Zinong Yang

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EDUCATION

06/2019 – Present **Boston University, Boston**, MA
Ph.D. Student in **Neuroscience**, Graduate Program in Neuroscience, Mentor: Professor Laura Lewis

06/2023 – Present **Massachusetts Institute of Technology, Cambridge**, MA
Graduate Visiting Student in Research Laboratory of Electronics and the Institute of Medical Engineering Systems

09/2017 -06/2017 **University of California, San Diego (UCSD)**, La Jolla, CA
Bachelor of Science in Cognitive Science specialized in Neuroscience, GPA: 3.75/4.0 (top 15%); Minor: Philosophy.
Honors degree, Cum Laude

PUBLICATION

Yang, Z., Williams, S., Beldzik, E., Anakwe, S., Schimmelpfennig, E., Lewis, L.D. Attentional failures after sleep deprivation represent moments of cerebrospinal fluid flow. 2024. Submitted.

Yang, Z., Lewis, L.D. Imaging the temporal dynamics of brain states with highly sampled fMRI. *Curr Opin Behav Sci.* 2021 Aug; 40:87-95. doi: 10.1016/j.cobeha.2021.02.005.

Beldzik, Ewa., **Yang, Z.**, Stephanie Williams, Laura Lewis, Distinct Spectral Pattern of Cognitive, Drowsiness, and Fatigue-related Theta/alpha EEG Activity During Wakefulness, *Sleep*, Volume 47, May 2024

Levitt, Joshua & **Yang, Z.,** & Williams, Stephanie & Espinosa, Stefan & Garcia-Casal, Allan & Lewis, Laura. (2023). EEG-LLAMAS: a low-latency neurofeedback platform for artifact reduction in EEG-fMRI. *NeuroImage*. 273. 120092. 10.1016/j.neuroimage.2023.120092.

FELLOWSHIP AND AWARDS

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

EMPLOYMENT

01/2018 – 06/2019 **MHT Mental Health Technology lab**, UC San Diego School of Medicine, CA
Lab Assistant (Primary Investigator: Fiza Singh, MD)

Enhancing Gamma Band Response in Schizophrenia to Improve Working Memory

- Performing electroencephalography (EEG) data processing such as filtering, artifact rejection, source localization, time-frequency analysis, independent component analysis, etc.
- Maintaining and implementing experiments using stimulus presentation software such as Neurobehavioral System Presentation.
- Performed statistical analysis of neuropsychological testings data using Excel and SPSS for manuscripts and poster.
- Duties include coordinating and mentoring undergraduate research assistants, testing participants and delivering EEG-based neurofeedback via device.

CERTIFICATE

04/2016 29th Annual UC San Diego Undergraduate Research Conference, "*Coherence Training of Gamma*

Wave in Persons with Schizophrenia via Neurofeedback" Excellent research and presentation

PRESENTATIONS

Yang, Z., Williams, S.D., Anakwe, S., Schimmelpfennig, E., Lewis, L.D. Cerebrospinal fluid flow closely tracks behavioral performance during an attention task. Organization for Human Brain Mapping, Seoul, Korea, 2024

Yang, Z., S.D. Williams, N. Tacugue, Z. Valdiviezo, J. Hua, T. Ly, M. Aon, I. Vinal, E. Schimmelpfennig, N.M. Leonard, R.S. Huang, D. Zimmerman, J. Yee, L.D. Lewis. SWADEE: A GUI-based tool for slow wave activity detection via EEG and eyetracking. Society for Neuroscience 2022. San Diego, CA.

Williams, S.D., **Yang, Z.,** Stephanie Anakwe, Joseph Licata, Emillia Schimmelpfennig, Massinissa Bosli, Nicole Leonard, Iris Vinal, May Aon, Zenia Valdiviezo, Nicole Tacugue, Lewis, L.D. Changes in Osmolyte Concentration and Excitatory-Inhibitory Balance after 24 Hours of Total Sleep Deprivation. ISMRM MRS 2024

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

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

Andre van der Kouwe, Hongbae Jeong, **Yang, Z.,** Donald Straney, Robert Frost, Laura Lewis, and Giorgio Bonmassar. The MotoNet: An MRI-Compatible EEG Net with Embedded Motion Sensors. International Society for Magnetic Resonance in Medicine (ISMRM) 2022.

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

Herrera, E. I., Singh, F., Smith, A., **Yang, Z.,** Ring, L., Amello, A., Pineda, J. A. (2017). Role of gamma neurofeedback in working memory of persons diagnosed with schizophrenia. Presented at Society for Neuroscience Meeting, Washington, DC.

N. Dudeck, F. Singh, A. Smith, **Yang, Z.,** R. Cheng, R. Gosla, J. A. Pineda. (2016). Gamma Neurofeedback synchrony training on working memory in schizophrenia.

F. Singh, A. Smith, N. Dudeck, R. Cheng, R. Gosla, **Yang, Z.,** J. A. Pineda. (2016). Neurofeedback on Working Memory in Schizophrenia Patients. Presented at Society for Neuroscience Meeting, San Diego, CA.

RESEARCH EXPERIENCE

01/2018 – 06/2019 **de Sa Lab,** University of California, San Diego, CA

Research Assistant (Primary Investigator: Virginia de Sa, Ph.D)

- Help with developing BCI P300 speller experiments with python-based game design package SNAP.
- Help with setting up Brain Products EEG system and recording data from participants on BCI motor-imagery experiments with MATLAB.

01/2018 – 06/2019 **the Vision and Memory Lab,** University of California, San Diego, CA

Research Assistant (Primary Investigator: Timothy F. Brady, Ph.D and Mark W. Schurgin, Ph.D)

- Work on projects investigating the capacity of visual long-term memory using behavioral psychological methods.
- Lead 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.
- Performing advanced data analysis in Matlab include batching all test results from over 20 participants, plotting receiver operating characteristic(ROC) curve and calculating area under the curve (AUC.)
- Conducting literature reviews on visual long-term memory, visual working memory and signal detection theory.

08/2015 – 01/2018 **Cognitive Neuroscience Lab,** University of California, San Diego, CA

Research Assistant/Manager (Primary Investigator: Jaime A. Pineda, Ph.D)

Gamma Neurofeedback Training as a potential therapy for improving working memory in schizophrenia patients

- Supervised undergraduate research assistants, organized lab work, reordered supplies and maintained security standards in the lab. Conduct the initial screenings, schedule subjects for visits and assist with EEG data collection.
- Utilized both the Cognionics Quick-20 dry-EEG electrode system and the wet electrodes to administer electroencephalogram (EEG) recording and Neurofeedback training on schizophrenic and normal populations.
- Administered various neuropsychological test (e.g., RBANS) and behavioral tasks (e.g., n-back) to assess working memory.
- Experience with Though Technology ProComp Infiniti EEG Suite, Version 6.0 and EEG data analysis using EEGLAB and NeuroGuide.

Meta-analysis on Neurofeedback training and its effects on Autism Spectrum Disorder patients

- Devised online questionnaires to implement meta-analysis study using a variety of programs (e.g., Qualtrics) to streamline the work.

Using Transcranial Alternating Current Stimulation (tACS) and Gamma Synchrony Neurofeedback to Improve Working Memory in a Normal Adult Population

- Constructed research proposal and performed literature reviews.

09/2013 Research Study in Psychology, "*How Past Experience in Psychological Counseling Affect High School Students' Educational Performance*"

- Designed the questionnaire. Data collection and analysis with SPSS. Oral presentation in School Conference.

SKILLS (AND QUALIFICATION)

Foreign Language: Mandarin(Native), English (Proficient), German (Basic Communication Skill), Japanese (Basic Communication Skill)

Computers:

IBM SPSS (Statistical Package for the Social Sciences), MATLAB including EEGLAB and BCILAB,

R: Expertise in using statistical software. Expertise from basic to advanced statistical analyses including, but not limited to: t-test, correlations, chi square, ANOVA, linear regressions, multiple regressions, machine learning.

Python: Proficient knowledge of statistical packages (e.g. numpy). Adobe Acrobat Pro, Qualtrics, Microsoft Word, Excel, Photoshop, Film Editing, Cinematography

PROFESSIONAL MEMBERSHIPS AND VOLUNTEER SERVICE

Omega Psi Cognitive Science Honor Society in UCSD

UCSD Cognitive Science Student Association (CSSA)

Historian and organizer of **International Cognitive Science Conference** in UCSD 2016

Society for Neuroscience

Volunteer alongside medial professional to provide free medical services for people without health insurance in several medial outreach events.