# Yirong Xiong

https://afurrybear.com

Email : xiong.yirong.xyr@gmail.com

GitHub : https://github.com/AFurryBear


## Education

**Ph.D in Neuroscience** **2024 –**

*Johns Hopkins University* *Baltimore, USA*

**M.Sc in Neural Information Processing** **2021 – 2023**

*Universität Tübingen* *Tübingen, Germany*

- Summer school: The Computational Summer school on Modeling Social and collective behavior (COSMOS)

**M.Sc in Psychology** **2018 – 2021**

*Beijing Normal University* *Beijing, China*

- Summer school: Computational Neuroscience (neuromatch academy 2021)

**B.Sc in Information Management and Information System** **2014 – 2018**

*Sun Yat-Sen University* *Guangdong, China*

## Research Experience

**The Zanvyl Krieger Mind/Brain Institute, Prof. James Knierim** **2024 –**

*Neural mechanisms of landmark recalibration in retrosplenial cortex* *Baltimore, USA*

**Max Planck Institute for Brain Research, Prof. Gilles Laurent** **2023 – 2024**

*Neural mechanisms of camouflaging in cuttlefish* *Frankfurt, Germany*

- Design electrophysiological experiments on texture encoding in cuttlefish visual system.
- Analyze the network structure and properties of the medulla in the optic lobe of cuttlefish.

**Max Planck Institute of Animal Behaviour, Dr. Vivek Hari Sridhar** **2023 –**

*Decision-making in spatial navigation* *Konstanz, Germany*

- Simulated goal-directed navigation trajectory using ring attractor model.
- Study how stimuli uncertainty and computational noise modulate bifurcation dynamics.

**Cluster of Excellence "Machine Learning", Dr. Charley Wu** **2022 –**

*Rate-distortion theory as a model of human selective memory* *Tübingen, Germany*

- Designed an online compositional bandit experiment for representation learning.
- Designed an online experiment for value-based memory.
- Simulated attention-based reinforcement learning model to study expertise effect on value-based memory.

**Institute for Neurobiology, Prof. Andrea Burgalossi** **2023**

*Electrophysiological diversity of head direction neurons in thalamus and presubiculum* *Tübingen, Germany*

- Used unsupervised learning to cluster head direction cells based on neural activities.

**Department of Computer Science, Dr. Anna Levina (Martius)** **2022 – 2023**

*Dissociated aperiodic and periodic neural dynamics during attention* *Tübingen, Germany*

- Dissociated aperiodic and periodic neural dynamics using LFP data from V1 and V4 in spatial visual attention task.

**Max Planck Institute For Ornithology, Dr. Daniela Vallentin** **2022**

*Juvenile song detection* *Seewiesen, Germany*

- Developed juvenile song detection pipeline using DAS.
- Developed interactive tool to check annotation efficiently.

**Institute for Neurobiology, Dr. Lena Veit** **2021 – 2022**

*UMAP labeling tool* *Tübingen, Germany*

- Developed a Web-based tool for visualizing and relabeling syllables (Github link).

*Pitch learning model project*

- Disentangled factors in context-based pitch learning using regression models.

**State Key Laboratory of Cognitive Neuroscience and Learning, Dr. Gaolang Gong** **2018 – 2021**

*Corpus Callosum Topography Based on dMRI (ccmapping.org)* *Beijing, China*

- Developed a track-generating and filtering pipeline and obtained fibers passing through the corpus callosum and connecting left and right hemispheres.
- Generated individual corpus callosum topography (HCP-S1200), and established group-averaged validated topographic maps with different weighting methods.
- Developed a Web-based tool to provide full and interactive access to the topographic result.

*Asymmetries of planum temporale predict lateralization of auditory-language processing*

- Labelled planum temporale manually and draw masks of relative ROIs.

## Papers

Qin, Peipei, Bi, Qiuhui, Guo, Zeya, Yang, Liyuan, Li, HaoKun, Li, Peng, Liang, Xinyu, Luo, Junhao, Kong, Xiangyu, **Xiong, Yirong**, Sun, Bo, Ocklenburg, Sebastian, and Gong, Gaolang. "Microstructural Asymmetries of the Planum Temporale Predict Functional Lateralization of Auditory-Language Processing". In: *eLife* 13 (2024). DOI: 10.7554/eLife.95547.1.

**Xiong, Yirong**, Yang, Liyuan, Wang, Changtong, Zhao, Chenxi, Luo, Junhao, Wu, Di, Ouyang, Yiping, Thiebaut de Schotten, Michel, and Gong, Gaolang. "Cortical Mapping of Callosal Connections in Healthy Young Adults". In: *Human Brain Mapping* 45.3 (2024). DOI: 10.1002/hbm.26629.

Yang, Liyuan, Zhao, Chenxi, **Xiong, Yirong**, Zhong, Suyu, Wu, Di, Peng, Shaoling, Schotten, Michel Thiebaut de, and Gong, Gaolang. "Callosal fiber length scales with brain size according to functional lateralization, evolution, and development". In: *Journal of Neuroscience* 42.17 (2022). DOI: 10.1523/JNEUROSCI.1510-21.2022.

Bistere, Linda, Gomez-Guzman, Carlos, **Xiong, Yirong**, and Vallentin, Daniela. "Female calls promote song learning in male juvenile zebra finches". 2024. DOI: 10.1038/s41467-024-53251-z.

## Conferences & Workshops

Evans, Dominic, Karimi, Ali, Elmaleh, Margot, Jiang, He, **Xiong, Yirong**, Medeiros, Sylvia, Gerhardt, Ben, Rencken, Simone, Georgiades, Sofia, and Laurent, Gilles. "Visual coding in Sepia officinalis". In: *Cephalopod Neuroscience Conference*. 2024.

**Xiong, Yirong**, Blanco-Hernandez, Eduardo, Balsamo, Giuseppe, and Burgalossi, Andrea. "Electrophysiological diversity of head direction neurons revealed by t-SNE multidimensional embedding". In: *Tübingen Systems Neuroscience Symposium*. 2023.

**Xiong, Yirong**, Moneta, Nir, Bányai, Mihály, and Wu, Charley M. "Selective memory for reward-relevant features is modulated by expertise during reward learning". In: *Conference on Cognitive Computational Neuroscience*. 2023.

**Xiong, Yirong**, Moneta, Nir, Nagy, David, Bányai, Mihály, and Wu, Charley M. "Selective memory for reward-relevant features is modulated by expertise during reward learning". In: *Learning and Decision-Making Workshop*. 2023.

**Xiong, Yirong** and Sridhar, Vivek H. "Understanding the Influence of Uncertainty and Noise on Spatial Decision Dynamics". In: *Conference on Cognitive Computational Neuroscience*. 2024.

**Xiong, Yirong**, Yang, Liyuan, Zhao, Chenxi, Luo, Junhao, Wu, Di, and Gong, Gaolang. "A population-based online interactive atlas of human brain callosal connectivity." In: *Organization for Human Brain Mapping (OHBM) Annual Meeting*. 2021.

## Honors & Awards

**IMPRS stipends** (monthly stipend awarded by Max Planck Institute) – 2021
**The First Prize Academic Scholarship of Beijing Normal University** – 2020 & 2019
**Scientific Research Contributions Scholarship of Beijing Normal University** – 2019
**Freshman Scholarship of Beijing Normal University** – 2018

## Skills

**Programming Languages**: Python, JavaScript, SQL, HTML/CSS, Stan, MATLAB, R
**Neuroscience Tools**: Psychtoolbox, Kilosort, FreeSurfer, FSL
**Languages**: Mandarin(native), English(fluent)

## Hobbies

Electronic keyboard, marathon running, birdwatching, baking.