

Michelle Dai

PHD STUDENT · APPLIED MATH AND STATISTICS

Johns Hopkins University, 3100 Wyman Park Dr, Baltimore, MD 21218

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Research Interests

Large Language Models · Image Processing · Time Series · Biostatistics

Education

Johns Hopkins University

PH.D, APPLIED MATH AND STATISTICS

Baltimore, MD

August 2024 - present

- GPA: 3.73/4.0
- Advisors: Dr. Yanxun Xu, Dr. Carey Priebe
- Relevant Coursework: Mathematical Statistics, Time Series Analysis, Mathematical Image Analysis, Machine Learning I, Statistical Theory

Princeton University

B.S.E., OPERATIONS RESEARCH AND FINANCIAL ENGINEERING

Princeton, NJ

August 2019 - May 2023

- GPA: 3.62/4.0
- Minors in Finance, Statistics and Machine Learning
- Undergraduate thesis advisor: Dr. Jianqing Fan
- Relevant Coursework: Fundamentals of Statistics, Probability and Stochastic Systems, Introduction to Monte Carlo Simulation, Intro to Statistical Learning with Applications in R, Intro to Data Science, Research Projects in Data Science, Analysis of Big Data, Econometrics, Intro to Financial Mathematics

Publications

Savadikar, C., **Dai, M.**, & Wu, T. 2023. Continual Learning via Learning a Continual Memory in Vision Transformer. arXiv preprint arXiv:2303.08250.

Research Experience

Johns Hopkins University - Applied Math and Statistics

Baltimore, MD

January 2026 - Present

ADVISORS: DR. YANXUN XU, DR. CAREY PRIEBE

- Research topics: large language models, knowledge graphs, artificial intelligence in healthcare

Princeton University - Operations Research and Financial Engineering

Princeton, NJ

August 2022-April 2023

ADVISOR: DR. JIANQING FAN

- Thesis: “Pricing American Options Through Model-Guided Machine Learning Incorporating Asset Characteristics and Market Environments”

North Carolina State University - Electrical and Computer Engineering

Raleigh, NC

May 2021-August 2021

ADVISOR: DR. TIANFU WU

- Publication: “Continual Learning via Learning a Continual Memory in Vision Transformer”

Professional Experience

The World Bank Treasury

BANKING OPERATIONS JUNIOR ANALYST

Washington, DC

June 2023 - August 2024

- Investigated and reconciled errors in thousands of international transactions
- Utilized Python scripts and PowerBI to construct visual dashboards tracking and tabulating investigations cases and incurred bank charges
- Assisted in the cloud-based migration of the department's financial databases

The World Bank Treasury

SUMMER INTERN

Washington, DC

May 2022 - August 2022

- Analyzed over 10,000 emails to propose methods on improving AI email classification algorithm accuracy
- Conducted research on the carbon credit market and certified emission reductions for use in an internal paper
- Wrote reports on 2022 2Q green bond investments and variable loan rate comparisons among multilateral development banks

Teaching Experience

Spring 2026 **Quantitative Portfolio Theory and Performance Analysis**, Teaching Assistant

Fall 2025 **Risk Measurement/Management in Financial Markets**, Teaching Assistant

Spring 2025 **Interest Rate and Credit Derivatives**, Teaching Assistant

Fall 2024 **Introduction to Financial Derivatives**, Teaching Assistant

- Taught a weekly section for approx. 25 master's level students focused on topic review and problem solving
- Provided additional assistance to students including regular and extra office hours, regular feedback on graded homework, and creating study guides and holding review sessions before exams

Leadership Roles

Student Seminar Coordinator

Baltimore, MD

August 2025 - present

JOHNS HOPKINS UNIVERSITY APPLIED MATH AND STATISTICS DEPARTMENT

- Organizing a weekly seminar to support PhD students practicing their presentation skills
- Handling all scheduling, logistics, and communications required to run and publicize the seminar

Social Events Coordinator

Baltimore, MD

August 2025 - present

JOHNS HOPKINS UNIVERSITY APPLIED MATH AND STATISTICS DEPARTMENT

- Budgeting, planning, and hosting roughly monthly social events for the department's students, staff, and faculty

Technology Chair

Princeton, NJ

VTONE, PRINCETON UNIVERSITY

December 2021 - December 2022

- Coordinated audio and lighting needs for musical performances
- Filmed and edited performance footage
- Trained future tech chairs on all of the above skills

Vice President

Princeton, NJ

May 2021 - May 2022

ACAPELLAGO, PRINCETON UNIVERSITY

- Scheduled and planned rehearsals, performances, and social events
- Supported the president in administrative duties and liaising with university administration

Assistant Artistic Director

Princeton, NJ

May 2021 - May 2022

SYMPHO URBAN ARTS CLUB, PRINCETON UNIVERSITY

- Collaborated with the artistic director to plan rehearsals and performances
- Checked in with and supported choreographers and members to ensure preparation progress

Vice President

Princeton, NJ

May 2020 - May 2021

SYMPHO URBAN ARTS CLUB, PRINCETON UNIVERSITY

- Fostered and shared knowledge and history of the artform of breaking to club members
- Collaborated with other board members to plan Princeton Battlegrounds, a competitive dance event for local universities (unfortunately canceled due to COVID-19)

Skills

Programming

- Python
- R
- MATLAB
- SQL

Tools

- Microsoft Office (Word, Excel, PowerPoint, PowerBI)
- \LaTeX

Languages (Estimated Proficiency)

- Mandarin Chinese: B2
- Spanish: A2