Madeleine Pollack
pollmm.github.io
madeleine.pollack@mit.edu

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

Education

Massachusetts Institute of Technology, Cambridge, MA
Candidate for **PhD** in Operations Research; expected completion, **JUNE 2028**. GPA: **4.5/5.0**
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

Research Experience

2023–Present **Massachusetts Institute of Technology**, Cambridge, MA
Graduate Research Assistant
Advisor: Prof. Swati Gupta
Projects: **(1)** Multi-armed bandits with reviewers, with calibration for reviewer quality, to guide human-AI collaboration, **(2)** AI/ML to minimize deceased organ non-utilization, and improve equity in the kidney allocation process, **(3)** Analyzing policy proposals for safe and progressive use of AI in infrastructure investments, and more, **presented at INFORMS 2024**.

2022-2023 **Georgia Institute of Technology**, Atlanta, GA
Undergraduate Research Assistant
Supervisors: Prof. Swati Gupta and Prof. Daniel Molzahn
Project: Optimizing infrastructure investment decisions for powerline undergrounding to prevent power loss, decrease wildfire risk, and ensure equitable benefit across socioeconomic groups, **presented at INFORMS 2023**

2020-2023 **Georgia Institute of Technology**, Atlanta, GA
Undergraduate Research Assistant
Supervisors: Prof. Lauren Steimle (2020-2022)
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 **(Presented at IISE 2022, INFORMS 2022**).

Teaching Experience

2023-Present **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 Chinese high school students.

Preprints

1. 2024, "*Equitably allocating wildfire resilience investments for power grids: The curse of aggregation and vulnerability indices*", https://arxiv.org/abs/2404.11520, with **Ryan Piansky, Swati Gupta, Alyssa Kody, and Dan Molzahn.**
    a. Submitted to Applied Energy

2. 2024, "*The implications of state aggregation in deteriorating Markov Decision Processes with optimal threshold policies*", https://arxiv.org/abs/2405.12912, with **Lauren N. Steimle**.
    a. Major revision at Computers & OR

Work Experience

2022 (Fall) **Tesla Motors**, Fremont, CA
Industrial Engineering Intern

- Developed headcount recommendations, saving Tesla $12.5 million annually.
- Designed user-friendly interfaces for data access, including dashboards and web applications.
- Built Multiple Linear Regression and Markov Decision Process models to support data-driven decision-making.

2021 (Fall) **Hermeus Corporation**, Atlanta, GA
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.
- Created a "deck merger tool" to combine data from multiple sources with varying fidelities into a single, consolidated spreadsheet.
- Designed data visualization scripts for vehicle performance, as well as scripts for sensitivity analyses and implementing Machine Learning algorithms.

2021 (Summer) **Space Capital,** New York, NY
Brooke Owens Fellow, Venture Capital Intern

- Actively involved in deal sourcing and participated in founder introductions with prospective portfolio companies.
- Attended two weekly deal flow meetings to discuss the candidacy of sourced 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

2023-2024 **Henry Gabbay Fellowship**
Awarded to one promising incoming first-year ORC student each year

2023 (Spring) **Institute of Industrial & Systems Engineering (IISE) National Capstone 1st Place**
1st place national capstone award for our supplier selection decision-support tool utilizing Thompson sampling frameworks for supplier recommendations.

2023 (Spring) **Davidson Family Tau Beta Pi Award**
Awarded to best graduate in the School of Engineering (comprising 11 majors) at Georgia Tech

2022 (Spring) **Adobe Women in Technology Scholarship**
$10,000 scholarship awarded to 10 women nationally for demonstrated skills in computing fields

2021-2023 (Spring) **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 (Fall) **Society of Women Engineers Undergraduate Research Competition Finalist**
Awarded to top 5 women students based on their demonstrated research in engineering fields

2021 (Fall) **INFORMS Undergraduate Travel Scholarship**
Competitive scholarship to attend the INFORMS Annual Meeting as an undergraduate student based on academic record, research experience, and demonstrated leadership in Operations Research communities.

2021 (Fall) **Brooke Owens Fellowship**
Highly competitive fellowship program providing internships and mentorship in the aerospace field for women and gender-minority students

2020 (Fall) **Literature Media & Communications First Year Writing Award**
Best first-year research composition (out of approximately 4,500 first-year students)

Skills, Activities, and Citizenship

Software: Julia, Python, R, Windows, Git

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

Citizenship Citizen of the United States