

CHING FANG

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EDUCATION

Columbia University Aug 2019-Sept 2024
PhD in Neuroscience, at the Theoretical Neuroscience Center; NSF GRFP 2019
Advisors: Larry Abbott, Dmitriy Aronov

University of California, Berkeley December 2018
B.A. in Computer Science, B.A. in Molecular & Cell Biology (Honors)

RESEARCH EXPERIENCE

Postdoctoral Researcher | Kempner Institute at Harvard University Oct 2024 - present
Interpreting in-context reinforcement learning strategies developed by transformers meta-trained on animal navigation tasks. Work advised by Kanaka Rajan.

Machine Learning Research Intern | Apple April 2024 - Sep 2024
Building foundation models for multimodal time series of healthcare data.

PhD Researcher | Columbia Theoretical Neuro. Center Aug 2019 - Sep 2024
Topics: transformer-like models of memory in the brain; deep RL models to simulate representation learning in the brain. Work advised by Kim Stachenfeld, Larry Abbott, Dmitriy Aronov.

Research Assistant | UC Berkeley Electrical Engineering May 2018 - Aug 2019
Brain-machine interfaces, interpretable ML models. Work advised by Jose Carmena.

CONFERENCE AND WORKSHOP PAPERS

Fang, C., Stachenfeld, K. [Predictive auxiliary objectives in deep RL mimic learning in the brain.](#) *ICLR*, 2024. (Accepted as oral, top 1.2% of submissions)

Fang, C., Sandino, C., Mahasseni, B., Minxha, J., Pouransari, H., Azemi, E., Moin, A., Zippi, E. [Promoting cross-modal representations to improve multimodal foundation models for physiological signals.](#) *NeurIPS Advances in Medical Foundation Models (AIM-FM) Workshop*, 2024.

Fang, C.*, Shook, E.*, Buck, J.*, and Horga, G. [Predictive Coding Dynamics Improve Noise Robustness in A Deep Neural Network of the Human Auditory System.](#) *NeurIPS Shared Visual Representations in Humans and Machines (SVRHM) Workshop*, 2022. (Accepted as oral)

Fang, C., Aronov, D., Abbott, L., and Mackevicius, E. [Biological Mechanisms for Learning Predictive Models of the World and Generating Flexible Predictions.](#) *ICML Beyond Bayes Workshop*, 2022. (Accepted as oral)

Tyulmankov, D.*, **Fang, C.***, Vadaparty, A., and Yang, G.R. [Biological key-value memory networks.](#) *NeurIPS*, 2021.

JOURNAL PAPERS

Fang, C.*, Lindsey, J.*, Abbott, L. F., Aronov, D., Chettih, S. [Barcode activity in a recurrent network model of the hippocampus enables efficient memory binding.](#) *eLife*, 2025.

Fang, C., Aronov, D., Abbott, L. F., Mackevicius, E. [Neural learning rules for generating flexible predictions and computing the successor representation.](#) *eLife*, 2023.

Vendrell-Llopis, N., **Fang, C.**, Qu, A., Costa, R., Carmena, J. [Diverse operant control of different motor cortex populations.](#) *Current Biology*, 2022. (* equal contribution)

TALKS

Yale NeuroAI Journal Club	New Haven, March 2025
International Conference on Learning Representations (ICLR) Main conference; top 1.2% of submissions	<i>Vienna, May 2024</i>
Computational and Systems Neuroscience (COSYNE) Main conference; top 3% of submissions	<i>Lisbon, March 2024</i>
Computational and Systems Neuroscience (COSYNE) Learning rules workshop Invited talk	<i>Lisbon, March 2024</i>
DeepMind NeuroLab Workshop	<i>London, March 2024</i>
Flatiron Institute Junior Theoretical Neuroscientists Workshop	<i>NYC, June 2023</i>
National Institute of Neurological Disorders and Stroke T32	<i>Philadelphia, June 2023</i>
DeepMind NeuroLab Workshop	<i>London, Feb 2023</i>
Max Planck UCL Centre for Computational Psychiatry	<i>London, Feb 2023</i>
NeurIPS SVRHM Workshop	<i>New Orleans, Dec 2022</i>
Cognitive Computational Neuroscience (CCN)	<i>San Francisco, Aug 2022</i>
Flatiron Institute Center for Computational Neuroscience	<i>New York, Aug 2022</i>
ICML Beyond Bayes Workshop	<i>Baltimore, July 2022</i>
Gatsby Tri-Center Meeting for Theoretical Neuroscience	<i>Jerusalem, June 2022</i>

SKILLS

Python, PyTorch, Slurm, Git