Yirong Xiong

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Education

Universität Tübingen **2021 – present**
M.Sc in Neural Information Processing *Tübingen, Germany*

- Courses: Neural Dynamics, Introduction of Computational Neuroscience, Birdsong as a Model in Cognitive and Systems Neuroscience, Machine Learning, Signal Processing, Neural coding, Neurophysiology, Neural Experimental Technique, Sensory System, Functional Organization of Vertebrate CNS, Cognitive Map

Beijing Normal University **2018 – 2021**
M.Sc in Psychology *Beijing, China*

- Courses: Computational Neuroscience (neuromatch academy 2021), Nerve Interface, Brain Imaging Data Modeling

Sun Yat-Sen University **2014 – 2018**
B.Sc in Information Management and Information System *Guangdong, China*

- Courses: SQL, Data Visualization, Linear Algebra, Advanced Mathematics, Discrete Mathematics, Statistics for Management

Research Experience

Institute for Neurobiology, Dr. Andrea Burgalossi **2023 – present**
Morphology and activity of head direction cells *Tübingen, Germany*

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.

Cluster of Excellence "Machine Learning", Dr. Charley Wu **2022 – present**
rate-distortion theory as a model of human representation learning *Tübingen, Germany*

- Designed an online compositional bandit experiment for representation learning.
- Designed an online experiment for value-based memory.

Max Planck Institute For Ornithology, Dr. Daniela Vallentin **2022**
Juvenile song detection *Seewiesen, Germany*

- Designed juvenile song detection pipeline using DAS.
- Designed UMAP 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 using Mrtrix3. Obtained fibers passing through the corpus callosum and connecting left and right hemispheres.
- Generated individual corpus callosum topography based on HCP S1200 Database, and established group-averaged validated topographic maps with different weighting methods.
- Designed a Web-based tool to provide full and interactive access to the topographic result using Three.js, WebGL, and Node.js.

Asymmetries of planum temporale predict lateralization of auditory-language processing

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

School of Information Management, Dr. Daifeng Li **2018**
Effects of Different Machine Learning Methods on ADHD classification *Guangdong, China*

- Classified ADHD and control group using SVM, Logistic, CNN.

Papers

Yang, Liyuan, Chenxi Zhao, **Xiong, Yirong**, Suyu Zhong, Di Wu, Shaoling Peng, Michel Thiebaut de Schotten, and Gaolang Gong. "Callosal fiber length scales with brain size according to functional lateralization, evolution, and development". In: *Journal of Neuroscience* 42.17 (2022), pp. 3599–3610.

Xiong, Yirong, Liyuan Yang, Changtong Wang, Chenxi Zhao, Junhao Luo, Di Wu, Yiping Ouyang, Michel Thiebaut de Schotten, and Gaolang Gong. "Population-based cortical mapping of callosal connections in the human brain". Under review: *NeuroImage*, https://doi.org/10.21203/rs.3.rs-2210117/v1. (2022).

Conferences

Xiong, Yirong. "Population-based cortical mapping of callosal connections in the human brain". In: NeNa Conference (Neurowissenschaftliche Nachwuchskonferenz). 2022.

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

Honors & Awards

IMPRS stipends (monthly funding for IMPRS 5-Year MSc/PhD program) – 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, MATLAB
Brain Imaging Tools: FreeSurfer, FSL
Languages: Mandarin(native), English(fluent)

Hobbies

Electronic keyboard, marathon, birdwatching.