

# IAN MCPHERSON

imcpher1@jhu.edu

## EDUCATION

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### Johns Hopkins University

Ph.D. in Applied Mathematics and Statistics

Current Advisor: Mauro Maggioni

Overall GPA: 4.00

*August 2022 - Present*

### Tufts University

M.Sc. in Mathematics

Concentration in Probability and Computational Methods

Overall GPA: 3.99

*August 2020 - May 2022*

### Occidental College

B.A. in Biochemistry & Economics

*August 2015 - May 2019*

## RESEARCH INTERESTS

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High-Dimensional Statistics, Manifold Learning, Riemannian Optimization, Scaling Limits for Neural Networks

## TEACHING

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### *Johns Hopkins University*

- Fall 2024 **Instructor of Record** EN.500.111 Geometric Toolbox for Data Science  
Designed and conducted a survey course in Geometric Methods for High Dimensional Statistics.
- Fall 2024 **Teaching Assistant** EN.553.634 Elements of Statistical Learning  
Undergraduate/graduate level course on the theory behind statistical learning
- Summer 2024 **Instructor** Master's Program Probability Review  
Designed and gave a review series on probability fundamentals for incoming Master's students
- Spring 2024 **Teaching Assistant** 553.738 for Professor *Mauro Maggioni*  
Graduate-level course on High-Dimensional Approximation, Probability, and Statistical Learning
- Fall 2023 **Teaching Assistant** 553.632 for Professor *Sergey Kushnarev*  
Undergraduate/graduate-level course on Bayesian statistics
- Summer 2023 **Instructor** Master's Program Probability Review  
Designed and gave a review series on probability fundamentals for incoming Master's students
- Spring 2023 **Teaching Assistant** 553.681 Numerical Analysis for Professor *Mario Micheli*  
Undergraduate/graduate-level course on numerical analysis
- Fall 2022 **Teaching Assistant** 553.691 Dynamical Systems for Professor *Yannis Kevrekedis*  
Undergraduate/graduate-level course on nonlinear dynamical systems

### *Tufts University*

- Summer 2022 **Teaching Assistant and Guest Lecturer** Math 70 Linear Algebra for *Curtis Heberle*  
Undergraduate introduction to linear algebra, giving five guest lectures
- Spring 2022 **Teaching Assistant** Math 166 Statistics for Professor *Bruce Boghosian*  
Undergraduate mathematical statistics introduction
- Fall 2021 **Teaching Assistant** Math 126 Numerical Linear Algebra for Professor *Abiy Tassisa*  
Undergraduate introduction to numerical linear algebra
- Summer 2021 **Teaching Assistant and Guest Lecturer** Math 21 Introductory Statistics for *Linda Garant*  
Undergraduate introduction to statistics, giving four guest lectures

## AWARDS AND SCHOLARSHIPS

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### 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

## CONFERENCES AND WORKSHOPS

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August 2024	Funded for Princeton Machine Learning Theory Summer Graduate School
June 2024	Funded for SLMATH (UC Berkeley) Summer Graduate School
	Interacting Particle Systems: Analysis and Computation
May 2024	Funded ICERM Workshop Participant
	Interacting Particle Systems: Analysis, Control, Learning and Computation
June 2023	Funded ICERM Workshop Participant
	Modern Applied and Computational Analysis
May 2023	Funded ICERM Workshop Participant: Optimal Transport
January 2023	Joint Mathematical Meetings Annual Conference

## TALKS

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January 2024	"Riemannian Optimization and Wasserstein Barycenters", <i>Applied Mathematics and Statistics Student Seminar</i> , JHU
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## PROFESSIONAL SERVICE AND COMMUNITY INVOLVEMENT

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Fall 2023 - Present	Graduate Student Seminar Co-organizer
Fall 2023 - Present	Foundations of Data Science Journal Referee (1)
Fall 2023	Ph. D. Committee Member for an External Review of JHU's AMS Department

## EXPERIENCE

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### MIT Lincoln Laboratories - Group 33

May 2022 - August 2022

*Research Intern*

*Lexington, MA*

- Obtained DoD Security Clearance: Secret Level
- 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.
- Field work in White Sands Missile Range for testing different radar array parts, as well as assisting with the teardown and packaging of a few sites.

### Tufts University's Data Intensive Studies Center

January 2022 - May 2022

*DISC Research Intern*

*Medford, MA*

- Research assistant to Dr. Abani Patra, working on understanding and implementation of Markov Random Fields with an eye towards analysis of polar caps.

### Tufts University's Math Department

May 2021 - August 2021

*Research Assistant*

*Medford, MA*

- Research assistant to Dr. Kasso Okoudjou, working with a set of orthogonal polynomials on the Sierpinski Gasket with an eye towards producing analogs to the Legendre Polynomials on the unit interval.

## TECHNICAL QUALIFICATIONS

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### Proficient Coding Languages

MATLAB, Python, Java, L<sup>A</sup>T<sub>E</sub>X.

## **HOBBIES**

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Dancing and choreographing, long distance running, rock climbing, and cooking.