

Haorui Sun

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EDUCATION

University of Vermont (UVM), Burlington, VT

Expected Graduation: 2026

Ph.D. in Biomedical/Medical Engineering

Grinnell College, Grinnell, IA

Aug 2017 – Dec 2020

B.A. in Biology and Computer Science

GPA: 3.82

TECHNICAL SKILLS

- **Languages:** Python, MATLAB, R, Java, JS, C, C#, HTML, CSS, PHP, Ruby on Rails, HTTP, Scheme
- **Laboratory Skills:** EEG, Eye Tracking, Neuroelectrophysiology, Confocal Microscopy, Image Analysis
- **Other:** EEGLAB, PsychoPy, Unity, Scikit-learn, TensorFlow, Keras, Pytorch

RELEVANT PROJECTS

Mindless Reading, Burlington, VT

Sept 2021 – Present

- Designed and implemented a reading task paradigm in PsychoPy.
- Conducted simultaneous data collection, utilizing EyeLink 1000 Plus and Biosemi with 64 EEG electrodes.
- Developed the pipeline to extract and analyze eye features such as fixations and saccades.
- Developed a classifier for mindless reading detection, utilizing Scikit-learn and TensorFlow.

Attentional Switching, Burlington, VT

Jan 2022 – Present

- Created a naturalistic virtual reality (VR) environment using Unity.
- Designed a preprocessing pipeline to remove motion and eye artifacts from EEG data in EEGLAB.
- Conducted fixation-related potential (FRP) and event-related spectral perturbation (ERSP) analyses.
- Applied linear mixed effects (LME) model to assess the impact of social anxiety on neural responses.

Out of Sight, not Out of Mind, Neuromatch Academy

July 2022

- Employed linear regression and convolutional neural networks to develop a classifier on calcium imaging data from 11,000 neurons in the mouse visual cortex to predict pupil area.

LEADERSHIP EXPERIENCES

Teaching Assistant, BME3000A Core 3 Systems & Signals, Burlington, VT

Sept 22 – Present

- Assisted 40 undergraduate students in comprehending course materials.
- Strengthened expertise in linear modeling of biological systems, continuous and discrete-time descriptions of signals, linear system analysis, and Fourier and Laplace analysis.

Graduate Mentor, Glass Brain Lab, Burlington, VT

Sept 2021 – Present

- Mentored undergraduate and master's students, providing training in data collection and analysis.
- Collaborated on planning and reporting project and maintained oversight of individual progress.

PUBLICATIONS

Journals

- Jangraw, D.C., Keren, H., Sun, H. et al. A highly replicable decline in mood during rest and simple tasks. *Nat Hum Behav* 7, 596-610 (2023). <https://doi.org/10.1038/s41562-023-01519-7>
- Jangraw, D. C., Finn, E. S., Bandettini, P. A., Landi, N., Sun, H., Hoeft, F., Chen, G., Pugh, K. R., & Molfese, P. J. Inter-subject correlation during long narratives reveals widespread neural correlates of reading ability. *NeuroImage*, 282, 120390. (2023). <https://doi.org/10.1016/j.neuroimage.2023.120390>

Conferences

- P300 Fixation-Related Potential Affected by Facial Emotion in Virtual Reality. IEEE NER 2023, MD.
- Mood Drift Over Time: A highly replicable decline in mood during rest and simple tasks. NBH Forum, UVM.