Jiazhen Hong

Piscataway, NJ 08854
Tel: 201-985-4402
Website: https://h128jj.github.io/jiazhenhong/
E-mail: jh1590@rutgers.edu
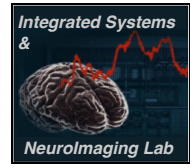
EDUCATION

Rutgers University, New Brunswick, NJ, USA   *Ph.D. candidate*   *01/2020 – Present*
  Computer Engineering, G.P.A.: 3.9/4.0
  Thesis Topic: Artificial Intelligence for Time-Series Signal Processing in Brain-Computer Interfaces (BCIs)

Stevens Institute of Technology, Hoboken, NJ, USA   *M.Sc.*   *09/2017 – 01/2019*
  Electrical Engineering, G.P.A.: 3.9/4.0

Jimei & Chung Yuan Christian University, China   *B.Sc. (Double Degree)*   *09/2012 – 06/2016*
  Communication Engineering, G.P.A.: 3.5/4.0

WORKING EXPERIENCE

Integrated Systems & Neuroimaging Lab, Rutgers University   *Teaching/Research Assistant*   *01/2020 – Present*
  • Developed ChatBCI, a mind-controlled speller system for BCI integrating **LLMs**.
  • **Lead** LLM-Driven brain-computer interface (**BCI**) project to accelerate the speller incorporating **Generative AI**.
  • Designed a **Transformer**-based model to enhance character recognition rates in the P300 speller system.
  • Developed topographic image representation for video-like electroencephalography (**EEG**) signals using **TimeSformer**.
  • Created a channel selection method to improve the speed and efficiency of **BCI** systems for motor imagery tasks.

EMOTIV, San Francisco, CA, USA   *Research Intern*   *10/2024 – Present*
  • Developed a **Mamba-based foundation model** for processing long sequence time-series signals in brain-computer interfaces.

Conference Reviewer
  • International Conference on Artificial Intelligence and Statistics (AISTATS)   *2023 – 2024*
  • IEEE International Symposium on Biomedical Imaging (ISBI)   *2024*
  • IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)   *2024*

TECHNICAL SKILLS

  - Python (PyTorch, TensorFlow, scikit-learn, Qt5, NumPy, Pandas)
  - MATLAB® (EEGLAB, Digital Signal Processing toolbox, object-oriented programming)
  - Hardware (Brain Products, actiCAP, Raspberry Pi, Arduino, VEX-brain)

SELECTED PUBLICATIONS

(Accepted/Published)
  - **J. Hong**, F. Shamsi, and L. Najafizadeh, "A **Deep Learning** Framework Based on Dynamic Channel Selection for Early Classification of Left and Right Hand Motor Imagery Tasks," Proc. of 44th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC'22), Glasgow, Scotland, July 2022, pp. 3550-3553
  - **J. Hong**, L. Najafizadeh, "P3T: A **Transformer** Model for Enhancing Character Recognition Rates in P300 Speller Systems," 58th Annual Asilomar Conference on Signals, Systems, and Computers
  - **J. Hong** and L. Najafizadeh, "TopoEEG: a **TimeSformer**-Based Topographic **Image Representation** Method for Early Single-Trial Detection of P300," 22nd IEEE International Symposium on Biomedical Imaging (ISBI 2025)

(Under review)
  - **J. Hong,** G. Mackellar, S. Ghane, "EEGM2: An Efficient **Mamba-2**-Based **Self-Supervised** Framework for Long-Sequence EEG Modeling" (Conference)
  - **J. Hong**, P. Rao, W. Wang, S. Chen, and L. Najafizadeh, "ChatBCI4ALS: A High-Performance, LLM-Driven Intent-Based BCI Communication System for Individuals with ALS" (Conference)
  - **J. Hong**, W. Qian, Y. Chen, and Y. Zhang, "A geometric approach to *k*-means," submitted (Journal)
  - **J. Hong**, W. Wang, and L. Najafizadeh, "ChatBCI: A P300 Speller BCI Leveraging **Large Language Models** for Improved Sentence Composition in Realistic Scenarios," in preparation (Journal)

(In Preparation)
  - **J. Hong**, W. Wang, S. Haghani, and L. Najafizadeh, "Subject-specific Channel Selection Based on Davies-Bouldin Index for EEG Motor Imagery Classification," in preparation (Journal)

AWARDS

  - Travel Award of 2024 IEEE Brain Discovery & Neurotechnology Workshop   *09/2024*
  - Best Teaching Assistant Award for Fall 2023, Rutgers ECE   *05/2024*