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))*

TANTE: Time-Adaptive Operator Learning via Neural Taylor Expansion
*Z. Wu, S. Wang, S. Zhang, **S. He**, et al. (In Review)*

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

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