SIZHUANG HE

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RESEARCH INTEREST

Generative Modeling: Flow Matching, Diffusion, Discrete Diffusion, **Operator Learning**: Modeling Continuous Spatiotemporal Dynamics, Integral Equations, **Computational Biology**: Single-cell Transcriptomics Data Analysis, **LLMs and Agentic AI**: Autonomous Systems for Biological Discovery

EDUCATION

Yale University   New Haven, CT
Ph.D. in Computer Science   *Aug. 2024 – Present*
- Advisor: Dr. David van Dijk
- Research Focus: Machine Learning for Computational Biology

University of Michigan, Ann Arbor   Ann Arbor, MI
Bachelor of Science in Honors Mathematics (Minor in Computer Science)   *Sep. 2019 – May 2023*
- Graduated with Highest Distinction
- GPA: 4.0 / 4.0

PUBLICATIONS

Non-Markovian Discrete Diffusion with Causal Language Models
Y. Zhang*, S. He*, et al. (NeurIPS 2025 (Poster))

Intelligence at the Edge of Chaos
S. Zhang*, A. Patel*, S. Rizvi, N. Liu, S. He, et al. (ICLR 2025 (Poster))

COAST: Intelligent Time-Adaptive Neural Operators
Z. Wu, S. Zhang, S. He, et al. (AI4MATH Workshop at ICML 2025 (Poster))

Scaling Large Language Models for Next-Generation Single-Cell Analysis
S. Rizvi*, D. Levine*, A. Patel*, S. Zhang*, E. Wang*, S. He, et al. (bioRxiv)

CaLMFlow: Flow Matching using Causal Language Models
S. He*, D. Levine*, et al. (arXiv)

Operator Learning Meets Numerical Analysis: Improving Neural Networks through Iterative Methods
E. Zappala, D. Levine, S. He, et al. (arXiv)

* denotes equal contribution

HONORS & AWARDS

Fan Family Fellowship, Yale University (2025) **Outstanding Achievement in Mathematics Award**, University of Michigan, Ann Arbor (2023) **James B. Angell Scholar**, University of Michigan, Ann Arbor (2023) **University Honors**, University of Michigan, Ann Arbor (2022, 2023)

SERVICES

Conference Reviewer
- International Conference on Learning Representations (ICLR)
- AI4MATH Workshop at ICML 2025