# Tianxiao He

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## EDUCATION

**New York University** — New York, NY
Ph.D., Computer Science — Sep 2023 - Present
Academic 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*)

**Bard College at Simon's Rock** — Great Barrington, MA
B.A., Computer Science (early college) — May 2021
GPA: 4.0/4.0 (*summa cum laude*)

## PUBLICATION

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," in *Thirty-seventh Conference on Neural Information Processing Systems* (**Neurips 2023 spotlight**)

## CONFERENCE PRESENTATION

**Tianxiao He**, Anna Maslarova, Mihály Vöröslakos, Chenyi Li, Yurong Liu, György Buzsáki, Erdem Varol (2024). Blind in vivo localization of microelectrode arrays via functional correlation patterns in the mouse hippocampus (**SFN 2024)**

Yizi Zhang*, **Tianxiao He***, Julien Boussard, Cole Hurwitz, Erdem Varol, Charlie Windolf, Olivier Winter, Matt Whiteway, The International Brain Lab, & Liam Paninski. (2023). Density-based Neural Decoding using Spike Localization for Neuropixels Recordings. Computational & Cognitive Neuroscience Conference (**COSYNE 2023)**

## RESEARCH EXPERIENCE

**New York University** — New York, NY
*Graduate Student, Department of Computer Science* — Sep 2023 – now

- Collaborated with Buzsaki lab at NYU to develop in vivo probe localization method that decode hippocampal sublayer of the channels from high-density probe recordings
- Applied a Bayesian model with supervised alignment approach to manage distributional shift across recordings from different subjects
- Evaluated model on multiple dataset, and achieved substantial accuracy across different sessions and subjects using minimum supervision

**Columbia University** New York, NY

*Research Assistant, Department of Statistics* Sep 2022 – Aug 2023

- Developed a density-based neural decoding method that bypasses spike sorting
- Applied dynamical MoG to model spike feature distributions and employed variational inference to fit the resulting model and to decode animal behavior
- Benchmarked the model using recordings from various animals and probes and showed better performance than spike sorting and previous clusterless decoders

## TEACHIING EXPERIENCE

**New York University**

*Teaching Assistant, Department of Computer Science* Jan 2023 - now

- Delivered guest lecture on "Neural Decoding" for NYU CS-GY 9223 Neuroinformatics
- Conducted office hour to assist students interpret and present journal club papers
- Designed project ideas and mentored students on neural data science projects

## PROFESSIONAL DEVELOPMENT

**Computational & Cognitive Neuroscience (CCN) Summer Program**

*Cold Spring Harbor Asia* June 2023 – July 2023

- Attended lectures and seminars on neural circuit mechanism of higher cognitive functions
- Implemented Recurrent Neural Networks to model human dorsal and ventral pathway through continual learning of visual tasks

## AWARDS & FELLOWSHIPS

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| 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 |