

Tianxiao He

343 Gold St, Brooklyn, NY 11201 • (518) 428-9860 • th3129@nyu.edu

EDUCATION

New York University

New York, NY

Ph.D., Computer Science

Sep 2023 - Present

Research Advisor: Erdem Varol

Columbia University

New York, NY

B.S., Computer Science

May 2023

Research Advisor: Liam Paninski

GPA: 3.9/4.0 (*cum laude*)

PUBLICATIONS

T. He, A. Williams, S. Harvey. “How Data Augmentation Shapes Neural Representations”. **NeurIPS 2026**; ICLR 2026 ReAlign Workshop (**Oral**)

T. He*, M. Patel*, C. Li, A. Maslarova, M. Vöröslakos, N. Ramanathan, W. Hung, G. Buzsáki, and E. Varol. “Self supervised learning for in vivo localization of microelectrode arrays using raw local field potential. ” **NeurIPS 2025**

Y. Zhang*, **T. He***, J. Boussard, C. Windolf, O. Winter, E. M. Trautmann, N. Roth, H. Barrel, M. M. Churchland, N. Steinmetz, E. Varol, C. L. Hurwitz, and L. Paninski. “Bypassing spike sorting: Density-based decoding using spike localization from dense multielectrode probes.” **NeurIPS 2023 (spotlight)**

J. Adhinarta, J. Dong, **T. He**, J. Huang, D. Sprague, J. Wan, H. J. Lee, Z. Yu, H. Lu, E. Yemini, S. Kato, E. Varol, and D. Wei. “WormID-Benchmark: Extracting Whole-Brain Neural Dynamics of *C. elegans* at the Neuron Resolution”. bioRxiv 2025

INTERNSHIP

Research Scientist Intern at Center for Computational Neuroscience

Flatiron Institute

May 2025 – August 2025

- Developed a geometric framework to quantify how data augmentation interacts and reshapes neural representations
- Embedded hidden representations from CNNs and ViTs into a smooth manifold using shape analysis invariant to scale, rotation and reflection
- Demonstrated consistent and stereotyped trajectories across augmentation strength and type, enabling more effective model ensembling (accepted to NeurIPS 2026)

Research Trainee in Computational & Cognitive Neuroscience Program

Cold Spring Harbor Asia

June 2023 – July 2023

- Developed a brain-inspired model of dorsal and ventral pathways in visual processing
- Implemented a recurrent neural network with continual learning across sequential tasks
- Demonstrated compositional and flexible task representations within the model, enabling learning without catastrophic forgetting

TECHNICAL SKILLS

- **Programming:** Python, Java, Git, SQL, PyTorch, TensorFlow, Hugging Face
- **Machine Learning:** Self supervised learning, Transformers, Biosignal & Audio Foundation models
- **Other skills:** Signal Processing, Neural Decoding, Audio Detection/Segmentation

CONFERENCE PRESENTATION & WORKSHOP

Decoding Anatomical Structure from Neural Population Activity using Self-supervised Learning (COSYNE 2026)

Self supervised learning for in vivo localization of microelectrode arrays (SAND 2025)

Blind in vivo localization of microelectrode arrays via functional correlation patterns in the mouse hippocampus (SFN 2024)

Density-based Neural Decoding using Spike Localization for Neuropixels Recordings (COSYNE 2023)

PROFESSIONAL SERVICE

Conference Reviewer

NeurIPS 2023, NeurIPS 2025, MICCAI 2025, NeurIPS 2026 (Top Reviewer) & NeurIPS 2026 GenAI4Health workshop

Program Committee

NeurIPS 2025, 2026 Brain & Body Foundation Model Workshop

Journal Reviewer

PLOS Computational Biology

Teaching Experience

Guest Instructor, Neuroinformatics Class, New York University

AWARDS & FELLOWSHIPS

NYU School of Engineering PhD Fellowship	2023-2024
Columbia University Dean's List	2021-2022
Simon's Rock Dean's List	2019-2021
Simon's Rock Merit Scholarship	2018-2021