

# SIZHUANG HE

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## RESEARCH INTEREST

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**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

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### Yale University

*Ph.D. in Computer Science*

New Haven, CT

Aug. 2024 – Present

- Advisor: Dr. David van Dijk
- Research Focus: Machine Learning for Computational Biology

### University of Michigan, Ann Arbor

*Bachelor of Science in Honors Mathematics (Minor in Computer Science)*

Ann Arbor, MI

Sep. 2019 – May 2023

- Graduated with Highest Distinction
- GPA: 4.0 / 4.0

## PUBLICATIONS

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### 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

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- **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

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### Conference Reviewer

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