Anming Gu

CONTACT INFORMATION

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RESEARCH INTERESTS

Foundations of Machine Learning, Design and Analysis of Algorithms, Stochastic Calculus, Statistical Inference

My research interests lie at the intersection of theoretical computer science, statistics, and machine learning, with a particular emphasis on applying mathematical tools to analyze and prove results on machine learning algorithms.

EDUCATION

Boston University — Boston, MA
B.A. in Computer Science, Minor in Mathematics — Expected May 2024
GPA: 3.96/4.00

HONORS AND AWARDS

Putnam Math Competition Top 35%	2022
Undergraduate Research Opportunity Program (UROP)	Spring 2021, Fall 2021
USA Biology Olympiad Top 30	2020
4x USA Biology Olympiad Semifinalist	2017 – 2020
3x AIME Qualifier	2017, 2019, 2020
University of Toronto Biology Competition International 18th Place	2019

RESEARCH EXPERIENCE

Boston University — Boston, MA
Research Assistant, supervised by Prof. Edward Chien — Sept 2020 – Present

- Optimal transport and spectral graph theory for regularization in deep learning.
- Optimal transport and mean-field Langevin dynamics for particle filters.

PUBLICATIONS

Manuscripts
K. Greenewald, **A. Gu**, M. Yurochkin, J. Solomon, E. Chien. k-Mixup Regularization for Deep Learning via Optimal Transport. arXiv preprint: arXiv:2106.02933.

PROJECTS

Monte Carlo Geometry Processing
Presented a paper on [Monte Carlo Geometry Processing: A Grid-Free Approach to PDE-Based Methods on Volumetric Domains] and implemented Monte Carlo algorithms in C++ to solve linear elliptic PDEs on graphical domains (Geometry Processing, Spring 2022).

Hypergraph Expanders
Wrote an exposition on the paper [Hypergraph expanders of all uniformities from Cayley graphs] (Mathematical Methods for Theoretical Computer Science, Spring 2022).

TEACHING EXPERIENCE

Boston University — Boston, MA

- Teaching Assistant: Analysis of Algorithms (Spring 2022)
- Grader: Analysis of Algorithms, Linear Algebra, Honors Differential Equations, Calculus II (Fall 2021)

INDUSTRY EXPERIENCE

Capital One — McLean, VA
Software Engineering Intern — Summer 2022

- Created a full-stack application using JavaScript and Python, implemented APIs, and performed integration testing.

SKILLS

- **Languages**: C/C++, Python, OCaml, Java, Bash, MATLAB, JavaScript
- **Technologies**: PyTorch, TensorFlow, Pandas, Jupyter Notebook
- **Other**: Linux, Git/Github, LaTeX, Make

SELECT COURSEWORK

- **Current**: Machine Learning Practicum, *Functional Analysis*, *Financial Econometrics*
- **Theoretical Computer Science**: Analysis of Algorithms, Theory of Computation, *Mathematical Methods for Theoretical Computer Science*
- **ML/AI**: *Machine Learning*, *Artificial Intelligence*, *Deep Learning*
- **Software**: Functional Programming, Software Engineering, *Functional Compilers*
- **Applications**: *Geometry Processing*
- **Applied Mathematics**: Linear Programming
- **Statistics**: Probability Theory, Stochastic Processes
- **Economics & Finance**: Methods in Quantitative Finance

[*Graduate*]

REFERENCES

Available upon request.