ZINONG YANG

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EDUCATION

Boston University, Boston, MA *Sep 2019 - June 2025*
Ph.D. in Computational Neuroscience

Massachusetts Institute of Technology, Cambridge, MA *June 2023 - June 2025*
Graduate Visiting Student in Research Laboratory of Electronics and the Institute of Medical Engineering Systems

University of California, San Diego, La Jolla, CA *Sep 2014 - June 2017*
Minor: Philosophy
Honors degree: Cum Laude

PUBLICATIONS

[1] J. Levitt, X. Zeng, **Yang, Z.**, L. Jacob, and L. Lewis, "Closed-loop auditory stimulation of sleep slow waves drives cerebrospinal fluid flow in humans," *under revision in Science Translational Medicine*, 2025.

[2] **Yang, Z.**, S. Williams, E. Beldzik, S. Anakwe, E. Schimmelpfennig, and L. Lewis, "Attentional failures after sleep deprivation represent moments of cerebrospinal fluid flow," *Nature Neuroscience accepted*, 2025.

[3] J. Levitt, **Yang, Z.**, S. Williams, S. Espinosa, A. Garcia-Casal, and L. Lewis, "EEG-LLAMAS: a low-latency neurofeedback platform for artifact reduction in EEG-fMRI," *NeuroImage*, 2023.

[4] **Yang, Z.** and L. Lewis, "Imaging the temporal dynamics of brain states with highly sampled fmri," *Curr Opin Behav Sci*, 2021.

ACHIEVEMENTS

Organization for Human Brain Mapping Merit Award *2024*
Kavli Summer Institute in Cognitive Neuroscience Fellow, UCSB *Summer 2022*

SKILLS

Human Neuroscience	EEG, fMRI, fNIRS, Eyetracking, physiological timeseries analysis
Artificial Intelligence	Deep Learning, Large Vision Models, classical machine learning
Programming Languages	Python (Pytorch, Tensorflow, Sklearn, Pandas, Numpy), MATLAB (EEGLAB), R, git, Bash, C/C++
Large-scale Computing	SLURM, multi-gpu computing
Languages	Mandarin Chinese (Native), English (Proficient), German (Basic), Japanese (Basic)
Others	Adobe Acrobat Pro, Qualtrics, Microsoft Word, Excel, Photoshop, Film Editing, Cinematography

PRESENTATIONS

[5] E. Beldzik, N. Cicero, D. Gomez, **Yang, Z.**, J. Iglesias, E. B, and L. Lewis, "Subcortical neuromodulatory circuits for joint regulation of sleepiness and vascular physiology," in *ESRS Sleep Europe*, 2026.

[6] E. Beldzik, D. Gomez, N. Cicero, **Yang, Z.**, J. Iglesias, and L. Lewis, "Subcortical dynamics during failures in maintaining alertness after sleep restriction in the human brain," in *Sleep*, May 2025.

[7] E. Beldzik, **Yang, Z.**, S. Williams, and L. D. Lewis, "Distinct spectral pattern of cognitive, drowsiness, and fatigue-related theta/alpha eeg activity during wakefulness," in *Sleep*, 2024.

[8] **Yang, Z.**, S. Williams, N. Tacugue, Z. Valdiviezo, J. Hua, T. Ly, M. Aon, I. Vinal, E. Schimmelpfennig, N. Leonard, R. Huang, D. Zimmerman, J. Yee, and L. Lewis, "SWADEE: A GUI-based Tool for Slow Wave Activity Detection via EEG and Eyetracking," in *Society for Neuroscience*, San Diego, CA, 2022.

[9] S. Williams, **Yang, Z.**, S. Anakwe, J. Licata, E. Schimmelpfennig, M. Bosli, N. Leonard, I. Vinal, M. Aon, Z. Valdiviezo, N. Tacugue, and L. Lewis, "Changes in osmolyte concentration and excitatory-inhibitory balance after 24 hours of total sleep deprivation," in *ISMRM MRS*, 2024.

[10] S. Williams, **Yang, Z.**, S. Anakwe, Z. Valdiviezo, N. Tacugue, I. Vinal, E. Schimmelpfennig, M. Aon, M. Bosli, J. Licata, N. Leonard, M. Ruiz, H. Fitzgerald, M. Otto, and L. Lewis, "Fast fmri imaging of amygdala bold hemodynamics in major depressive disorder after 26 hours of total sleep deprivation," in *Society of Biological Psychiatry*, 2024.

[11] E. Beldzik, **Yang, Z.**, S. Williams, and L. Lewis, "Elucidating the theta paradox: Distinct spectral characteristics of cognitive- and drowsiness-related increases in midfrontal theta eeg activity," in *Society for Neuroscience*, 2023.

[12] A. van der Kouwe, H. Jeong, **Yang, Z.**, D. Straney, R. Frost, L. Lewis, and G. Bonmassar, "The MotoNet: An MRI-Compatible EEG Net with Embedded Motion Sensors," in *International Society for Magnetic Resonance in Medicine (ISMRM)*, 2022.

[13] **Yang, Z.**, J. Pineda, I.-W. Shu, J. Onton, A. Rivas, N. Zhen, L. Ring, M. Bordyug, and F. Singh, "Update on a longitudinal pilot study to assess the effects of gamma neurofeedback on cognitive function in schizophrenia patients," in *Society for Neuroscience Meeting*, San Diego, CA, 2018.

[14] E. Herrera, F. Singh, **Yang, Z.**, L. Ring, A. Amello, and J. Pineda, "Role of gamma neurofeedback in working memory of persons diagnosed with schizophrenia," in *Society for Neuroscience Meeting*, Washington, DC, 2017.

[15] N. Dudeck, F. Singh, **Yang, Z.**, R. Cheng, R. Gosla, and J. Pineda, "Gamma neurofeedback synchrony training on working memory in schizophrenia," in *Society for Neuroscience Meeting*, 2016.

[16] F. Singh, A. Smith, **Yang, Z.**, and J. Pineda, "Neurofeedback on working memory in schizophrenia patients," in *Society for Neuroscience Meeting*, San Diego, CA, 2016.

RESEARCH EXPERIENCE

Lewis Lab for Imaging Brain Dynamics Sep 2019 - June 2025
Supervisor: Dr. Laura D. Lewis MIT

- Conducted 100+ simultaneous fast fMRI-EEG-Eyetracking scans with human participants and developed analysis pipelines to examine the multimodal dataset.
- Led non-invasive cerebrospinal fluid (CSF) after sleep deprivation project with a team of 10: investigated the relationship between brain's neural signals and brain' fluid signal.
- Developed a MATLAB software (SWEET) for detecting local sleep activities in human with EEG and Eyetracking and presented the result at Society for Neuroscience.
- Implemented an AI-based generative model with PyTorch for predicting neural activity and behavioral performance from physiological signals (e.g., heart rate, pupil diameter, skin conductance).

Functional Neuroscience Lab Jan 2015 - June 2019
Supervisors: Dr. Jaime A Pineda and Prof. Fiza Singh UC San Diego

- Led a team of 5 undergraduate researchers to deliver EEG-based neurofeedback to treat schizoaffective disorders.
- Performed EEG data processing such as filtering, artifact rejection, source localization, time-frequency analysis, and independent component analysis.
- Utilized both the Cognionics Quick-20 dry-EEG electrode system and the wet electrodes to administer EEG recording and Neurofeedback training on schizophrenic and normal populations.
- Maintained and implemented experiments using stimulus presentation software such as Neurobehavioral System Presentation.

· Performed statistical analysis of neuropsychological test data using Excel and SPSS. Experience with Though Technology ProComp Infiniti EEG Suite, Version 6.0 and EEG data analysis using EEGLAB and NeuroGuide.

de Sa Lab Jan 2018 - June 2019
Supervisors: Dr. Virginia de Sa UC San Diego

· Contributed to the development of BCI P300 speller experiments with Python-based game design package SNAP.
· Set up Brain Products EEG system and helped conducting BCI motor-imagery experiments.

Vision and Memory Lab Jan 2018 - June 2019
Supervisors: Dr. Timothy Brady and Dr. Mark Schurgin UC San Diego

· Investigated the capacity of visual long-term memory leveraging behavioral psychological methods.
· Led behavioral experiments involving recruitment of and guidance to participants to complete a series of computer-based tasks while recording their outputs for further comparison/analysis.
· Performed advanced data analysis in MATLAB and R to analyze test results, generate receiver operating characteristic (ROC) curve and calculated area under the curve (AUC).

AD HOC REVIEWER

Current Opinion in Behavioral Sciences, Academia Medicine and Health