Gengshuo 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**

Experience

Current
Sep 2019
Research in Doiron Theoretical Neuroscience Group
at the University of Pittsburgh and the University of Chicago
Instructor: Prof. Brent Doiron
Studying the geometry of neural variability using random matrix theory and collaborating with experimental neuroscientists to verify the theoretical predictions.

Jun 2019
Sep 2018
Undergraduate thesis project in Neural Information Processing Lab
at Peking University
Instructor: Prof. Si Wu
Studied the fast response property of balanced networks.

Aug 2018
Jun 2018
Volunteering in Computational Neurobiology Laboratory
at Salk Institute
Instructor: Prof. Terrence Sejnowski
Worked with Dr. Dongsung Huh to analyze the mechanisms of a spiking neural network trained with gradient descent.

Mar 2018
Sep 2017
Undergraduate research in Neural Information Processing Lab
at Beijing Normal University
Instructor: Prof. Si Wu
Worked on the theoretical analysis of a model of hierarchical memory retrieval with feedback modulation in hierarchical Hopfield networks.

Publications

[1] **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).

[2] 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).

[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. (2022). Neural feedback facilitates rough-to-fine information retrieval. *Neural Networks*.