JINGCHENG SHI

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EDUCATION

Columbia University in the City of New York **New York, NY** | *August 2022 – Present*
GPA: 4.0/4.0 Ph.D in Neurobiology and Behavior, advisor: Attila Losonczy, MD, Ph.D - expected June 2027, M.Ph. in Neurobiology and Behavior - expected June 2025, M.A. in Neurobiology and Behavior - October 2024
Coursework: Survey of Neuroscience I: Molecular and Cellular Neuroscience, Survey Neuroscience II: Developmental and Systems Neuroscience, Analysis for Neuroscientists, Statistical Machine Learning

University of California, Berkeley **Berkeley, CA** | *August 2017 – May 2020*
GPA: 3.7/4.0 B.A. Molecular and Cell Biology, Neurobiology
Coursework: Intro to Computer Programming for Scientists, Structure and Interpretation of Computer Programs

SKILLS

Programming: Python, scikit-learn, Numpy, Tensorflow, Pandas, PyTorch, Matplotlib, Seaborn, SciPy, MATLAB
Framework and Tools: Git, Jupyter, Anaconda

EXPERIENCES

Graduate Research Assistant with Dr. Attila Losonczy | Columbia University **New York, NY** | *January 2023 – Present*
- Developed and implemented **2P-NucTag** approach to identify transcriptomic signatures of functionally relevant neuronal populations in the mouse hippocampus.
- Conducted computational modeling to analyze neuronal network dynamics, contributing insights into hippocampal functionality.

Rotation Student with Dr. Larry Abbott| Columbia University **New York, NY** | *May – July 2023*
- Investigated dendritic dynamics and input-dependent response patterns in single neurons through computational approaches, applying quantitative models to analyze cellular responsiveness and adaptation.

Rotation Student with Dr. Christoph Kellendonk| Columbia University **New York, NY** | *August – December 2023*
- Analyzed roles of midbrain dopamine and acetylcholine signaling in mouse models during reversal learning tasks, applying neurocomputational modeling to assess learning and memory processes.

Research Technician / Junior Specialist / Lab Manager with Dr. Vikaas Sohal | University of California, San Francisco **San Francisco, CA** | *July 2020 – June 2022*
- Discovered the **rescuing effect of gamma entrainment (GENUS)** on cognitive flexibility impairments in a schizophrenia mouse model.
- Collaborated with Dr. Kathleen Cho to investigate **long-range prefrontal PV inhibition** effects on cognitive task activity, contributing to a Nature publication.

PROJECTS

Multi-Compartment Axon Model
- Developed and simulated a **multi-compartment model** of an axon using the Hodgkin-Huxley framework to study axonal dynamics and signal propagation.

Neural Population Decoding
- Simulated response patterns of interneurons within the cricket's cereal system, evaluating the accuracy of population decoding schemes for sensory inputs.

Maximizing Classification Accuracy in Multi-Layer Neural Networks
- Simulated a multi-layer neural network to estimate the maximum number of random input patterns that can be accurately classified, focusing on optimizing network architecture and hyperparameters for improved performance.

PUBLICATIONS

- **Jingcheng Shi** et al. 2P-NucTag: on-demand phototagging for molecular analysis of functionally identified cortical neurons. bioRxiv 2024.03.21.586118 (2024) doi:10.1101/2024.03.21.586118. **Under Review at Nature**.
- Cho, K. K. A., **Shi, J.**, Phensy, A. J., Turner, M. L. & Sohal, V. S. Long-range inhibition synchronizes and updates prefrontal task activity. **Nature** 1–7 (2023) doi:10.1038/s41586-023-06012-9.
- **Jingcheng Shi**, Aarron J. Phensy, & Vikaas S. Sohal. Rhythmic auditory stimulation rescues cognitive flexibility in mutant mice with impaired gamma synchrony. bioRxiv 2021.11.15.468681 (2021) doi:10.1101/2021.11.15.468681.