KUN CHEN

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EDUCATION

Ph.D. in Psychology **Aug. 2021 - Present**
University of Macau *Macau SAR, China*

B.S. in Computer Science and Technology **Sept. 2015 - June 2019**
Huazhong University of Science and Technology *Wuhan, China*

RESEARCH INTERESTS

- Exploring social decision-making processes using computational models that combine behavioral and fMRI data.
- The neural representation of semantic/knowledge in the human brain and the differences in semantic representation between human and machine.
- Developing brain-inspired natural language processing (NLP) models instead of purely statistical models to make the model learn the language as humans.

PUBLICATIONS

- **Chen, K.**, Wang, R., Huang, J., Gao, F., Qi, Y., Yuan, Z., Wu, H*. (under revision). A resource for assessing dynamic binary choices in the adult brain using EEG and mouse-tracking. *Scientific Data*.
- Wu, H*., Cao, S., Bai, C., **Chen, K.**, & Mobbs, D*. (2021, October 10). Moral by default? The dynamic tradeoffs between honesty and self-interest. https://doi.org/10.31234/osf.io/kr4pw

MANUSCRIPTS

- Li, H., Pang, L., **Chen, K.**, Dean, M., & Wu, H*. (in prep.). The Unrestful Brain: Alterations in Resting Functional Connectivity after Moral Decisions.

RESEARCH EXPERIENCE

Probing Individuals's Morality under Different Possibilities of Lying **Jan. 2022 - Present**
Individual Research, Affective, Neuroscience and Decision-making Lab *Macau, China*

- Designed a novel paradigm to investigate individuals' dishonest behavior when they know different probabilities of events occurring.

Oxytocin Modulates Behavioral Variability and Neural Variability **Jan. 2022 - Present**
Individual Research, Affective, Neuroscience and Decision-making Lab *Macau, China*

- Built behavioral Drift-difussion model to calculate behavioral variability.
- Extracted functional connectivity of fMRI and calculated the neural variability based on modular change rate of the functional network.

Resting-state fMRI of Social Brain Regions Predicts Dishonesty **Nov. 2021 - Mar. 2022**
Participant, Affective, Neuroscience and Decision-making Lab *Macau, China*

- Implemented connectome-based predictive modeling (CPM) to predict dishonesty score baesd on resting-state fMRI functional connectivity.

Resting-state fMRI Change Before and After Dishonesty Experiment **Oct. 2021 - Present**
Participant, Affective, Neuroscience and Decision-making Lab *Macau, China*

- Methodology discussion and data visualization.

A Dataset for Binary Decision-Making using HD-EEG and Mouse-Tracking **Oct. 2020 - Present**
Research Assistant, Affective, Neuroscience and Decision-making Lab *Zhuhai, China*

- Designed and programmed mouse-tracking experiments under High-density electroencephalography (HD-EEG) equipment.
- Behavioral data (response time, accuracy etc.) and mouse trajectory analysis with Python.
- Proposed a HD-EEG data preprocessing pipeline with Python and MATLAB, respectively.
- Conducted ERP, time-frequency, and microstate analysis of EEG data.
- Published BIDS dataset with easy to use data and code.

Weibo Public Opinion Analysis during the Epidemic **Apr. 2020 - June 2020**
Research Assistant, Affective, Neuroscience and Decision-making Lab *Zhuhai, China*

- Crawled and cleaned post/folloing/follower information of Weibo users during COVID-19.
- Conducted sentiment classification of the posts and analyzed the emotion change during the epidemic.

Text Representation and Machine Comprehension **Feb. 2017 - Sept. 2018**
Intern, China Mobile TD Joint Innovation Laboratory *Wuhan, China*

- Data clean, QANet model implementation and training for dialogue generation.
- Attended *The Second Evaluation Workshop on Chinese Machine Reading Comprehension* (CMRC2018) contest.

PROJECTS

Neuropsychological test applet | *Python, Qt* **Apr. 2020 - June 2020**

- Pyqt-based neuropsychological cognition evaluation applet with score feedback in real time.

An Emulator for a Subset of x86 Instruction Set | *C, Linux* **Dec. 2018 Feb. 2019**

- Implemented a x86 based system with most common used instructions.
- Implemented from CPU simulation to a simple complete operating system with I/O support.

Five-stage Pipeline CPU based on MIPS | *Logisim, Verilog* **Feb. 2018 - Apr. 2018**

- Implemented five-stage pipeline CPU supporting basic MIPS instructions and some extended instructions based on logisim.
- Loaded self-implemented single-cycle CPU on FPGA and run some simple assemble codes.

Chat Client-Server with File Transmission | *C++, Qt* **Oct. 2017 - Nov. 2017**

- Realized instant messaging tools with user management, point-to-point communication, offline messaging, and multi-person chat functions based on TCP.
- Realized point-to-point reliable file transmission based on UDP.

SKILLS

- **Programming**: Python, C/C++, R, Java
- **Framework**: PyTorch, MNE, PsychoPy, OpenSame, jsPsych
- **Data Analysis**: EEG, fMRI
- **Methodology**: Deep Learning, Computational Modeling, Natural Language Processing

TEACHING

PSYC 2004: Personality Psychology **Fall, 2021**
Teaching Assistant *Department of Psychology, University of Macau*

PSYC 3318: Artificial intelligence and Human Cognition **Spring, 2022**
Teaching Assistant *Department of Psychology, University of Macau*