

IAN MCPHERSON

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<https://mcpersonianoliver.github.io/>

EDUCATION

Johns Hopkins University

Ph.D. in Applied Mathematics and Statistics (GPA: 4.0)

Research Advisors: Mauro Maggioni and Mateo Díaz

August 2022 - May 2027 (Expected)

Tufts University

M.Sc. in Pure Mathematics: Probability and Computation (GPA: 4.0)

August 2020 - May 2022

Occidental College

B.A. in Biochemistry & Economics

August 2015 - May 2019

RESEARCH INTERESTS

Riemannian Optimization, Manifold Learning, Optimal Transport, Statistical Learning

RESEARCH PAPERS

Revise and Resubmit

Neural Network Approach for Discrete Time Portfolio Optimization. (*Management Science*)

Ian McPherson, Rui Gao, Shaung Li, Luhao Zhang.

Submitted

Nonsmooth Riemannian Optimization with Inexact Manifold Primitives via Bundle Methods

Mateo Díaz, Benjamin Grimmer, Ian McPherson

Working Papers

Constrained Fréchet Means of Unknown Submanifolds of Non-Euclidean Spaces

Ian McPherson, Mauro Maggioni.

SELECTED TALKS AND PRESENTATIONS

Constrained Fréchet Means of Unknown Submanifolds of Non-Euclidean Spaces

SIAM Mathematics of Data Science (MDS26) at Salt Lake City

November 2026

INFORMS Annual Meeting at San Francisco

November 2026

Nonsmooth Riemannian Optimization with Inexact Manifold Primitives via Bundle Methods

Modeling and Optimization: Theory and Applications (MOPTA) 2026 at Lehigh University

August 2026

SIAM Conference on Optimization (OP26) at University of Edinburgh

June 2026

International Conference on Continuous Optimization (ICCOPT)

July 2025

Jr. Mathematical Institute of Data Science (MINDS) Seminar at Johns Hopkins University

April 2025

University of Wisconsin-Madison SIAM Student Seminar at UW-Madison

April 2025

AWARDS AND SCHOLARSHIPS

Duncan Research Fund Grant

September 2024

Funding to attend summer school at EPFL and present preliminary work

Whiting School of Engineering Teaching Assistant Award

April 2024

Sole recipient across WSE for 2024, in recognition of excellence and talent as a graduate TA.

Rufus P. Isaacs Graduate Fellowship

Fall 2023-Spring 2024

PROFESSIONAL SERVICE

Referee, *Mathematics of Operations Research, Foundations of Data Science*

Co-organizer, co-chair “Geometry, Dynamics, and Inference”, SIAM MDS *Fall 2026*

Co-organizer, co-chair “At the intersection of Optimization, Statistics, Games, and Diffusion”, INFORMS *Fall 2026*

Co-organizer, Geometry and Optimization Seminar, Johns Hopkins University *Spring 2026*

Session Chair, “Optimization on Manifolds and Geometric Approaches”, ICCOPT *Summer 2025*

Co-organizer, Graduate Student Seminar, Johns Hopkins University *Fall 2023 - Spring 2024*

Graduate Student Representative, External Review Committee, Johns Hopkins University *Fall 2023*

TEACHING EXPERIENCE

Instructor

(EN.500.111) **Geometric Toolbox for Data Science** *Fall 2024*

Designed a survey course in Geometric Methods for High Dimensional Statistics.

Master’s Program Probability Review *Summer 2023, 2024*

Designed and gave a review series on probability fundamentals for incoming Master’s students

Teaching Assistant

Johns Hopkins University *Fall 2022 - Spring 2026*

Graduate Courses: Probability Theory II, Applied Statistics and Data Analysis, Mathematics of Data Science, Elements of Statistical Learning, High-Dimensional Approximation and Statistical Learning, Bayesian Statistics, Causal Inference, Numerical Analysis, Dynamical Systems

Tufts University *Summer 2021 - Summer 2022*

Graduate Courses: Numerical Linear Algebra, Mathematical Statistics

Undergraduate Courses: Introductory Statistics, Linear Algebra

SELECTED WORKSHOPS AND SUMMER SCHOOLS

Mathematical Aspects of Data Science Summer School at EPFL *September 2025*

Princeton Machine Learning Theory Summer School *August 2024, 2025*

Statistics and Optimal Transport Workshop at Columbia University *March 2025*

Optimization Workshop at Universidad de Los Andes *December 2024*

SLMath Graduate School on Interacting Particle Systems at UC Berkeley *June 2024*

ICERM on Interacting Particle Systems at Brown University *May 2024*

ICERM on Modern Applied and Computational Analysis at Brown University *June 2023*

ICERM on Optimal Transport at Brown University *May 2023*

ADDITIONAL EXPERIENCE

MIT Lincoln Laboratories - Group 33 *May 2022 - August 2022*

Research Intern *Lexington, MA*

- Developed algorithms for the classification of RF signals in Python.
- Verified the well-posedness of a MILP Battle Management Optimization problem, and compared and contrasted different MILP solvers within MATLAB.