Ruien Wang

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E-mail: sb82402@um.edu.mo **GitHub**: github.com/rainneuro

Personal website: https://rainneuro.github.io/ **Lab website**: https://andlab-um.com/

Education

University of Macau ***Aug 2018 - June 2022***

Bachelor of Social Sciences in Psychology Macau SAR, China

Research Experience

Center for Cognitive and Brain Sciences, University of Macau ***Aug 2020 - present***

Supervisor: Prof. Haiyan Wu

The abnormalities of resting-state EEG microstates in probable REM sleep behavior disorder (Cooperation with West China Hospital)

Oct 2020 – June 2021

- Independently conducted the resting-state EEG preprocessing and microstate analysis in MATLAB & Statistics by *R* language
- Manuscript writing and editing

The abnormal electrophysiological signatures of patients with obstructive sleep apnea syndrome (Cooperation with West China Hospital)

Oct 2020 – July 2021

- Designed a visual-search EEG paradigm
- Independently conducted the task-EEG preprocessing and both event-related potential analysis and time-frequency analysis in MATLAB & Statistics by *R* language
- Manuscript writing and editing

How facial features influence the perception of male faces: evidence from NLP analysis on social media data (Course project of *Artificial Intelligence & Human Cognition*)

May 2021

- Independently conducted the web scrapping of social media data
- Conducted the NLP analysis and sentiment analysis on social media data using *Python*

The multi-modal representation of negative emotion experience under virtual reality (ongoing project)

March 2021 – present

- Independently built a primary platform for EEG and psychophysiology simultaneous data collection under virtual reality
- Collected the EEG, psychophysiological data, and psychometric data on neuroticism, empathy, and mentalizing
- Independently used the Inter-subject Representational Similarity Analysis (IS-RSA) to reveal the emotion representation across subjects and the correlation with psychometric data by using *Python*
- Implemented EEG variation analysis to reveal a neural index for emotional variability

An EEG & Mouse tracking dataset for assessing the brain dynamic of binary choice in the human brain

Aug 2020 – Apr 2021

- EEG paradigm design and programming in *Psychopy*
- Collected the 128 channel EEG data
- Manuscript writing and editing

The neural mechanism of motivated dishonesty

Sept 2020 – Apr 2021

- Collected the 3T fMRI data
- Manuscript writing and editing

The effect of oxytocin on modulating self-other distinction

Aug 2020 – Oct 2021

- Manuscript writing and editing

Participated in the Chinese translation of the book *Computational Modeling of Cognition and Behavior*

Aug 2020 – Sep 2021

- Chinese translation and proofreading

Neural computation of personal space and its influence on dynamic social navigation (ongoing project)

June 2021 – present

- Conceptualization on personal space and social navigation
- Personal space learning and social navigation task design and programming in *Psychopy*

Intraindividual variability in reaction time and white matter integrity (ongoing project)

Oct 2021 - present

- Diffusion tensor imaging (DTI) analysis by using *the DIPY* package in *Python*

The social navigation in virtual reality environment (ongoing project)

June 2021 – present

- Conceptualization of navigation in the social context under virtual reality
- Virtual reality task design and programming in *Unity*

Center for Cognitive and Brain Sciences, University of Macau *Oct 2019 - May 2020*

Supervisor: Prof. Zhen Yuan

Investigating the neural pattern of morphological constraints in reading Chinese compound word: An EEG-fNIRS fusion study

Nov 2019 – May 2020

- Collected the EEG-fNIRS fusion data
- Manuscript writing and editing

Department of Psychology, University of Macau *Jan 2019 - Sep 2019*

Supervisor: Prof. Wei Deng

- Research assistant

Publications

- Peng, A[#]., **Wang, R[#].**, Huang, J., Wu, H., & Chen, L. Abnormalities of resting-state

electroencephalographic microstate in REM sleep behavior disorder. *Frontiers in Human Neuroscience*, 607. **doi:** https://doi.org/10.3389/fnhum.2021.728405

- Wang, Y., **Wang, R.**, & Wu, H. (2021). The role of oxytocin in modulating self-other distinction brain: a pharmacological fMRI study. *bioRxiv*. **doi:** https://doi.org/10.1101/2021.10.17.463805

Submitted manuscripts

- **Wang, R.**[#], Peng, A.[#], Huang, J., Chen, L. & Wu, H. Electrophysiological signature in patients with obstructive sleep apnea syndrome: evidence from visual-search task. *Clinical Neurophysiology.* [under review]
- Chen, K., **Wang, R**., Huang, J., Gao, F., Qi, Y., Yuan, Z., Wu, H. A resource for assessing dynamic binary choices in the adult brain using EEG and mouse-tracking. *Scientific Data*. [under review]
- Gao, F., **Wang, R.**, Paulo, Armada., Wang, M., Li, H., Yuan, Z. How the brain encodes the morphological constraints during Chinese word reading: An fNIRS-EEG study. *Cortex.* [under review]

Manuscripts in preparation

- Neural and psychophysiological Intersubject representational similarity analysis reveals individual variation for negative emotion experience under virtual reality.
- Dissecting social brain contributions to dishonesty adaptation and consistency considerations.

Presentation

Center for Cognitive and Brain Sciences, University of Macau ***Sep 2021***

- Workshop on psychophysiological data processing in *Python*
- Workshop on EEG preprocessing pipeline for MATLAB

Center for Cognitive and Brain Sciences, University of Macau ***Jun 2021***

- CCBS NeuroTalk: Abnormalities of resting-state electroencephalographic microstate in REM sleep behavior disorder

Center for the Cognitive Science of Language, Beijing Language and Culture University ***Dec 2020***

- Investigating the neural pattern of morphological constraints in reading Chinese compound words using simultaneous EEG-fNIRS recording

Skills

- **Programming**: Python, MATLAB, R, Unity (C#)
- **Data acquisition**: EEG, 3T fMRI, fNIRS, Eye-tracking, BIOPAC, Virtual-reality technique
- **Neuromodulation**: TMS, TDCS
- **Data Analysis**: EEG, fMRI, fNIRS, DTI, Multi-modal physiological data
- **Language**: Chinese (native), English (proficient)

Courses

- Cognitive neuroscience, computational neuroscience, computational psychiatry, neuroeconomics
- Artificial intelligence & human cognition, machine learning, deep learning, reinforcement learning

Research Interests

- Social cognitive neuroscience: Emotion, Fear learning, Social Space, Decision-making
- Computational Neuroscience: Reinforcement learning, Bayesian modeling

Awards

Faculty of Social Sciences, University of Macau ***Aug 2018-present***

Student on Dean's Honor list for:

- 2018/2019 academic year
- 2019/2020 academic year
- Second semester of 2020/2021 academic year

Conferences and Exchange Experience

The 8th National Conference on research and application of EEG and neuroimaging, Chong Qing, China

April 2021

- Attended a series of workshops on various neuroimaging and statistics methods
- Attended the series talks on cognitive neuroscience

Academic exchange to State key laboratory of Cognitive Neuroscience and Learning, Beijing Normal University, Beijing China

Jun 2021 – July 2021

- Helped to collect the behavioral data
- Conducted fMRI data processing and functional connectivity analysis
- Conducted psychophysiological data analysis

References

- **Prof. Haiyan Wu (Primary Supervisor), University of Macau, China**

  E-mail: haiyanwu@um.edu.mo

- **Prof. Zhen Yuan, University of Macau, China**

  Email: zhenyuan@um.edu.mo

- **Prof. Wei Deng, University of Macau, China**

  Email: wdeng@um.edu.mo