TINGYU ZHU

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EDUCATION

University of California, Berkeley — *Berkeley, CA*
Ph.D. in Industrial Engineering and Operations Research — *2022-2027 (expected)*
with minors in math and machine learning
Advisor: Zeyu Zheng

Peking University — *Beijing, China*
B.S. in Mathematics and Applied Mathematics — *2018-2022*

RESEARCH INTERESTS

Structured Generative AI, Stochastic Modeling and Simulation, Machine Learning, LLM Agents

JOURNAL PUBLICATIONS

1. **Learning to Simulate from Heavy-Tailed Distribution via Diffusion Model** (2026)
   H. Liu†, **T. Zhu**†, N. Jia, J. He, Z. Zheng (co-first author)
   Operations Research

2. **A Doubly Stochastic Simulator with Applications in Arrivals Modeling and Simulation** (2023)
   Y. Zheng, Z. Zheng, **T. Zhu** (in alphabetical order)
   Operations Research

3. **Learning to Simulate Sequentially Generated Data via Neural Networks and Wasserstein Training** (2023)
   T. Zhu, H. Liu, Z. Zheng
   ACM Transactions on Modeling and Computer Simulation (TOMACS)

SELECTED CONFERENCE PROCEEDINGS

1. **ResiliBench: Evaluating Agentic Workflow Adaptation in Stochastic Environments**
   R. Ao†, Z. Min†, **T. Zhu**†, W. Yin, X. Wang (co-first author)
   International Conference on Learning Representations (ICLR) 2026

2. **Efficient Fine-Grained Guidance for Diffusion-Based Symbolic Music Generation**
   T. Zhu†, H. Liu†, Z. Wang, Z. Jiang, Z. Zheng (co-first author)
   International Conference on Machine Learning (ICML) 2025

WORKING PAPERS

1. **Stating Requirements Is Not Enough: A Stochastic Framework for Open-Ended Work with LLMs**
   T. Zhu, Z. Zheng
   Submitted to *Operations Research*

2. **Selection of the Best Policy under Fairness Constraints**
   T. Zhu, Y. Wu, Z. Zheng
   https://arxiv.org/abs/2605.09945
   Submitted to *Operations Research*

3. **IDA-Bench: Evaluating LLMs on Interactive Guided Data Analysis**
H. Li†, H. Liu†, **T. Zhu**†, T. Guo†, Z. Zheng, X. Deng, M. I. Jordan (co-first author)
https://arxiv.org/abs/2505.18223

PROFESSIONAL EXPERIENCE

Alibaba DAMO Academy *June 2025 - Present*
AI Agent Application Research Intern

- Designed and implemented a self-correcting AI agent framework that converts SDTM datasets to ADSL format based on natural-language specifications, achieving a 99% transformation success rate.
- Optimized agent workflow documentation for full-stack code generation, cutting prompt and output token volume by 70–80% with no measurable degradation in system performance.
- Designed and built a local-first macOS AI-based research workspace using Electron, FastAPI, and SSE, integrating multiple AI coding agents with persistent sessions and context management to streamline file-based research workflows and reduce context switching.
- Investigated why AI research agents needed repeated correction on open-ended tasks: frontier LLMs recognized known requirements yet violated them again in later revisions. Built a stochastic model of generation and revision to guide when to keep refining and when to restructure the task.

AWARDS

- Marshall-Oliver-Rosenberger (MOR) Fellowship, IEOR Department *2026*
- IEOR Faculty Fellowship *2025*
- The Ronald W. Wolff Fellowship, IEOR Department *2023*
- Outstanding Graduate, Peking University *2022*
- Young Scholar, Yuanpei College *2021*

TEACHING EXPERIENCE

Graduate Student Instructor, University of California, Berkeley

- INDENG 173, Introduction to Stochastic Processes *Spring 2024, Spring 2026*
- INDENG 142, Introduction to Machine Learning and Data Analytics *Fall 2025*
- INDENG 215, Analysis and Design of Databases *Spring 2025*
- INDENG 130, Methods of Manufacturing Improvement *Fall 2024*
- INDENG 242, Applications in Data Analysis *Fall 2023*

Teaching Assistant, Peking University

- Probability and Statistics, School of EECS *Spring 2022*

ACADEMIC SERVICE

Reviewer

- *Operations Research* *2026*
- *Conference on Neural Information Processing Systems (NeurIPS)* *2026*

ACTIVITIES & INTERESTS

Collaborative Pianist *UC Berkeley, Department of Music*

- Served as a pianist for instrumentalists in recitals
- Performed chamber music at *noon concerts*