

Curriculum Vitae

Chen, Ruiqi

Peking University
Intelligent Science and Technology

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EDUCATION

Bachelor of Science | Peking University, Beijing, China 2017.9 - 2021.7

- Major: Intelligence Science and Technology, Department of Machine Intelligence
- Overall GPA: 3.56/4.0 (84.7/100) Last term's GPA: 3.72/4.0 (87.8/100)
- English skills: GRE 338 (AW 4), TOEFL 106 (Speaking 24), CET6 618

RESEARCH EXPERIENCE

IDG/McGovern Institute for Brain Research | Tsinghua University 2019.7 - Present

- **Advisor:** Prof. [Bo Hong](#) (PI)
- **EEG Oddball Experiment ([Link](#))**
 - Designed and performed an EEG oddball experiment with Psychtoolbox
 - Conducted event-related potential (ERP) analysis with EEGLAB
 - Successfully replicated the MMN/P300 effect
- **EEG Functional-Connectivity-Based Microstates Analysis ([Link](#))**
 - Recorded long-time EEG signal from 5 subjects resting/listening to a story/listening to music, with eyes open or closed
 - Conducted k-means clustering based on voltage distribution or functional connectivity pattern
 - Analyzed results with mathematic tools including dynamic general linear model, transition matrix, multidimensional scaling, unsupervised learning, and silhouette evaluation ([Codes](#))
 - Discovered the functional-connectivity-based equivalent of the classic EEG microstates
 - Established the link between microstates and activity of the Default Mode Network (DMN)
 - Explored the interaction between alpha oscillation and microstates' internal dynamics
 - Results will be summarized and submitted soon after further analysis

IDG/McGovern Institute for Brain Research | Peking University 2019.3 - Present

- **Advisor:** Prof. Huan Luo (PI)
- **EEG data analysis practice ([Link](#))** 2019.3
 - Implemented an inverted encoding model based on an EEG visual working memory experiment
 - Reconstructed the tuning curve for the orientation of two Gabor stimuli

- Practiced MATLAB programming, basic EEG data processing, and multivariate pattern analysis
- **Project: The representation of time and order in working memory** 2019.4 – Present
 - Reviewed over 40 articles about the temporal organization in working memory ([Link](#))
 - Designed an EEG experiment to explore the neural mechanism underlying the manipulation of mnemons in auditory working memory and collected data from 16 subjects ([Link](#))
 - Replicated (Albouy et al., 2017) with modifications
 - Working on the data through ERP and time-frequency analysis currently

PROGRAMMING PROJECTS

Course Project: Visualization of NSFC Funding 2018 ([Link](#)) 2019.10

- Visualized the *National Natural Science Foundation of China* (NSFC) funding allocation with SVG
- Revealed the hidden disparity in NSFC funding allocation among different higher education institutions and among different regions in China
- Practiced front-end programming (HTML/CSS/Javascript, all self-taught within one week)
- Acquired visualization skill (with D3.js) for high-dimensional big data (e.g., EEG signal) analysis

ACTIVITIES

Summer Program for Neural and Cognitive Science | Tsinghua University 2019.8

- Learnt about the principles, methodology and frontiers of neuroscience ([Details](#))

RELEVANT COURSES

Probability Theory and Statistics (90/100)

- Basic statistical tools including estimation, hypothesis testing, ANOVA, and regression

Experimental Psychology (90/100)

- Experiment design, psychophysical methods, sensation and perception, memory, etc.

Computational Perception and Scene Analysis (86/100)

- Physiological, psychological and computational models for visual and auditory processing

Practice of Data Structure and Algorithm (87/100)

- C++ implementation of graph algorithms including network flow, shortest path, interval tree, etc.

SKILLS

- **Programming:** C/C++, Python, MATLAB, HTML/CSS/Javascript, SVG (with D3.js)
- **EEG experiment:** Psychtoolbox programming, EEG recording
- **EEG data analysis:** ERP, spectrotemporal analysis, multivariate pattern analysis, dynamic general linear model, unsupervised clustering, phase coupling analysis