@mit.edu • LinkedIn • personal website

EDUCATION

Massachusetts Institute of Technology

Cambridge, MA

Ph.D. Candidate in Operations Research, GPA 5.0/5.0

09/23-present

- Advisor: Prof. Dimitris Bertsimas
- Research Focus: Imbalanced learning, multi-modal machine learning, data-driven optimization
- Selected Coursework: Deep Learning, Integer Optimization, ML under Optimization Lens, Robust Optimization, Linear Programming, Fundamentals of Probability

University of Oxford

Oxford, UK

M.Eng. Engineering Science, First Class Honours

09/19-07/23

- Focus: Optimization, Control Systems, “Engineering, Entrepreneurship & Management” pathway
- Awarded 2nd place out of 150
- Selected Coursework: Machine Vision & Robotics, Signal/Image Analysis, Software Design

CURRENT RESEARCH PROJECTS

Risk-Stratified Undersampling for Imbalanced Learning

Methodological Paper

04/24-present

- Developed a novel methodology using stratified matching (paper under review at JCO)
- Improved detection of cancer patients at high risk of mortality in survival models (up to 30%)
- Applying framework on large-scale insurance data to detect future extreme-cost claimants

Multi-class Prediction of Cardiac Dysfunction from ECG Data

Hartford Healthcare Cardiology Collaboration

10/23-present

- Built a multi-modal ML pipeline integrating electrocardiograms with patient health records for 4-class classification of reduced ejection fraction
- Deploying a prototype for outpatient screening at HHC
- **Recognition:** Bronze medal at Yale Health AI Championship 2025; presented at INFORMS Conference 2024 (Seattle); presented at Heart Rhythm Society Conference 2025 (San Diego)

Prediction of Readmission Risk with Multi-modal Data

Hartford Healthcare Bone & Joint Institute Collaboration

10/23-present

- Integrating multiple sources of orthopedic patients (tabular data, CT scans, clinical notes etc.) to predict 30-day readmission after surgery
- Leveraging LLMs to summarize multi-modal data and improve model interpretability

PAST RESEARCH EXPERIENCE

University of Oxford

Master's Thesis Research supervised by Prof. Paul Goulart

10/22-05/23

- Built a mixed-integer programming solver with a novel early termination algorithm
- Reduced solve time by 15% on portfolio optimization and model predictive control benchmark problems

Oxford Robotics Institute

Summer Research supervised by Prof. Lars Kunze

07/22-09/22

- Developed ROS-based robot simulation framework for embodied question answering
- Extended human-robot dialogue system using knowledge graphs, GNNs, and language models

University of Oxford

Engineering & Entrepreneurship Design Project

10/21-05/22

- Designed a hospital service robot combining technical engineering with business strategy
- **Recognition:** Finalist team at the UK-wide Engineers in Business Competition 2022

PUBLICATIONS

- Y. Chen, **C. Ning**, P. Goulart. “Unified Early Termination for Primal-Dual Mixed Integer Conic Programming.” *IEEE Control Systems Letters*, vol. 7, pp. 2803-2808, 2023.
- D. Bertsimas, **C. Ning**, G. Margonis, et al. “Improving Survival Models in Healthcare: A Novel Matching Approach.” doi:10.21203/rs.3.rs-5467577/v1, under review at *JCO CCI*, 2025.

TECHNICAL SKILLS & LANGUAGES

Programming

- **Languages:** Python, R, Julia, SQL, C++, MATLAB
- **ML/Data:** PyTorch, TensorFlow, scikit-learn, Spark, pandas

Languages

- Fluent in English, Chinese (Mandarin), German, French, Luxembourgish
- Latin (“Kleines Latinum” Diploma)

WORK EXPERIENCE

MIT Sloan School of Management

Cambridge, MA

Teaching Assistant

02/25-present

- Teaching assistant for graduate-level course Optimization Methods (15.C57) and undergraduate course Analytics for a Better World (15.076)
- Conducting weekly office hours and recitations covering optimization theory
- Created course content integrating machine learning and predictive analytics with social impact applications (15.076)

TNG Technology Consulting

Munich, Germany

Software Engineering Intern

07/21-10/21

- Conducted in-depth data analysis on employee skill development using SQL and Python
- Collaborated in Agile development environment with pair programming and version control

University of Oxford

Oxford, UK

Student Fundraiser & Publications Business Development

10/20-04/21

- Generated 20% of Oxford Student Publications’ annual advertising revenue through strategic client acquisition
- Raised £20,000 for Worcester College through alumni engagement and relationship building

AWARDS & LEADERSHIP

- **Luxembourgish Baccalaureate Valedictorian 2019** - Highest academic achievement nationwide
- **Worcester College Academic Scholarships** - First Class Honours recognition (2021-2023)
- **Engineers in Business Competition Prize 2022** - National finalist for autonomous robot design
- **Health AI Championship Bronze Prize 2025**
- **MIT INFORMS Student Chapter** - Organized departmental community and networking events

CATHERINE OELLIG

Cambridge MA, USA | +1 (617) 233-8228 | oellig@gmail.com | <https://www.linkedin.com/in/catherine-oellig/>

SUMMARY

Master's student in Mathematics at the Technical University of Munich with international study experience in Spain and South Korea. Currently conducting research at the Massachusetts Institute of Technology at the MIT Sloan Operations Research Center. Strong background in quantitative research, data analysis, and consulting across energy, aerospace, and financial engineering. Passionate about applying mathematical and data-driven methods to real-world challenges in finance, energy, and public policy.

EDUCATION

Technical University of Munich , Munich, Germany M.Sc. in Mathematics <i>Relevant Coursework: Integer/Linear Optimization, Deep Learning, Power System Optimization, Quantitative Finance</i>	Expected 03/2026
Massachusetts Institute of Technology , USA Visiting Student Researcher ORC <i>Associated Scholarship: Erasmus SMP+ Scholarship</i>	10/2025 – Present
Seoul National University , South Korea Visiting Student in Computational Mathematics and Engineering	09/2024 – 12/2024
Universitat de Barcelona , Spain Visiting Student in Applied Mathematics <i>Associated Scholarship: Santander Erasmus Grant</i>	02/2024 – 06/2024
University of Bonn , Bonn, Germany B.Sc. in Mathematics <i>Major in Numerics and Stochastics, Minor in Economics</i>	03/2022
Schönstatter Marienschule , Vallendar, Germany <i>Awards: German Mathematics Award for Outstanding Grades in Math</i>	2018

PROFESSIONAL EXPERIENCE

MTU Aero Engines , Munich, Germany Working Student – Strategy Intern – Strategy	05/2025 – 07/2025 02/2025 – 04/2025
- Supported strategic decision-making in the aviation and MRO sectors through market and industry trend analysis. - Built forecasting models for engine part scrap rates to enhance profitability evaluations and contract negotiations.	
RIVACON GmbH , Frankfurt, Germany Working Student – Consulting	07/2024 – 08/2024
- Built optimization models using mixed integer programming to forecast electricity demand. - Improved demand prediction accuracy to enhance energy distribution and pricing strategies.	

Intern – Consulting

05/2022 – 10/2022

- Conducted as-is analysis and feasibility assessments for ETL pipeline optimization in credit risk measurement.
- Led data exploration and statistical analysis on renewable energy generation forecasts for pricing strategies.

Munich School of Politics and Public Policy, Munich, Germany

Research & Teaching Assistant

07/2024 – 08/2024

- Held weekly review sessions for graduate students in Politics & Technology.
- Coordinated lectures and contributed to academic research at the Chair of International Relations.

German Aerospace Center (DLR), Cologne, Germany

Research Intern – Scalable Machine Learning

11/2022 – 03/2023

- Applied deep learning and clustering techniques to real-time cardiovascular MRI segmentation.
- Developed anomaly detection methods to enhance segmentation accuracy.

SKILLS

- *Computer Skills:* Python, PyTorch, SQL, C#, MATLAB/Simulink, GitHub, Office 365, Canva
- *Language Skills:* German (Fluent), English (Fluent), Spanish (Intermediate), Korean (Beginner)

VOLUNTEERING & HOBBIES

Volunteering

- START Munich, Munich - *Community Member* 2025 – Present
Active at talks/workshops and founder/VC meetups, support of event ops and community initiatives.
- Technical University of Munich, Munich - *International Student Buddy* 2023
Mentored incoming internationals, supported enrollment/admin, organized orientation and social events.
- MarcAurelConsult e.V., Bonn - *Deputy CEO & CFO: Head of Tech, Legal & Operations* 2021 – 2022
Led website/marketing relaunch, ran tech training; managed pro-bono projects and project acquisition

Hobbies

Running, Swimming, Power Yoga & Painting

Jimin Park

Operations Research Center
Massachusetts Institute of Technology
77 Massachusetts Avenue, E40-103
Cambridge, MA 02139

Mobile: +1 857-928-8952
E-mail: pjimin@mit.edu

EDUCATION

- Sep 2022 - June 2027 **Massachusetts Institute of Technology (MIT)**, Cambridge, United States
(Expected) *Candidate for Ph.D. in Operations Research*
- Advisor: Yanchong Karen Zheng
 - Cumulative GPA: 5.00 / 5.00
- Mar 2020 - Feb 2022 **Seoul National University**, Seoul, Republic of Korea
M.S. in Business - Operations Management
- Advisor: Michael K. Lim
 - Cumulative GPA: 4.30 / 4.30 (4.00 / 4.00)
- Mar 2016 - Feb 2020 **Seoul National University**, Seoul, Republic of Korea
B.A. in Economics, Bachelor of Business Administration
- Graduation rank: 2 / 120 (Summa Cum Laude)
 - Cumulative GPA: 4.19 / 4.30 (3.97 / 4.00)

FIELDS OF INTEREST

Game Theoretical Modeling and Optimization, Sustainable Operations Management, Empirical Operations Management, Agricultural Supply Chain, Food Waste

PUBLISHED/FORTHCOMING ARTICLES

"Informal Cross Border Trade: Operations, Policy, and Opportunities." with M. K. Lim, K. Murali,
Management Science, 2023, 70(10) 7142-7160

"Improving Cash-constrained Smallholder Farmers' Revenue: The Role of Government Loans." with S. Singhvi, Y. Zheng, forthcoming at **Management Science**

PAPERS UNDER REVIEW/REVISION

"The Role of Online Grocery on Household Food Waste: An Empirical Analysis" with X. Liu, Y. Zheng,
under review at **Manufacturing & Service Operations Management**

WORKING PAPERS

"When Perishables Go Online: The Impact of Omnichannel Retail on Waste." with Y. Zheng

"When Budgets Drive Boxes: Evidence of Budget-Driven Procurement in Humanitarian Supply Chains."
with M. Eftekhari, Y. Zheng

AWARDS AND HONORS

- Fall 2024 – Spring 2025 **Accenture Fellowship**, MIT School of Engineering
- Fall 2022 - **Doctoral Study Abroad Scholarship**, Korea Foundation for Advanced Studies (KFAS)
- Feb 2020 **Highest Honors in Graduation**, Seoul National University

Feb 2020 **Seoul National University Alumni President Award**, Seoul National University
Fall 2016 - Fall 2019 **Scholarship for Academic Excellence**, Seoul National University

RESEARCH EXPERIENCE

MIT **Research Assistant** for Professor Yanchong Karen Zheng
Spring 2022
Fall 2023 – Present

MIT **Research Fellow** for Professor Yanchong Karen Zheng
Fall 2022 – Spring 2023

Seoul National University **Research Assistant** for Professor Michael K. Lim
Dec 2018 - Fall 2021

- *Smart City Marketplace: Technology, Governance, and Sustainability*

TEACHING AND SERVICE

MIT **Student Organizer** for Operations Management Seminar
Fall 2025

Seoul National University **Teaching Assistant** for Professor Michael K. Lim
Spring 2020 – Fall 2021

- *Management Science* (Undergraduate)
- *Operations Management* (Undergraduate/MBA)
- *Advanced Decision Analysis* (MBA)
- *Process Management* (MBA)

Seoul National University **Teaching Assistant** for Professor Song-Hee Kim
Spring 2021

- *Management Science* (Undergraduate)

Seoul National University **Operations Management Seminar**
Aug 2019 – Fall 2021

SKILLS / OTHERS

Computer Skills: R, Python, Mathematica, Matlab, Excel, SPSS, Xpress-MP, LaTeX
Languages: Korean (Native), English (Fluent), Japanese (Basic)
Citizenship: South Korea

Zedong Peng

CONTACT INFORMATION	Room E40-154, Operations Research Center 1 Amherst St, Cambridge, MA 02142	Email: zdpeng@mit.edu Phone: 765-543-6310
RESEARCH INTERESTS	Modeling and optimization with emphasis on uncertainty quantification, algorithm design, open-source and hardware-accelerated solver development, and applications in online advertising, supply chain management, and energy systems.	
EXPERIENCE	Massachusetts Institute of Technology , Cambridge, MA Sloan School of Management Postdoctoral Associate Advisor: Prof. Haihao Lu	Sep 2024-present
	Purdue University , West Lafayette, IN Davidson School of Chemical Engineering Postdoctoral Associate Advisor: Prof. David E. Bernal Neira	Aug 2023-Aug 2024
	JD.com , Beijing, China Applied Scientist & Doctoral Management Trainee Ads Bidding Team & Supply Chain Optimization Team	Aug 2021-Jul 2023
EDUCATION	Zhejiang University , Hangzhou, China Ph.D. in Control Science and Engineering, Graduation with distinction Thesis Title: Modeling and Optimization Algorithm of Planning and Scheduling in Petrochemical Industry Advisor: Prof. Gang Rong	2016-2021
	Carnegie Mellon University , Pittsburgh, PA Visiting Student in Center for Advanced Process Decision-making Advisor: Prof. Ignacio E. Grossmann	2019-2020
	Northeastern University , Shenyang, China B.S. in Automation, Graduation with distinction	2012-2016
PREPRINTS AND PAPERS UNDER REVIEWS	“cuPDLPx: A Further Enhanced GPU-Based First-Order Solver for Linear Programming”, with Haihao Lu, Zedong Peng, and Jinwen Yang, <i>Under Review, INFORMS Journal on Computing</i>.[†] “MPAX: Mathematical programming in JAX”, with Haihao Lu and Jinwen Yang, <i>accepted to NeurIPS 2025 Workshop on ScaleOPT, Journal version in preparation</i>.[†] “Enhanced Outer-Approximation Methods for MINLP via Presolve Convexification and Bound Tightening”, with Kaiyu Cao, Kevin C. Furman, Can Li, Ignacio E. Grossmann, and David E. Bernal Neira, <i>Major Revision, INFORMS Journal on Computing</i>. “Spectral Outer-Approximation Algorithms for Binary Semidefinite Problems”, with Daniel de Roux and David E. Bernal Neira, <i>arXiv preprint arXiv:2506.18265 (2025)</i>. “Hybrid Quantum Branch-and-Bound Method for Quadratic Unconstrained Binary Optimization”, with Daniel de Roux and David E. Bernal Neira, <i>arXiv preprint arXiv:2509.11040 (2025)</i>.	

[†]Authors listed alphabetically.

JOURNAL PUBLICATIONS	“Benchmarking quantum optimization for the maximum-cut problem on a superconducting quantum computer”, with Dupont, Maxime, Bhuvanesh Sundar, Bram Evert, David E. Bernal Neira, Stephen Jeffrey, and Mark J. Hodson, <i>Physical Review Applied</i> 23.1 (2025): 014045. “Measure this, not that: Optimizing the cost and model-based information content of measurements”, with Jialu Wang, Ryan Hughes, Debangsu Bhattacharyya, David E. Bernal Neira, and Alexander W. Dowling, <i>Computers & Chemical Engineering</i> 189 (2024): 108786. “Alternative regularizations for Outer-Approximation algorithms for convex MINLP”, with Bernal, David E., Jan Kronqvist, and Ignacio E. Grossmann, <i>Journal of Global Optimization</i> 84.4 (2022): 807-842. “Shale gas field development planning under production profile uncertainty”, with Can Li, Ignacio E. Grossmann, Kysang Kwon, Sukjoon Ko, Joohyun Shin, and Yiping Feng, <i>AIChE Journal</i> 68.1 (2022): e17439. “Multi-period design and planning model of shale gas field development”, with Can Li, Ignacio E. Grossmann, Kysang Kwon, Sukjoon Ko, Joohyun Shin, and Yiping Feng, <i>AIChE Journal</i> 67.8 (2021): e17195. “A progressive hedging-based solution approach for integrated planning and scheduling problems under demand uncertainty”, with Yi Zhang, Yiping Feng, Gang Rong, and Hongye Su, <i>Industrial & Engineering Chemistry Research</i> 58.32 (2019): 14880-14896.	
	“Addressing Discrete Dynamic Optimization via a Logic-Based Discrete-Steepest Descent Algorithm”, with Albert Lee and David E. Bernal Neira, <i>2024 IEEE 63rd Conference on Decision and Control (CDC)</i>. IEEE, 2024. “Deep reinforcement learning approach for capacitated supply chain optimization under demand uncertainty”, with Yi Zhang, Yiping Feng, Tuchao Zhang, Zhengguang Wu, and Hongye Su, <i>2019 Chinese automation congress (CAC)</i>. IEEE, 2019.	
	TEACHING EXPERIENCE	MIT • TA, 15.071. The Analytics Edge (MBA) Fall 2025 Zhejiang University • TA, Operations Research (Graduate) Fall 2016 • TA, Data Mining and Data Fusion (Graduate) Winter 2016
	PRESENTATIONS	<i>MPAX: Mathematical Programming in JAX</i> • International Conference on Continuous Optimization (ICCOPT), July 2025 • MIP Workshop, June 2025 <i>MindtPy: The Mixed-Integer Nonlinear Decomposition Toolbox in Pyomo</i> • AIChE Annual Meeting, November 2023 • INFORMS Annual Meeting, October 2023 <i>Enhanced Outer-Approximation Methods for MINLP via Presolve Convexification and Bound Tightening</i> • European Symposium on Computer Aided Process Engineering (ESCAPE), June 2024 <i>Hybrid Quantum Branch-and-Bound Method for Quadratic Unconstrained Binary Optimization</i> • AIChE Annual Meeting, November 2024 • International Symposium on Mathematical Programming (ISMP), June 2024
	PROGRAMMING	Python, Julia, C, C++, CUDA

Madeleine Pollack

Operations Research Center
Massachusetts Institute of Technology
77 Massachusetts Avenue, E40-103
Cambridge, MA 02139
Office Phone: (617) 253-3601

34 Ash St., Apt 303
Cambridge, MA 02138
(803) 818-1807
pollack9@mit.edu

Education

Massachusetts Institute of Technology, Cambridge, MA
Candidate for **PhD** in Operations Research; expected completion, **JUNE 2028**. GPA: **4.7/5.0**
Advisor: **Swati Gupta**

Georgia Institute of Technology, Atlanta, GA
B.S. Industrial and Systems Engineering; **May 2023**. GPA: **4.0/4.0**
Highest Honors, College of Engineering Honor Graduate

Work Experience

- 2024-** **Blended Learning**, Cambridge, MA
Project Lead for Operations Management and Supply Chain Analytics course
I teach weekly seminar-style classes on network optimization, business analytics, and optimization software skills to high school students.
- Sep 2022-** **Tesla Motors**, Fremont, CA
Dec 2022 *Industrial Engineering Intern*
- Developed headcount recommendations, saving Tesla \$12.5 million annually using Markov Decision Process models.
 - Built Multiple Linear Regression and Markov Decision Process models to support data-driven decision-making.
- Aug 2021-** **Hermeus Corporation**, Atlanta, GA
Dec 2021 *Flight Sciences Engineering Intern*
- Developed Python tools to enhance data analysis efficiency, including an optimizer script to maximize total efficiency for a given target Mach number and angle of elevation.
 - Designed data visualization scripts for vehicle performance, as well as scripts for sensitivity analyses and implementing Machine Learning algorithms.
- June 2021-** **Space Capital**, New York, NY
July 2021 *Brooke Owens Fellow, Venture Capital Intern*
- Actively involved in deal sourcing and participated in founder introductions with prospective portfolio companies.
 - Contributed to writing three content pieces on early-stage investment methodology, best practices for founders hiring their first twenty employees, and a research report on the state and direction of the InsurTech sector.

Honors and Awards

- 2025-2028** **NSF-GRFP Fellowship**
- 2023-2024** **Henry Gabbay Fellowship**

2023	Institute of Industrial & Systems Engineering (IISE) National Capstone 1st Place
2023 (Spring)	Davidson Family Tau Beta Pi Award Awarded to best graduate in the School of Engineering (comprising 11 majors) at Georgia Tech
2022	Adobe Women in Technology Scholarship
2021-2023	Georgia Tech IISE Awards - Best 2nd or 3rd year student in the Industrial Engineering major (2021) - Best undergraduate researcher in the Industrial Engineering major (2022) - Best display of leadership in the GT Industrial Engineering department (2023) - Best graduating senior student in the Industrial Engineering major (2023)
2021,2022 (Spring)	Georgia Tech Undergraduate Research Awards - 3rd place poster, School of Engineering (2021) - 2nd place oral presentation, School of Engineering (2022)
2021,2022	2x Society of Women Engineers Undergraduate Research Competition Finalist
2021	INFORMS Undergraduate Travel Scholarship
2021 (Fall)	Brooke Owens Fellowship Highly competitive fellowship program providing internships in the aerospace field.
2020 (Fall)	Literature Media & Communications First Year Writing Award Best first-year research composition (out of approximately 4,500 first-year students)

Publications

1. Kim, C., Moondra, J., Verma S., **Pollack, M.**, Kong, L., Tambe M., Gupta, S. (2025). *Navigating the Social Welfare Frontier: Portfolios for Multi-objective Reinforcement Learning*. **ICML**.
<https://proceedings.mlr.press/v267/kim25ac.html>
2. **Pollack, M.**, Piansky, R., Gupta, S., & Molzahn, D. (2025). *Equitably allocating wildfire resilience investments for power grids: The curse of aggregation and vulnerability indices*. **Applied Energy**.
<https://doi.org/10.1016/j.apenergy.2025.125501>

Pre-prints

1. **Pollack, M.**, & Steimle, L. N. (2024). *The implications of state aggregation in deteriorating Markov Decision Processes with optimal threshold policies*. **arXiv preprint**. arXiv:2405.12912

In Preparation

1. **Pollack, M.**, Gupta, S., & Duvall, D. (2025). *Cost-Averse Learning with Mixed-Fidelity Bandit Feedback*
2. Daillak, T., Gupta, S., Lee, J., **Pollack, M.** (2025). *Towards Minimizing Non-Utilization of Organs: Interpretable and Transparent AI for Navigating Regional Differences in Organ Acceptance Decisions*

Research Experience

2023–Present **Massachusetts Institute of Technology**, Cambridge, MA
Graduate Research Assistant & PhD student
Advisor: Swati Gupta
Projects: (1) Algorithms for multi-armed bandits with costs for improved feedback, *(2)* Machine Learning solutions to minimize organ and improve equity in the deceased-donor kidney

allocation offer process, (3) Analyzing policy proposals for safe and progressive use of AI in hiring, infrastructure investments, and more.

2022-2023

Georgia Institute of Technology, Atlanta, GA

Undergraduate Research Assistant

Supervisors: Swati Gupta and Daniel Molzahn

Project: Optimizing infrastructure investment decisions for powerline undergrounding to prevent power loss, decrease wildfire risk, and ensure equitable benefit across socioeconomic groups.

2020-2023

Georgia Institute of Technology, Atlanta, GA

Undergraduate Research Assistant

Supervisors: Lauren Steimle

Project: Optimal aggregation of the state spaces of Markov Decision Processes to balance the trade-off between precision of state space definition and the accuracy of estimated transition probabilities to maximize infinite-horizon reward.

Skills, Activities, and Citizenship

Software: Julia, Python, R, Windows, Git, Microsoft Office

Soft Skills: Project management, technical writing, presentations, and cross-industry (venture capital, engineering, tech, healthcare) and cross-academic (CS, engineering, business) communication

Technical Skills: Data analysis, machine learning, optimization, simulation

Citizenship Citizen of the United States

PETROS PRASTAKOS

pprastak@mit.edu | (201) 912-4400

EDUCATION

Massachusetts Institute of Technology (MIT), Cambridge, MA

Sep 2023 – Present

Ph.D. in Operations Research, Advisor: Prof. Rahul Mazumder, GPA: 5.0/5.0

Research Areas: Machine Learning, High-dimensional Statistics, Convex and Mixed-Integer Optimization, Differential Privacy

Relevant Coursework: Linear Optimization, Nonlinear Optimization, Fundamentals of Probability, Statistical Learning Theory, Non-Asymptotic Mathematical Statistics, Causal Inference using ML and AI, *Statistical Reinforcement Learning (currently being taken in Fall 2025)*

Awards: A. G. Leventis Graduate Fellowship

New York University, Courant Institute of Mathematical Sciences, New York, NY

Sep 2021 – May 2022

Non-Degree Graduate Coursework in Mathematics (fully funded by the Federal Reserve Bank of New York), GPA: 4.00/4.00

Relevant Coursework: Algebraic Topology 1, Advanced Topics in Numerical Analysis: Convex and Nonsmooth Optimization

Yale University, New Haven, CT

Sep 2017 – May 2021

B.S. in Applied Mathematics (concentration in Computer Science), Economics, GPA: 3.91/4.00, Honors and Distinction in both majors

Relevant Coursework: Functional Analysis*, Ergodic Theory*, Measure-Theoretic Probability*, General Equilibrium Theory*, Abstract Algebra, Game Theory (intensive), Algorithmic Game Theory, Applied Data Mining and Machine Learning, Discrete Mathematics, Real Analysis, Algorithms, Vector Analysis, Data Structures, Artificial Intelligence, Bayesian Probability and Statistics, Ordinary & Partial Differential Equations, Linear Algebra, Monetary Policy, Capital Markets, Financial Theory **Graduate courses*

Awards: National Panhellenic Merit-Based Scholarship, Yale First-Year Summer Fellowship for Research in the Sciences and Engineering, Schulz Research Fellowship in the Physical Sciences, Princeton Environmental Ideathon – 2nd place

Tenaflly High School, Tenaflly, NJ

Jun 2017

Awards: Class of 2017 Valedictorian; National Finalist in 2016 US Chemistry Olympiad; Columbia University Science Honors Program; National AP Scholar; Rensselaer Medalist

RESEARCH AND WORK EXPERIENCE

MIT Operations Research Center, *Ph.D. Candidate*, Cambridge, MA

Sep 2023 – Present

- Research on using mixed-integer programming methods for differentially private feature selection in sparse (ℓ_0) regression and classification problems; proving probabilistic guarantees on support recovery using tools from high-dimensional statistics
- Current work on tree ensemble methods leveraging optimization-based formulations to enhance reproducibility and interpretability (via structured regularization and sparsity) while preserving predictive performance

Federal Reserve Bank of New York, *Senior Research Analyst*, New York, NY

Jul 2021 – Jul 2023

- Statistical analysis, data cleaning, and modelling for numerous research and policy projects in the Department of Banking Studies under Department Head Gara Afonso, and Financial Economists Hyeyoon Jung and Lee Seltzer
- Selected projects include (a) [estimating the demand curve for bank reserves during 2010-2021 using a time-varying VAR model](#) (MATLAB), (b) [analyzing the strategic complementarity of banks in the Fedwire payment system](#) (Stata), (c) [studying the effect of climate regulatory risks on corporate bonds using a Black-Scholes-type pricing model](#) (MATLAB), (d) coauthoring a [blog post](#) published in Liberty Street Economics regarding the effect of the Federal Reserve's two main rates for implementing monetary policy, the IORB and ON RRP rates, on the federal funds rate distribution (Stata); notable project collaborators include Dr. John Williams (NY Fed President), Dr. Hyun Song Shin (Bank of International Settlements), and Dr. Darrell Duffie (Stanford GSB)
- Earned the NY Fed Vault Propel Award twice and the Vault Soar Award for exemplary performance from senior management

Yale University Department of Mathematics and Economics, *Senior Thesis*, New Haven, CT

Sep 2020 – Apr 2021

- Advised by Professors Samuelson and Strack, augmented the standard SIR epidemiological model to account for births and deaths, and the possibility of temporary immunity via a flow from the recovered to the susceptible class; performed steady state and stability analysis on the new model; introduced social distancing to the model through the use of a central planner, and established sufficient conditions under which a planner can select the optimal level of social distancing under certain assumptions on the planner's objective function

Federal Reserve Bank of New York, *Summer Analyst – Research Group*, New York, NY

Jun 2020 – Aug 2020

- Worked in the Financial Intermediation function under Dr. Nicola Cetorelli (Vice President and Function Head) and Dr. Gara Afonso (Assistant Vice President) on analyzing (a) the flow-performance relation of bank loan mutual funds, and (b) the behavior of liquidity shocks in a digital currency environment

Accenture, *Database Management/Software Engineering Intern*, Athens, Greece

Jun 2019 – Jul 2019

- Worked on the enterprise data warehouse (EDW) team at the National Bank of Greece
- Designed the functional specifications for multiple search queries to feed the SAP BW with data from the EDW
- Significantly reduced the time required to feed data from the EDW to the Customer Analytics sector of the bank by restructuring the tables and building queries that dynamically update the table contents to preserve storage based on the bank's specifications
- Technologies used: SQL Server and Microsoft Visual Studio

PUBLICATIONS

Differentially Private High-dimensional Variable Selection via Integer Programming

Petros Prastakos, Kayhan Behdin, Rahul Mazumder

NeurIPS 2025

Preliminary version appeared at the ICLR 2024 Workshop on Private ML

TEACHING

MIT, *Graduate Teaching Assistant*, Cambridge, MA

Jun 2024 – Dec 2024

- Led weekly recitation, held office hours, designed and graded assignments and exams for the following graduate courses:
 - 15.072: Advanced Analytics Edge (Master of Business Analytics course, Fall 2024), Overall Rating: [6.2/7.0](#)
 - 15.086: Engineering Probability (MIT LGO course, Summer 2024)
 - 15.087: Engineering Statistics and Data Science (MIT LGO course, Summer 2024 & 2025)
 - 15.071: The Analytics Edge (MBA course, Fall 2025)

NYU Courant Institute of Mathematical Sciences, *Graduate Teaching Assistant*, New York, NY

Sep 2021 – Dec 2021

- Led weekly recitation, held office hours, and graded exams for MATH-UA.325: Analysis (Undergraduate course)

Yale University, *Undergraduate Teaching Assistant/Grader*, New Haven, CT

Sep 2018 – May 2021

- Undergraduate TA (i.e. held office hours)/Grader for the following 11 courses starting sophomore year (2 courses per semester):
MATH 120: Multivariable Calculus (Grader w/ Prof. Orosz; F'18) | ECON 115: Introductory Microeconomics (TA w/ Profs. Goldberg, Oster, and O'Dea; F'18, S'19) | ENAS 151: Multivariable Calculus for Engineers (TA w/ Prof. Bennett; S'19) | ECON 122: Intermediate Macroeconomics (TA w/ Prof. Peters; F'19) | CPSC 223: Data Structures and Programming Techniques (TA/Grader w/ Prof. Glenn; F'19) | CPSC 202: Mathematical Tools for Computer Science (TA w/ Prof. Bridy; S'20) | MATH 222: Linear Algebra with Applications (Grader w/ Prof. Vandenboom; S'20) | MATH 244: Discrete Mathematics (TA w/ Prof. Pohoata; F'20) | MATH 250: Vector Analysis (Grader w/ Prof. Neitzke; F'20) | MATH 300: Topics in Analysis (Sole Grader w/ Prof. Velozo; S'21) | CPSC 365: Algorithms (TA/Grader w/ Prof. Glenn; S'21)

SKILLS

Languages: Greek (native); English, French (fluent)

Computer programming: Python, R, MATLAB, Stata, LaTeX (advanced); C, C++, SQL (intermediate); Java (beginner)

Romain Puech

PhD Student at MIT Operations Research Center and MIT Open Learning – puech@mit.edu

I am interested in machine learning and optimization for social good. I am exploring self-improving generative AI agentic systems to empower instructors and support personalized education for Open Learning's 40M learners.

EDUCATION

Massachusetts Institute of Technology – PhD, Operations Research Center

Advised by Dimitris Bertsimas. GPA: 5/5 – ML, RL, DL, Proba, Integer & Nonlinear Opt. Sep. 2024 – May 2029

École Polytechnique – BSc, Math & CS (double major), Biology minor

GPA: 4.2/4.0 – Excellence scholarship recipient Sep. 2021 – Jun. 2024

ETH Zurich, D-MATH – Exchange Semester

Graduate-level courses in NLP, Linear Optimization and Statistics Sep. 2023 – Jan. 2024

SELECTED WORK EXPERIENCE

MIT Open Learning

Graduate Researcher advised by Prof. Bertsimas

Sep. 2024 – Present

- Developed an **LLM-based problem-solving tutor** deployed to **20 MIT classes (2k+ students)**.
- Supervised **5 undergraduate and master's students** on GenAI for education projects.
- Ongoing work on self-improving agents, AI-based adaptive teaching and natural language feedback extraction.
- Co-developed an ML cheating detection model for online classes currently being deployed on MIT Learn.

MIT Operations Research Center

Graduate Researcher advised by Prof. Bertsimas

Sep. 2024 – Present

- **First-author** on an ML/optimization paper for wildfire detection using drones. Submitted to **ICLR'26**.

ETH Zurich – AI Center

Part-time projects and BSc thesis with Prof. Sachan and Prof. Kapur

Sep. 2023 – Sep. 2024

- Research on LLMs for **AI tutoring systems**. Collaboration with the Learning Sciences department.
- **First-author** of *Pedagogical Steering of Large Language Models for Tutoring*, Findings of **ACL'25**.

Safran Data Systems

R&D summer internship

Jun. 2023 – Aug. 2023

- Developed an algorithm for **non-convex mixed integer optimization** applied to satellite signal processing.
- **First-author** of *Mathematical Optimization-Based Period Estimation with Outliers and Missing Observations*.

New York University – Courant Institute (remote)

Semester research project in applied mathematics with Prof. Galichon

Mar. 2023 – Jun. 2023

- Researched gradient-based methods for the **entropic-regularized discrete optimal transport**.

École Polytechnique – Laboratory for Optics & Biosciences (LOB)

Bioinformatics project and research internship with Prof. Myllykallio

Mar. 2022 – Oct. 2022

- **First-author** of *Structuring effects of archaeal replication origins*, submitted to **Briefings in Bioinformatics**.

RELEVANT AWARDS & SKILLS

- Ranked 6th EMEA, **29th Worldwide** at **Meta Global Hackathon 2022**, out of +3000 participants.
- **Excellence Scholarship** from École Polytechnique's foundation.
- École Polytechnique's **Commencement speaker**.
- Highest honors in French selection for the **International Physics Olympiad**. (Top 11 nation-wide)

Languages: Python, C, C++, Julia, R, Web programming. **Tools:** PyTorch, TensorFlow, Docker, Git, LangChain/LangGraph, Ollama, Hugging Face, JuMP, Gurobi.

SELECTED PROJECT

TutoSAT – AI SAT prep website

Co-Founder

Nov. 2024 – Feb. 2025

- **Co-Founder/CTO** of tutosat.com. Worked on the website, adaptive questions and analytics/gamification.
- Full-stack web development and deployment with Node.js, Firebase, Tailwind CSS and Vercel.
- Participated in the **Sandbox Spring'25** (MIT Incubator) cohort.

PUBLICATIONS & PREPRINTS

(* = equal contribution)

[1] **Puech, R.**, Ye, J., de Moor, D., Trisovic, A., & Bertsimas, D. (2025). "WFDroneBench: A Benchmark for Sensor Placement and Drone Routing for Wildfire Detection." Under review at ICLR 2026

[2] **Puech, R.**, Macina, J., Chatain, J., Sachan, M., & Kapur, M. (2025). "Towards the Pedagogical Steering of Large Language Models for Tutoring: A Case Study with Modeling Productive Failure." Findings of the Association for Computational Linguistics: ACL 2025.

[3] **Puech, R.**, & Gouldieff, V. (2024). "Mathematical Optimization-Based Period Estimation with Outliers and Missing Observations." arXiv preprint to be submitted to IEEE Signal Processing Letters.

[4] Mottez, C*, **Puech, R***, Flament, D., & Myllykallio, H. (2023). "Structuring Effects of Archaeal Replication Origins." bioRxiv preprint to be submitted to Briefings in Bioinformatics

Sourav Sahoo

Operations Research Center, Massachusetts Institute of Technology

[Email](#) ◇ [Website](#) ◇ [Google Scholar](#) ◇ [Github](#)

Research Interests

Online Learning, Game Theory, Mechanism Design.

Education

Doctor of Philosophy in Operations Research

Massachusetts Institute of Technology

Advisor: [Prof. Negin Golrezaei](#)

Sept. 2023 - Present

GPA: 5.0/5.0

Dual Degree (B.Tech & M.Tech) in Electrical Engineering

Indian Institute of Technology, Madras

Advisor: [Prof. Abhishek Sinha](#)

Thesis: The k -experts Problem.

July 2017 - July 2022

GPA: 9.56/10.00

Publications and Working Papers

C4. [Learning Safe Strategies for Value Maximizing Buyers in Uniform Price Auctions](#)

ICML 2025, 42nd International Conference on Machine Learning,

Negin Golrezaei and Sourav Sahoo.*

★ Finalist, 2025 Michael H. Rothkopf Junior Researcher Paper Prize.[§]

★ Finalist, 2025 Jeff McGill RMP Best Student Paper Prize.[§]

C3. [Distributed Online Optimization with Byzantine Adversarial Agents.](#)

ACC 2022, 41st American Control Conference,

Sourav Sahoo, Anand Gokhale, and Rachel Kalaimani.

C2. [k-experts - Online Policies and Fundamental Limits](#)

AISTATS 2022, 25th International Conference on Artificial Intelligence and Statistics,

Samrat Mukhopadhyay, Sourav Sahoo, and Abhishek Sinha.

C1. [A Segment Level Approach to Speech Emotion Recognition Using Transfer Learning](#)

ACPR 2019, 5th Asian Conference on Pattern Recognition,

Sourav Sahoo, Puneet Kumar, Balasubramanian Raman, and Partha Roy.

W1. [Multi-Modal Detection of Alzheimer's Disease from Speech and Text](#)

BIOKDD 2021, 20th International Workshop on Data Mining in Bioinformatics,

Amish Mittal[†], Sourav Sahoo[†], Arnhav Datar[†], Juned Kadiwala[†], Hrithwik Shalu, and Jimson Mathew.

WP1. Learning to Bid in Discriminatory Auctions with Budget Constraints

Negin Golrezaei and Sourav Sahoo.*

Awards and Honors

Finalist, **Michael H. Rothkopf Junior Researcher Paper Prize**, 2025.[§]

Finalist, **Jeff McGill RMP Best Student Paper Prize**, 2025.[§]

Caltech Summer Undergraduate Research Fellowship (SURF) in 2020.

All India Rank 49 among 1.5 million applicants in JEE Mains 2017.

Gold Medal in Indian National Physics Olympiad, 2017.

All India Rank 18 in Kishore Vaigyanik Protsahan Yojana, 2015.

Certificate of Merit in Indian National Mathematical Olympiad, 2015.

* Alphabetical

[†] Equal contribution

[§] Winners to be announced at the INFORMS Annual Meeting, 2025.

Industry Experience

Quantitative Research Analyst

JPMorgan Chase & Co.

July 2022 - July 2023

Mumbai, India

Data Science Intern

Gramophone - Transforming Agriculture

Dec 2019 - Jan 2020

Bengaluru, India

Teaching Experience

Teaching Assistant for EE1102: Introduction to Programming.

Spring 2022

Teaching Assistant for EE5110: Probability Foundations for Electrical Engineers.

Fall 2021

Teaching volunteer at Kendriya Vidyalaya (IIT Chennai) for high school science and mathematics.

2017-2018

Presentations and Talks

Learning Safe Strategies for Value Maximizing Buyers in Uniform Price Auctions

- MIT CSAIL Machine Learning Tea Talk, Cambridge, 2025.
- Online Learning and Economics Workshop @ ACM Economics and Computation (EC), Stanford, 2025.
- Market Innovation Workshop (MIW), Virtual, 2025.
- INFORMS Annual Meeting, Seattle, 2024.[‡]
- Data-Driven Decision Processes Workshop, Chicago, 2024.[‡]
- Revenue Management and Pricing (RMP) Section Conference, Los Angeles, 2024.[‡]
- Manufacturing and Service Operations Management (MSOM) Conference, Minneapolis, 2024.[‡]

Professional Services

Reviewer for *IEEE Transactions on Automatic Control*, *AISTATS 2026*.

Co-organizer, MIT ORC Student Seminar (Fall 2024, Spring 2025).

Co-organizer, Session on Generative AI for Markets, INFORMS Annual Meeting, 2025.

Skills

Languages: *Fluent:* English, Hindi. *Native:* Odia.

Programming: Python

Software & Libraries: Tensorflow, PyTorch, CVX, $\text{\LaTeX}$

References

Prof. Negin Golrezaei

Sloan School of Management

Massachusetts Institute of Technology

golrezae@mit.edu

Prof. Patrick Jaillet

Electrical Engineering and Computer Sciences

Massachusetts Institute of Technology

jaillet@mit.edu

Prof. Abhishek Sinha

School of Technology and Computer Science

Tata Institute of Fundamental Research

abhishek.sinha@tifr.res.in

[‡] An earlier version of the work was presented under the title ‘Bidding in Uniform Price Auctions for Value Maximizing Buyers’.

Owen Shen

✉ owenshen@mit.edu

EDUCATION

Massachusetts Institute of Technology

Ph.D. in Operations Research, Candidate

2023 – Expected May 2028

Stanford University

Honors B.S. in Mathematics and B.A. in Philosophy

2019 – 2023

RESEARCH SUMMARY

- Advanced optimization theory through **differentiable programming**, **deep learning-integrated optimization**, and **scalable first-order methods** for high-dimensional decision problems.
- Implemented learning-augmented algorithms in **revenue optimization**, **resource allocation for cloud systems**, and **real-time bidding systems**.

SKILLS

- **Programming/Scripting:** Python, MATLAB, LaTeX, Julia, R, SQL
- **Technologies/Frameworks:** GitHub, MySQL, TensorFlow, Spark, MapReduce, PyTorch, Docker, AWS

PROFESSIONAL EXPERIENCE

PhD Research Intern – Agentic Systems

Amazon

Seattle, WA (On-site)

Jun. 2025 – Sep. 2025

Developed Agentic Store with automated negotiation/conversation using novel **RL framework** combining parametric policy learning with real-time strategy discovery.

SELECTED LEADERSHIP IN RESEARCH AND INDUSTRY PROJECTS

Differentiable Robust Optimization for Electricity Dispatch

MIT

Supervised by Prof. Patrick Jaillet

Jan. 2024 – Present

[\[Presented at INFORMS\]](#) [\[Presented at Shanghai Jiao Tong University\]](#)

- Leading the design and development of a novel differentiable solver for **large-scale convex optimization problems**; achieved 80% memory reduction and 10x speed improvement for energy dispatch problem.

Discrete Choice-Guided Reinforcement Learning for Delayed-Feedback Revenue Management

MIT

[\[Presented at INFORMS\]](#)

Supervised by Prof. Patrick Jaillet

Jan. 2024 – Present

- Developed algorithmic framework integrating SEO with dynamic pricing using **causal inference** and **reinforcement learning**; achieved **13% revenue increase** (\$100M+ baseline) for major hotel chain.

Online Optimization with Rational Agents [\[Presented at INFORMS\]](#)

MIT

Supervised by Prof. Patrick Jaillet

Jun. 2023 – Jun. 2024

- Designed **game theory** framework modeling rational marketplace participants as **reverse learning** problem, analyzed behaviors across market structures, and implemented at private trading company.

Online Regenerative Learning [\[arXiv\]](#) [\[Presented at Berkeley Simons\]](#)

Stanford

Supervised by Prof. Yinyu Ye

Sep. 2021 – Aug. 2023

- Developed novel **statistical learning algorithms** for linear data; submitted framework to PJM for spot-market electricity dispatch integration.

JANE (WENQI) WANG

Cambridge, MA | jane819@mit.edu | (718) 883-0086 | [linkedin.com/in/jane-wenqi-wang](https://www.linkedin.com/in/jane-wenqi-wang)

EDUCATION

Massachusetts Institute of Technology

Ph.D. Candidate in Operations Research, GPA: 5.00/5.00

Cambridge, MA
Expected May 2027

Columbia University

M.S. in Financial Engineering, GPA: 4.00/4.00

New York, NY
Dec 2021

New York University

B.A. in Economics and Mathematics, GPA: 3.97/4.00

New York, NY
May 2016

SKILLS

Programming Languages: Python, R, Julia, MATLAB

Python Packages: NumPy, Pandas, Statsmodels, Scikit-Learn, Gurobipy, PyTorch, GeoPandas

Languages: English (near native), Mandarin (native speaker)

RESEARCH EXPERIENCE

Massachusetts Institute of Technology

Graduate Researcher, Community Field Engagement to Minimize Water Risks

Cambridge, MA
Jul 2025 – Present

- Lead field research in 2 sub-districts in northern Thailand to assess water management challenges and develop decision-support tools that improve reservoir operations and agricultural water allocation.
- Collaborate with 6 reservoir operators and 10 local farmers to understand existing release strategies and the resulting effect on farming practices to inform the design of water allocation process aligning water supply with agricultural water demand.

Graduate Researcher, Impact Assessment of Forest Management Practice

Jul 2025 – Present

- Integrate large-scale spatial-temporal datasets on community forest locations, forest cover, and land use data to evaluate the impact of community forest management (CFM) on deforestation and agricultural productivity.
- Initial results show that forested areas under CFM experience less deforestation, and that sub-districts with more prevalent CFM practice see higher levels of cultivated cropland. These preliminary results guide the design of a rigorous empirical framework for CFM policy evaluation.

Graduate Researcher, Food Safety Risk Propagation Within the Agri-Food Supply Chain

Sep 2022 – Present

- Leveraged a self-constructed food safety test database of 12 million+ test records in China to build a panel dataset to quantify adulteration risks across various food supply chain (SC) locations in 333 prefectures.
- Applied instrumental variable (IV) approach to formulate a causal inference framework to characterize the product- and adulterant-level risk propagation mechanism in the SC.
- Provided empirical evidence that the existing retail-focused food safety testing policy fails to prevent adulterations risks in upstream locations, where these risks are introduced, from propagating downstream to consumer-facing SC locations.
- Proposed a more effective allocation of regulatory resources through shifting testing resources to more upstream SC locations, which can better mitigate systemic risk propagation.

PROFESSIONAL EXPERIENCE

Office of the New York City Comptroller

Budget Bureau Intern

New York, NY
Jun 2018 – Aug 2018

- Created visualizations for 10 neighborhoods in NYC about their states of retail vacancy to be included in the Budget Bureau's report on NYC retail vacancy issues.
- Conducted literature review on the effectiveness of homelessness reduction initiatives and mapped data on NYC shelter population to support the Budget Bureau's report on homelessness.
- Supported preparation of NYC's FY 2020 Adopted Budget to be presented before the NYS Financial Control Board meeting.

TEACHING EXPERIENCE

Massachusetts Institute of Technology

Graduate Teaching Assistant, 15.734 Operations Management

Cambridge, MA
Summer 2024, Summer 2025

- Teaching assistant for 120+ students in the operations management class for the Executive MBA program at MIT Sloan School of Management. Topics include process and capacity analysis, cycle time analysis, inventory management, and revenue management.
- Taught bi-weekly 2-hour recitations which reviewed lecture material and solved example problems. Held bi-weekly office hours. Prepared and graded homework submissions.

LEADERSHIP AND SERVICE

MIT Sidney-Pacific Graduate Residence

Cambridge, MA

Hall Councilor

May 2022 – Present

- Serve as residents' first point of contact for residents' conflicts and concerns and direct them to necessary campus resources if needed.
- Organize monthly hall events such as dinner outings, game nights, movie outings to foster a sense of community.

NYU University Learning Center

New York, NY

Learning Assistant

Feb 2019 – May 2020

- Tutored 11 introductory and intermediate Econ, Math, and CS courses.
- Designed and led academic skills workshops on exam preparation, note-taking, and time management.

TALKS

Food Safety Risk Propagation Within the Agri-Food Supply Chain

- INFORMS 2025 Annual Meeting (*upcoming*)
- INFORMS 2024 Annual Meeting

WORKING PAPERS

Food Safety Risk Propagation Within the Agri-Food Supply Chains. (*With Retsef Levi, Y. Karen Zheng, and El Ghali Zerhouni*)

Food Regulatory Policy Enforcement in China: Insights from Big Data Analytics. (*With David Byun, Retsef Levi, and El Ghali Zerhouni*)

William Zhang

31 Speridakis Ter. | Cambridge, MA 02139 | Phone: (360) 961-4114 | E-Mail: wzhang64@mit.edu

My current research interests follow a theme of uncertainty quantification in the context of sequential models, where an initial prediction informs downstream decisions such as subsequent predictions or ordering quantities. My work focuses on providing theoretically-grounded guarantees for these types of models, including generalization error (how well the model performs on unseen data) and prediction intervals (high probability regions for new points), with a focus on time-dependent data. Applications include forecasting for insurance valuation and also for energy production/emissions, with sparse historical data.

EDUCATION

Massachusetts Institute of Technology

Cambridge, MA | Expected Graduation: May 2027

Ph.D. 4th-Year

5.00/5.00 GPA

Relevant Courses: Theory of Probability, Mathematical Programming, High-Dimensional Statistics, Nonlinear Optimization, Robust Optimization, Theory of Operations Management, Machine Learning Under an Optimization Lens, Time Series Analysis

Brown University

Providence, RI | Graduated May 2022

B.S. Computer Science, Honors; B.S. Applied Math, Magna Cum Laude

3.97/4.00 GPA

RESEARCH EXPERIENCE

MIT, Operations Research Center

August 2022 — Present

Advisors: Prof. Georgia Perakis, Prof. Saurabh Amin

- Derived novel generalization bounds for sequential machine learning and optimization models with non-IID and unbounded data. Work focuses on theoretical guarantees for sequential problems.
- Worked with Liberty Mutual to develop two-stage forecasting model with sparse data by leveraging auxiliary variables.
- Proved coverage for prediction intervals in sparse-data settings where traditional methods fail
- Designed a conformal prediction method considering time-dependence and two-stage methods for distribution shift in each stage, allowing for nuanced interval adjustment that provides better coverage than blackbox methods.
- Collaborate with MIT Lincoln Lab on disaster response for floods, predicting demand under sparse data settings

Brown University, Computer Science Department

December 2020 — May 2022

Advisor: Prof. Eli Upfal

- Analyzed and implemented novel transfer learning model combining “weak-labelers” to produce better results on sparse data. Bounded generalization error and demonstrated improvement to classical models.

Brown University, Engineering Department

December 2019 — May 2022

Advisor: Dr. Ian Wong

- Applied topological data analysis to pattern formation in zebrafish cell populations. Created a pipeline for cell simulations and identification of clusters and phase transitions. Demonstrated robustness of TDA to noise and 10% accuracy improvements over benchmarks.

PUBLICATIONS

- Generalization bounds for sequential time-series and decision models. Amin S., Perakis G., Zhang W. [In Progress]
- Adaptive conformal prediction for two-stage models via residual decomposition. . Amin S., Perakis G., Zhang W. [Submitted]
- Topological data analysis of spatial patterning in heterogeneous cell populations: clustering and sorting with varying cell-cell adhesion. Bhaskar, D., Zhang, W., Volkening, A. Sandstede, B., Wong, I. npj Syst Biol Appl 9, 43 2023
- Topological Data Analysis of Collective and Individual Epithelial Cells using Persistent Homology of Loops. Bhaskar, D., Zhang, W., Wong, I. Soft Matter Journal of the Royal Society of Chemistry, Issue 17, 4653-4664, 2021.

PRESENTATIONS

- “Generalization Bounds for Sequential Time-Series and Supply Chain Decision Models” INFORMS October 2024
- “Predictive Analytics for Auto Insurance Industry Under Market Shocks” INFORMS October 2023
- “Topological Data Analysis of Pattern Formation in Heterogeneous Cell Populations” MAA Mathfest August 2021
- “Investigating Pattern Formation & Phase Transitions Using Applied Computational Topology” JMM January 2021

ACTIVITIES & INTERESTS

Community: ORC Student Seminar Organizer, ORC Student Mentor (2023,2024), JMLR Reviewer

Awards: MIT Generative AI Impact Consortium Symposium Top Applications Poster

Teaching: Statistics and Probability TA (2019-2021), Math Resource Center Tutor (2019), Math Departmental Undergraduate Group (2020), Multivariate Data Analysis 1.074/1.174 TA (2024), Machine Learning for Sustainable Systems 1.C01/1.C51 (2025)

Clubs/Interests: Tennis, Piano, Chamber Music, Music Composition, Game Development

Past Work: Draftkings Software Intern (2022), Math Tutor

Karl Zhu

+1 (617) 251-5314 | karlzhu@mit.edu | [linkedin.com/in/karl-kai-zhu](https://www.linkedin.com/in/karl-kai-zhu) | Cambridge, MA

EDUCATION

Massachusetts Institute of Technology <i>Candidate for PhD in Operations Research</i> - GPA: 5.0/5.0. - Advisor: Prof. Dimitris Bertsimas - Research areas: adaptive robust optimization for energy systems, reinforcement learning for healthcare.	Sep 2023 – May 2028 Cambridge, MA
University of Auckland <i>Bachelor of Engineering (Honours) in Engineering Science</i> - GPA: 8.7/9.0 (First Class Honours). - Advisor: Prof. Andy Philpott - Thesis: Improving multi-stage stochastic programming with distributionally robust optimisation.	Mar 2018 – Nov 2021 Auckland, New Zealand

WORK EXPERIENCE

Undergraduate R&D Engineer <i>Beca Engineering</i> - Developed optimization models to improve the energy efficiencies in multiple large cold-storage sites. - Reduced the 1MW compressors' energy consumption by 5% using machine learning and optimization.	Nov 2021 – Feb 2022 Auckland, New Zealand
R&D Intern <i>Fonterra</i> Stabilized milk allocation decisions by implementing a robust optimization model in Julia.	Nov 2020 – Feb 2021 Auckland, New Zealand

RESEARCH EXPERIENCE

Research Assistant <i>Massachusetts Institute of Technology</i> - Advisor: Prof. Dimitris Bertsimas - Optimizing Green Ammonia Investment and Operation. Methods: Optimization (adaptive robust, mixed-integer) - Optimal diagnostic testing for ED differential diagnosis. Methods: Reinforcement learning (POMDPs) - Brain Age: using MRI brain scans to predict neurological diseases. Methods: Deep learning (CNNs)	Sep 2023 – present Cambridge, MA
Research Assistant <i>University of Auckland</i> - Supervisors: A/Prof. Andrew Mason, Dr. Anthony Downward - Data analytics and optimization to find missing rightful shareholders with public data. - Built an analytics pipeline in Julia that produces a tractable integer program for large-scale inference.	Mar 2022 – Aug 2023 Auckland, New Zealand
Research Assistant <i>Photon Factory</i> - Supervisor: Dr. Alex Risos - Real-time drinking water pathogen detection with ultrafast lasers. - Developed imaging software in Python, and improved laser beam shaping algorithms with meta-heuristics.	Nov 2019– May 2020 Auckland, New Zealand

TEACHING EXPERIENCE

Teaching Assistant <i>Massachusetts Institute of Technology</i> Courses: <i>Optimization Methods (15.C57)</i>, <i>The Analytics Edge (15.727)</i>	Spring – Fall 2025 Cambridge, MA
Teaching Assistant <i>University of Auckland</i> Courses: programming, engineering mechanics, and mathematical modelling.	Mar 2020 – July 2023 Auckland, New Zealand
High School Tutor <i>MyTuition</i> For Cambridge International Examinations AS / A Level Math and Physics.	Mar 2018 – Oct 2022 Auckland, New Zealand

Published / Accepted

1. **Karl K. Zhu**, Andrew J. Mason, Anthony Downward. (2022). Finding the Missing with Integer Programming. *Proc. of the 54th ORSNZ Conference*.
2. Shao, Jing; Wang, Yingming; **Zhu, Karl**; Sun, Zhiyuan; Han, Suli; Dong, Hao; Sun, Shufeng; Song, Ping; Zhang, Ruolan (2024). Interface stress analysis and bonding strengthening exploration of metal layer on the laser-activated copper-clad AlN. *Microelectronics Reliability*, 155.
3. **Karl K. Zhu**, Dimitris Bertsimas. *Overfitting in Adaptive Robust Optimization*. Accepted to the *NeurIPS 2025 Workshop on Machine Learning and Operations Research*. arXiv:2509.16451.

Working Papers

1. **Karl K. Zhu**, Periklis Petridis, Dimitris Bertsimas. Adaptive Robust Optimization for Green Ammonia Capacity Planning and Operations Under Solar and Wind Uncertainty.
2. **Karl K. Zhu**, Yubing Cui, Cindy Wang, Vasiliki Stoumpou, Matthew Peroni, Dimitris Bertsimas. Optimal Diagnostic Test Selection with Finite-Horizon POMDPs.
3. Matthew Peroni, **Karl K. Zhu**, Charles Dai, Joanna Kondylis, Dimitris Bertsimas. (2024). *Brainsage: Learning Meaningful Representations from 3D Brain Scans for Neurological Disease Prediction*.

Conference Abstracts & Presentations

1. Grayson, T., **Zhu, K.**, Amani, R., Aguegaray, C., Broderick, N. G. R., Nieuwoudt, M., & Risos, A. (2020). How much plastic have you drunk today?. *7th Asian Spectroscopy Conference*.
2. **Karl K. Zhu**, Andrew J. Mason, Anthony Downward. (2022). Finding the Missing with Integer Programming. **Best Presentation Award – Young Practitioners' Prize** (*54th ORSNZ Conference*),
3. Andrew J. Mason, **Karl K. Zhu**, Anthony Downward. (2024). Using integer programming, Markov logic networks and inference to help find missing shareholders in social networks for a New Zealand Māori indigenous incorporation. *EURO 2024*,
4. **Karl Zhu**, Yubing Cui, Cindy Wang, Swathi Rachoor, Nadine Koser, Dimitris Bertsimas. (2024). Automating Care Reviews for Denial Management with Multimodal AI. *INFORMS Annual Meeting*.
5. Matthew Peroni, **Karl Zhu**, Charles Dai, Joanna Kondylis, Dimitris Bertsimas. (2024). Brainsage: Learning Meaningful Representations from 3D Brain Scans for Neurological Disease Prediction. *INFORMS Annual Meeting*.

SKILLS AND ACTIVITIES

Vice President – INFORMS Student Chapter, MIT	2024
Communications Officer – Operations Research Society of New Zealand	2023
Postgraduate Student Representative – Faculty of Engineering, University of Auckland	2022
Treasurer – University of Auckland Brazilian Jiu Jitsu Club	2022
Co-founding President – University of Auckland Chess Association	2019 – 2021
Olympic Trials Candidate – Swimming New Zealand	2016
World Youth Chess Championships – New Zealand team	2008, 2011

CITIZENSHIP

Citizen of New Zealand