Xuefei Wang

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Education

Fudan University — *Shanghai, China*

B.S. in **Computer Science** — *Sep. 2015 - Exp. Jun. 2020*

- GPA: 3.62/4.0, Outstanding Student Scholarship

University of California, San Diego — *California, U.S*

Non-degree Exchange Student — *Sep. 2017 - Jan. 2018*

- GPA: 3.81/4.0

Research Experiences

Chinese Academy of Science (CAS) — *Shanghai, China*

PI: **Ninglong Xu** (Institute of Neuroscience) — *Jan. 2019 – present*

- Conducted projection-specific monosynaptic **rabies tracing** on Auditory Cortex
  - Designed the experiment with another lab member
  - Performed surgery and virus injection on 14 mice, collected and scanned 2000 brain slices
  - Profiled brain-wide input distribution to Cortical-Cortical and Cortical-Subcortical projecting neurons in Auditory Cortex
  - Working to quantify the input differences
- Built an **FPGA**-based sound generator device
  - Identified the need for **time-reliable and waveform-flexible** sound delivering system
  - Designed the module with the lab engineer
  - Coded independently for the FPGA and other chips
  - Completed the first version of the system, and working for a fully-functioned final version

New York University Shanghai (NYUsh) — *Shanghai, China*

PI: **Xing Tian** (Neural and Cognitive Sciences) — *Jul. 2018 – Sep. 2018*

- Developed an Electroencephalogram (EEG) **toolbox** based on topography
  - Identified the gap in Event Related Potential (ERP) research – lack of **temporal analysis**
  - Developed a topography-based method to capture the temporal information about ERP components
  - Employed cosine similarity matrix and edge detection techniques (from Computer Vision) to enhance the results' robustness to noise
  - Quantified temporal variance in single trials and to align trials with topography projection
  - Implemented the above two methods into an open-source toolbox, and tested its validity with empirical datasets
- Compared **semantic representation** in human brain and in Nature Language Processing (NLP) models
  - Processed EEG Event Reltaed Potential (ERP) data from a two-word semantic priming study
  - Extracted semantic distances from NLP word embedding vectors
  - Analyzed semantic representation correlation between the brain and the machine with the **spatial-temporal clustering** method

University of California, San Diego (UCSD) — *California, U.S*

PI: **Douglas Nitz** (Cognitive Science) — *Dec. 2017 – Feb. 2018*

- Analyzed the **spatial tuning** of **Subiculum**
  - Processed behavior and multiple single-unit recording data from 8 rats, 1044 neurons from a spatial working memory task
  - Employed a novel machine learning method (**Decision Tree**) to quantify the neural correlates on the single neuron level
  - Demonstrated the differences of information coding across brain regions (CA1, Subiculum, Parietal Cortex)
- Investigating task-phase specific **alterations** in theta-frequency spike **phase precession** of Subiculum

Manuscript in Progress

Wang, X., Zhu, H.,& Tian, X.(2019) Revealing the Temporal Dynamics in Non-invasive Electrophysiological Recordings with Topography-based Analyses. bioRxiv doi: 10.1101/779546

Skills

Laboratory	Surgery on rodents (virus injection, head bar installation), handling and behavior training
Coding	Python (Proficient), Matlab (Proficient), C/C++, Java, SQL, R, Unix shell scripting
Hardware	Hardware Description Language (Verilog/System verilog, FPGA, Arduino, Raspberry Pi
Software	Git, Data/Code Management, Simulation (Neuron, PyNN), Docker, Virtual Machine, Windows Subsystem for Linux
Analysis	Machine learning, Statistics (Permutation test, Monte Carlo simulation, Generalized Linear Model)
Presentation	Data visualization (Python/Matlab), Vector graphics processing (Photoshop, Inkscape), LaTeX
Languages	Chinese, English (TOFEL:107)

Projects

Algorithm	Implemented algorithms from a scientific paper (linear multivariate pattern transformations in fMRI data)
Modeling	Investigated the influence of different STDP mechanism on phase coding with PyNN/Neuron Simulator

Leadership Activities

Fudan Qiuye Subtitle Group
Shanghai, China

Team Recruiter — *Sep. 2016 - Sep. 2017*

- Organized and recruited 70 members to translate and create subtitles for videos to popularize scientific knowledge to the public

Fudan Biology Nonprofit Organization
Shanghai, China

Volunteer Coordinator — *Feb. 2016 - Jul. 2017*

- Monitored and maintained off-campus voluntary programs, collaborated with institutes including Hospice Care Center, Shanghai Sea Museum, Shanghai Zoo

Fudan Architecture and Art Association
Shanghai, China

Program Manager — *May. 2016 - Jan. 2018*

- Organized Seminars and Workshops, invited professors and experts on Architecture, to promote the knowledge of architecture

Interests

- Pipa (Traditional Chinese musical instrument)
- Climbing (Bouldering/Top-roping/Ice-climbing)
- Hiking/Outdoors