Peter Hoffman

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EDUCATION

Massachusetts Institute of Technology **Cambridge, MA**
Ph.D. in Operations Research *2024-Present |5.0 /5.0*
Advised by Prof. Pablo Parrilo and Prof. Gabriele Farina
Research interests: diffusion models, sampling, optimization, deep learning

Massachusetts Institute of Technology **Cambridge, MA**
S.B. in Mathematics *2019-2024 | 4.8/5.0*

RESEARCH

An Overview of the Nested Sampling Algorithm, MIT Mathematics project, May 2023, P. Hoffman, supervised by Prof. Peter Kempthorne.
- Studied the nested sampling algorithm and its application to calculating the normalizing factor in Bayesian statistics

P. Hoffman, O. Lores, C. Yung, "Random Walks on Regions of $\mathbb{Z}$ and $\mathbb{Z}^2$", MIT Mathematics Department, October 2022
- Studied exit times of random walks on various regions of the integer lattice

Expander Graphs and their Construction, MIT Mathematics project, May 2022, P. Hoffman.
- Proved the existence of expander graphs using randomized constructions and proved the unique neighbor expansion

Integer Programming in Graph Coloring, MIT Sloan class project, May 2022, P. Hoffman, A. Hu, S. Konduru, A. Li, supervised by Prof. James Orlin.
- Designed an integer program to find proper colorings of randomly constructed non-planar graphs

Random Matrix Initialization Methods in Machine Learning, MIT Mathematics class project, May 2021, P. Hoffman, S. Simhon, V. Urvantsev, M. Yunus
- Used randomized initialization methods to improve performance of 2-layer feed forward neural networks

PROFESSIONAL EXPERIENCE

Citi Bank **Boston, MA**
Quantitative analyst in Citi's market making group *June 2022 – August 2022*
- Designed a model to produce fast approximations to the Black-Scholes option formula

Point72 **New York, NY**
Quantitative research intern in the Global Macro pod *June 2021 – August 2021*
- Used PCA methods to design and back-test a semi-automated cross-market CDS trading strategy

TEACHING EXPERIENCE

MIT Computer Science Department **Cambridge, MA**
Instructor for 6.S095 (Intermediate Probability) *December 2021 – Present*
- Instructor for the student-run IAP class *Intermediate Probability* supervised by MIT EECS Professor Guy Bresler

MIT Mathematics Department **Cambridge, MA**
Grader for 18.211 Combinatorial Analysis, *September 2023 – December 2023*

MIT Sloan School of Management **Cambridge, MA**
TA for 15.053 Optimization Methods in Business Analysis *February 2023 – May 2023*

MIT HSSP 2022 **Cambridge, MA**
Instructor for a self-organized high school summer class on uses of optimization in graph theory *June 2022 – August 2022*