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 GPA: 4.00 / 4.00
2019 – 2020	Graduate Training Program of the **Center for the Neural Basis of Cognition**
2015 – 2019	BSc in Mathematics and Applied Mathematics, **Beijing Normal University** GPA: 96.00 / 100
Apr–Jun 2018	Exchange Program at the **University of California, San Diego** GPA: 4.00 / 4.00
Jul 2017	Summer School in Computational and Applied Mathematics at **Peking University** Outstanding student
Jul–Aug 2016	Summer Sessions at the **College of William and Mary** GPA: 4.00 / 4.00

Experience

Current Jul 2020	Research in Doiron Theoretical Neuroscience Group at the University of Chicago Instructor: Prof. Brent Doiron Studying dimensionality transfer between neural populations.
Apr 2020 Sep 2019	Research in Doiron Theoretical Neuroscience Group at the University of Pittsburgh Instructor: Prof. Brent Doiron Studied interareal communication and its relations with private variabilities using data recorded simultaneously from macaque monkeys' PFC and V4 during a memory guided saccade task.
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 and used it to develop a fast-responding module for neuromorphic systems.

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 to do the XOR task. Various techniques including tensor component analysis (TCA) were employed.

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 new model of hierarchical memory retrieval with feedback modulation in hierarchical neural networks. The work was based on Hopfield networks but the underlying principles are potentially applicable to other kinds of networks in general.

Jun 2018 – Jun 2017 | National Training Program of Innovation and Entrepreneurship for Undergraduates
Instructor: Prof. Jingang Xiong
Studied the asymptotically symmetric solutions of a class of quasilinear elliptic equations through analysis of the corresponding ODE.

Nov 2017 – Apr 2017 | International Genetically Engineered Machine Competition (iGEM)
(Team BNU-China)
Developed mathematical models to assist the team's effort to display fibrous biopolymers on the yeast surface. Modeling work highly regarded by the judges.

Publications

[1] **Tian, G.**, Huang, T., & Wu, S. (2019, October). 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.

Scholarships and Honors

2016 & 2017 National Scholarship
2019 – 2020 University of Pittsburgh Arts and Sciences Graduate Fellowship

Skills

Language: TOEFL iBT: 118 / 120
GRE: Verbal 165 / 170, Quantitative 170 / 170, Analytical Writing 4.5 / 6.0
Programming: MATLAB, Julia