

XINMENG ZENG

PhD Candidate, Stanford University

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EDUCATION

Stanford University

Sep. 2023 – June 2028 (Expected)

Ph.D. in Computational and Mathematical Engineering

- **Current Research:**

With **Prof. Ruizhe Jia**, Stanford Advanced Financial Technologies Laboratory (AFTLab): *Who Loses and Why? Market Microstructure of Perpetual Futures*

We study the economics of financial marketplaces, participant-level trading performance, and the pricing of pre-IPO and tokenized stocks, combining on-chain order, position and trade records from Hyperliquid and Polymarket with traditional financial data, machine learning and agentic hypothesis generation.

- **Research Rotations:**

With **Prof. Marco Pavone**: Transformers for Trajectory Optimization.

With **Prof. David Tse**: Improved PBFT Consensus Protocols.

- **Relevant Coursework:** Machine Learning, Randomized Algorithms, Optimization, RL, Cryptography.

ETH Zurich

2022 – 2023

Master of Science in Applied Mathematics

- **Research Assistant** in Random Matrix Theory and Concentration Inequalities.

- **Award:** Laureate of Excellence and Opportunity Scholarship (Top 1-2 students per department).

- Teaching Assistant for Numerical Analysis.

Princeton University

Fall 2022

Mathematics Exchange Program

- Selected as the single candidate from the ETH Mathematics Department for this exchange.

- **Research:** Convex Geometry with Prof. Ramon van Handel.

- **Coursework:** Graph Theory, Combinatorial Optimization.

ETH Zurich

2020 – 2022

Bachelor of Science in Mathematics — Graduated with Distinction

- **Research:** Numerical Analysis & Random Matrix Theory.

- **Relevant Coursework:** Real and Complex Analysis, Numerical PDE, Physics and Quantum Mechanics, Probability Theory, Stochastic Processes, Applied Statistics, Graph Theory, Algebraic Methods in Combinatorics, Elliptical Functions, etc.

PUBLICATIONS

Who Loses and Why? Market Microstructure of Perpetual Futures

With Ruizhe Jia, Ciamac C. Moallemi and Shouqiao Wang | SSRN working paper

2026

The extremals of the Kahn-Saks inequality

Project with Prof. Ramon van Handel | Advances in Mathematics

2024

A Matrix Concentration Inequality for Products of Independent Gaussian Matrices

Master's thesis with Prof. Afonso Bandeira

2023

On the concentration of Gaussian Cayley matrices

Project with Prof. Afonso Bandeira | Applied and Computational Harmonic Analysis

2023

Transmission properties of space-time modulated metamaterials

Bachelor's Thesis with Prof. Habib Ammari | Studies in Applied Mathematics

2022

LEADERSHIP & PROFESSIONAL EXPERIENCE

Stanford Founders Club

2023 – Present

Financial Officer & Founding Member

- Founding member of the first graduate entrepreneurship club at Stanford.
- Organize startup and investor events for a community of 1000+ students.
- Manage financial outreach and business development initiatives.

Chinese Entrepreneurs Organization (CEO)

2023 – Present

VP of Business Development

- Lead business development efforts to foster entrepreneurship across communities.
- Host annual startup demo days with 300+ participants and VCs from top institutions (A16Z, NVIDIA, etc.).

Zurich Sustainability Week

2021 – 2022

Core Member

- Organized a major sustainability event featuring 2000+ participants and 50+ workshops.

TECHNICAL SKILLS & LANGUAGES

Programming Languages: Python, MATLAB, R

Mathematical Expertise: Real & Complex Analysis, Linear Algebra, Optimization, Statistics, Machine Learning, Financial Statistics, Numerical Analysis, Probability Theory, Brownian Motion, Stochastic Calculus.

Languages: English (Fluent), French (Fluent), Chinese (Native), German (B2), Japanese (B1)