

# Gengshuo TIAN

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## EDUCATION

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- 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: 96.00 / 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 **College of William and Mary**  
GPA: 4.00 / 4.00

## EXPERIENCE

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| <i>Current</i><br>SEP 2019 | Research in DOIRON THEORETICAL NEUROSCIENCE GROUP<br>at University of Pittsburgh<br>Instructor: Brent Doiron<br>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<br>SEP 2018      | Undergraduate thesis project in NEURAL INFORMATION PROCESSING LAB<br>at Peking University<br>Instructor: Si Wu<br>Studied the fast response property of balanced networks and used it to develop a fast-responding module for neuromorphic systems.  |
| AUG 2018<br>JUN 2018       | Volunteering in COMPUTATIONAL NEUROBIOLOGY LABORATORY<br>at Salk Institute<br>Instructor: Terrence Sejnowski<br>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<br>SEP 2017       | Undergraduate research in NEURAL INFORMATION PROCESSING LAB<br>at Beijing Normal University<br>Instructor: Si Wu<br>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	NATIONAL TRAINING PROGRAM OF INNOVATION AND ENTREPRENEURSHIP
JUN 2017	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	INTERNATIONAL GENETICALLY ENGINEERED MACHINE COMPETITION (iGEM)
APR 2017	(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

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- [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

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

## SKILLS

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