Resume - Kaiwen Zhang

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EDUCATION

Courant Institute, New York University Sep. 2024 – May 2029
Ph.D. Mathematics
Research interests: probability and stochastic analysis, applications to sampling and machine learning algorithms; partial differential equations, self-similar analysis, and novel solutions via physics-informed neural networks.

Columbia University, School of Engineering and Applied Science (GPA 4.18/4.00) Sep. 2020 – May 2024
B.S. Applied Mathematics, summa cum laude

RESEARCH EXPERIENCE

Delocalization of Error in Markov Chain Monte Carlo Schemes (Supervisor: J. Q. Weare, NYU) Sep. 2025 –
- Analyzes scaling of error for low-dimensional observables in MCMC schemes with high-dimensional target distributions

Self-similar Blowup of Burgers' Equation (Supervisor: T. Buckmaster, NYU) Jan. 2025 – Aug. 2025
- Examines novel strategy of proving blowup in evolution PDEs by changing to self-similar coordinates, and showing stability of blowup profile via energy dissipation inequalities, applied to Burgers' equation

Numerical Solutions to the Allen-Cahn Equation (Supervisor: Q. Du, Columbia) May 2024
- Studied consistency and energy stability estimates of spectral schemes for solving the Allen-Cahn equation, report *here*

Symmetry-breaking in Nonlinear Hartree Functional (Supervisor: M. I. Weinstein, Columbia) Aug. 2023 – Feb. 2024
- Investigated localization of large-mass minimizers of nonlinear Hartree functional using scaling properties of energy

Replica Exchange Stochastic Gradient Langevin Dynamics (Supervisor: K. Ren, Columbia) Jan. 2023 – May 2023
- Experimented effect of temperature parameter and implementations of gradient on reSGLD schemes; Python demos *here*

COMMUNITY ENGAGEMENT

Teaching Assistant, Honors Theory of Probability (MATH UA-338, NYU) Fall 2025
Teaching Assistant, Discrete Mathematics (MATH UA-120, NYU) Fall 2025
Founding Organizer, Student Analysis Seminar (with Grayson Davis, NYU) 2025-2026

INDUSTRY EXPERIENCE

Deloitte Canada, *Toronto, Canada* May 2023 – Aug. 2023
Financial Engineering and Modeling Intern
- Co-directed assessment on quality of client database used to develop anti-money laundering (AML) models by brainstorming assessment goals with team of 4, examining data with Python and SQL, and communicating findings with client; identified 5 previously unnoticed issues leading to further investigation on client side

Mercer China, *Shanghai, China* May 2021 – Jul. 2021
China Wealth Business Intern
- Analyzed Tencent's business model by collecting financial data across 13 quarters, identifying key business components, researching Chinese social apps, cloud, and gaming markets, and assessing company's strengths and weaknesses; produced 10-page internal report to support portfolio evaluation

HONORS AND AWARDS

Applied Mathematics Faculty Award, Columbia University Spring 2024
Dean's List, Columbia University Fall 2023, Fall 2022, Fall 2020
Andy Grove Scholarship, Intel 2021

SKILLS AND INTERESTS

- **Computer Skills:** Microsoft Office, Python (Numpy, Scipy, JIT, SageMath), Java, LaTeX, SQL, Visual Basic
- **Languages:** Chinese (Native), English (Natively Fluent), French (Elementary), Korean (Elementary)
- **Extracurricular Interests:** Tennis, volleyball, traveling, war history, movies, collecting airplane models