Gengshuo Tian

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Education

2019 – present	PhD Program in Mathematics at the **University of Pittsburgh**
2019 – present	Graduate Training Program of the **Center for the Neural Basis of Cognition**
2015 – 2019	BSc in Mathematics and Applied Mathematics, **Beijing Normal University** Gpa: 96.02 / 100, ranked 1 / 52
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 **College of William and Mary** Gpa: 4.00 / 4.00

Experience

Current
Sep 2019

Research in Doiron Theoretical Neuroscience Group
at University of Pittsburgh
Instructor: Brent Doiron

Building a multilayer spiking neural network model that reflects both spatial tuning properties and shared variabilities of PFC and V4 based on data recorded from macaque monkeys during a memory guided saccade task to study interareal communication and its relations with private variabilities.

June 2019
Sep 2018

Undergraduate thesis project in Neural Information Processing Lab
at Peking University
Instructor: 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: 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: 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: 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). Excitation-Inhibition Balanced Spiking Neural Networks for Fast Information Processing. In *IEEE SMC*.

[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).

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