Xingjian Zhang
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Professional Summary

I am a computational neuroscientist with multiple peer-reviewed publications on top scientific journals. I specialize in data analysis and computational modeling using statistics and deep learning for insightful research, story telling and innovative problem-solving.

Education

Postdoctoral scholar | *University of California Los Angeles* *July 2020 – present*
- BBRF Young Investigator Award (Named Aramont Charitable Foundation Investigator) 2023

Ph.D. in Neuroscience | *University of Texas Souwestern Medical Center* *Aug 2014 – May 2020*
- Fine Science Tools neuroscience travel award 2017

B.S. in Biological Science | *Tsinghua University* *Aug 2010 – July 2014*
- Outstanding dissertation (ranked 1st) 2014
- Member of Tsinghua Talented Program in Life Sciences

Research Experience

Postdoctoral Scholar | *University of California, Los Angeles* *July 2020 –Present*
- Led a research project with Prof. Weizhe Hong and Prof. Jonathan Kao on neural computational structure of social behavior in animal and artificial intelligence agents
- Led a project on the social neural dynamics of autism mouse models that was awarded BBRF Young Investigator Grant

Graduate research assistant | *University of Texas Southwestern Medical Center* *August 2014 – May 2020*
- Led a project with Prof. Julian Meeks on the physiological and computational functions of a newly identified olfactory neuron
- Worked with a team to develop a novel technique and discovered a new family of pheromones and their receptors

Projects

Shared neural dynamics in interacting biological and AI systems | *MATLAB, PyTorch, Computational modeling, Deep RL*
- Established a computational framework to quantify social dynamics in extensive neuro-behavioral datasets
- Modeled social behaviors using multi-agent deep reinforcement learning environment
- Collected and analyzed a large neural imaging dataset ($>$ 65000 neurons, $>$ 15000 minutes) of freely interacting mice
- Quantified mouse posture using convolutional neural network and generated a dataset containing 75 behavioral features

Neurophysiology study of accessory olfactory system (AOS) | *MATLAB, 2-photon imaging, Electrophysiology, Light-sheet miscroscopy*
- Studied chemosensory tuning of a novel interneuron subtype using neural recording on a specialized *ex vivo* prep
- Contributed to the discovery of bile acids as a novel pheromone family and their chemoreceptors

Annotator | *Python, PySide, GUI Design*
- Python software to label and manage multi-track episodic event sequences of videos

Feat2Annot | *Pytorch, LSTM, Attention, Beam search, CUDA, Pandas*
- Seq2Seq encoder-decoder LSTM with global attention to 'translate' posture tracking sequences into behavior annotation

CellScreener | *Python, Pytorch, PySide, Scikit-learn, CNN, CUDA*
- CNN assited GUI application to score the quality of calcium imaging signal

Publications

- **Zhang, X.**, Phi, N., Kao, J., Hong, W. et al. Shared neural dynamics across interacting biological or artificial intelligence systems. (in prep)
- **Zhang, X.** and Meeks, J.P. Paradoxically sparse chemosensory tuning in broadly-integrating external granule cells in the mouse accessory olfactory bulb. *Journal of Neuroscience* 2020
- Doyle, W.I., Dinser, J.A., Cansler, H.L., **Zhang, X.**, Meeks, J.P. et al. Faecal bile acids are natural ligands of the mouse accessory olfactory system. *Nat Commun* 2016
- Wong, W. M., Cao, J., **Zhang, X.**, Meeks, J. P. et al. Physiology-forward identification of bile acid sensitive vomeronasal receptors. *Science Advances* 2020

Services

Reviewer of 2024 COSYNE | *Computational and Systems Neuroscience Conference* *Nov 2023*
- Invited to review abstracts of computational system neuroscience researches

Board member of Seminars by Young Neuroscience Community Scholars | *UCLA* *2023-2024*
- Organized events inviting young neuroscientists from other institutes to share they research with UCLA community

Technical Background

Professional Skills : Statistics, Linear Algebra, Signal processing, Analytical modeling, Natural Language Processing, Deep learning
Programming Languages : Python, MATLAB, C/C++, R
Libraries : PyTorch, PyQt, Pandas, Numpy, Scikit-learn, SciPy, Matplotlib, Seaborn, ggplot2

Other

Academic Conference Presentations : SFN 2019, SFN 2017, AChemS 2019, AChemS 2017
Languages : Mandarin (Native), English (Fluent)
Coursera Certificates Probabilistic Graphical Models, Algorithms, Data Structure, Deep Learning