Bin LI

Latest Update: 2025/05/27
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https://libinutokyo.github.io

Education

2023 – now **Ph.D. Candidate, Graduate School of Frontier Science, the University of Tokyo**

2021 – 2023 **M.Eng., Graduate School of Engineering, the University of Tokyo**
Thesis title: *Evaluation of Task-Oriented Learning Ability of Spiking Neural Networks under Excitation-Inhibition Interaction.*

2017 – 2021 **B.S., Department of Physics, Jilin University**
Thesis title: *Structural and Optical Properties of $Cs_2AgIn_{0.9}Bi_{0.1}Cl_6$ Nanocrystals Under High Pressure.*

Research Publications

Journal Articles

1. **B. Li**, T. Zheng, R. Otsuki, M. Sugino, K. Shimba, and K. Kotani, "Neural oscillation in low-rank snns: Bridging network dynamics and cognitive function," *Frontiers in Computational Neuroscience*, 2025, Accepted, to appear.
2. R. Otsuki, **B. Li**, M. Sugino, K. Shimba, K. Kotani, and Y. Jimbo, "Application of parallel reservoir computing to the prediction of local field potential," *Advanced Biomedical Engineering*, vol. 14, pp. 15–22, 2025. DOI: 10.14326/abe.14.15.
3. T. Zheng, **B. Li**, Y. Jimbo, K. Shimba, and K. Kotani, "Noise enhances excitability of a neuronal population with heterogeneous excitatory neurons," *IEEJ Transactions on Electrical and Electronic Engineering*, Jul. 16, 2024. DOI: 10.1002/tee.24166.
4. **B. Li**, R. Iguchi, H. Noyama, T. Zheng, K. Kotani, and Y. Jimbo, "The effects of biological constraints on the performance of spiking neural networks," *IEEJ Transactions on Electronics, Information and Systems*, vol. 143, no. 7, pp. 634–640, 2023. DOI: 10.1541/ieejeiss.143.634.
5. H. Noyama, Y. Yoshikai, **L. Bin**, R. Iguchi, K. Kotani, and Y. Jimbo, "Analysis of a neural population model for interaction of LFP and individual action potential," *IEEJ Transactions on Electrical and Electronic Engineering*, vol. 18, no. 4, pp. 597–604, 2023. DOI: 10.1002/tee.23764.

Conference Proceedings

1. **B. Li**, T. Zheng, R. Otsuki, *et al.*, "A study with voltage dependent theta neuron model and low-rank connectivity in go-nogo tasks toward biologically plausible rnns," in *The 3rd RIKEN CBS Co-Creation International Conference*, Wako, Saitama, Japan, Jan. 16, 2025.
2. **B. Li**, T. Zheng, K. Kotani, K. Shimba, and Y. Jimbo, "Functional spiking recurrent neural networks under biological constraints of neurotransmitter receptors," in *EMBC* 2024, Orlando, USA, Jul. 18, 2024.

Skills

Languages English(Fluent, TOFEL 92), Mandarin Chinese (Native), Japanese (Fluent, N1).

Coding Python, Matlab, LaTeX, Pytorch

Miscellaneous Experience

Awards and Achievements

2024 **Research Fellowship for Young Scientist**, Japan Society for the Promotion of Science.

2023 Paper Encouragement Award from the Journal of the Electronics, Information and Systems, The Institute of Electrical Engineers of Japan (IEEJ).

Best Presentation Award, The Japan Society for Precision Engineering (JSPE).

2023 **UTokyo Todai Fellowship**, the University of Tokyo.

Summer School Experiences

2024 **Computational and Cognitive Neuroscience Summer School**, Cold Spring Harbor Asia.