Huzi Cheng

Email: huzcheng@iu.edu

Education

Ph.D. in Psychology and Neuroscience (Computational/Cognitive Neuroscience)
Indiana University Bloomington, 2018–2024

B.E. in Nuclear Engineering
Lanzhou University, 2014–2018

Publications

[1] Huzi Cheng and Joshua W Brown. Replay as a basis for backpropagation through time in the brain. *Neural Computation, in press*, 2025.

[2] Huzi Cheng and Joshua Brown. Goal Reduction with Loop-Removal Accelerates RL and Models Human Brain Activity in Goal-Directed Learning. In *Thirty-eighth Conference on Neural Information Processing Systems (Spotlight)*, 2024.

[3] Huzi Cheng, Bin Sheng, Aaron Lee, Varun Chaudhary, Atanas G Atanasov, Nan Liu, Yue Qiu, Tien Yin Wong, Yih-Chung Tham, and Ying-Feng Zheng. Have AI-Generated Texts from LLM Infiltrated the Realm of Scientific Writing? A Large-Scale Analysis of Preprint Platforms. *under review*.

[4] Huzi Cheng, Matthew Chafee, Rachael K Blackman, and Joshua Brown. Monkey Prefrontal Cortex Learns to Minimize Sequence Prediction Error. *bioRxiv*, pages 2024–02, 2024.

[5] Mainak Jas, Ryan Thorpe, Nicholas Tolley, Christopher Bailey, Steven Brandt, Blake Caldwell, Huzi Cheng, Dylan Daniels, Carolina Fernandez Pujol, Mostafa Khalil, et al. HNN-core: A Python software for cellular and circuit-level interpretation of human MEG/EEG. *Journal of Open Source Software*, 8(92):5848, 2023.

[6] Huzi Cheng and Joshua W Brown. Learning with augmented target information: An alternative theory of Feedback Alignment. *arXiv preprint arXiv:2304.01406*, 2023.

[7] Zhewei Zhang, Huzi Cheng, and Tianming Yang. A recurrent neural network framework for flexible and adaptive decision making based on sequence learning. *PLOS Computational Biology*, 16(11):e1008342, 2020.

Conferences Presentations

2022.11 SfN, GOLSA V2: Computational neural mechanism of scalable planning to arbitrary goals.

2020.10 Neuromatch 3.0, Replay-based Biologically Plausible Fast and Statistical Sequence Learning with RNNs.

2020.03 Cosyne 2020, An RNN that runs forward and backward: A new approach to biologically plausible sequence learning.

Honors & Awards

William K. Estes Summer Research Award, 2021.

Hui-Chun Chin and Tsung-Dao Lee Undergraduate Research Award, 2017.

Reviewer

Neural Networks

PLOS Computational Biology

Skills

General programming languages: Python, Matlab, C/C++, Javascript, Julia, Mathematica.

Deep learning: PyTorch, JAX, PyTorch-Lightning, huggingface libs (transformers, PEFT, etc.).

Hardware: Arduino

Open Source Contributions

2022, Google summer of code: HNN-Core: Simulation and optimization of neural circuits for MEG/EEG source estimates.

2021, NumFocus summer project: Optuna-dashboard: Real-time dashboard for Optuna, a hyperparameter optimization framework.