Gengshuo John Tian

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Education

2020 – present	PhD Program in Computational and Applied Mathematics at the **University of Chicago** Advisor: Prof. Brent Doiron
2019 – 2020	PhD Program in Mathematics at the **University of Pittsburgh** Advisor: Prof. Brent Doiron
2015 – 2019	BSc in Mathematics and Applied Mathematics, **Beijing Normal University**

Publications

[1] **Tian, G. J.**, Zhu, O., Shirhatti, V., Greenspon, C., Downey, J. E., Freedman, D. J., & Doiron, B. (2024). Neuronal firing rate diversity lowers the dimension of population covariability. *bioRxiv*.

[2] Liu, X., Zou, X., Ji, Z., **Tian, G.**, Mi, Y., Huang, T., Wong, K. M., & Wu, S. (2022). Neural feedback facilitates rough-to-fine information retrieval. *Neural Networks*.

[3] **Tian, G.**, Li, S., Huang, T., & Wu, S. (2020). Excitation-inhibition Balanced Neural Networks for Fast Signal Detection. *Frontiers in Computational Neuroscience*, 14, 79.

[4] Liu, X., Zou, X., Ji, Z., **Tian, G.**, Mi, Y., Huang, T., Wong, K. M., & Wu, S. (2019). Push-pull Feedback Implements Hierarchical Information Retrieval Efficiently. In *Advances in Neural Information Processing Systems* (pp. 5702-5711).

[5] **Tian, G.**, Huang, T., & Wu, S. (2019). Excitation-Inhibition Balanced Spiking Neural Networks for Fast Information Processing. In *IEEE International Conference on Systems, Man and Cybernetics* (pp. 249-252).

Talks and conference presentations (by topic)

Neuronal firing rate diversity lowers the dimension of population covariability

Sep 2023	Bernstein Conference (poster)	Berlin, Germany
Oct 2023	20 Years of Collaboration in Computational Neuroscience (talk)	Chicago, USA
Feb 2024	Computational and Systems Neuroscience (COSYNE) (poster)	Lisbon, Portugal
Sep 2024	Bernstein Conference – Neural Diversity and Computation Workshop (virtual talk)	Frankfurt, Germany
Oct 2024	Society for Neuroscience Meeting (SfN) (poster)	Chicago, USA

A nonlocal variational framework for optimal neural representations

Jul 2025	Junior Theoretical Neuroscientist Workshop at the Flatiron Institute (talk)	New York, USA

Short programs

Aug 2024	Methods in Computational Neuroscience Marine Biological Laboratory	Woods Hole, USA

Programming skills

MATLAB, Python, Julia