




# Jiazhen Hong

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## Personal Statement

I am a fourth-year Ph.D. candidate working at the Integrated Systems & NeuroImaging Laboratory, advised by Professor Laleh Najafizadeh. My primary research interests include machine learning, time-series signal processing, foundation model and Generative AI for brain-computer interfaces (BCIs), and natural language processing (NLP).

## Education

**Ph.D. candidate in  
Computer Engineering**  
02/2020 – Present

**Rutgers University, New Brunswick, NJ, USA**  
GPA:3.9/4.0  
Advisor: Professor Laleh Najafizadeh

**M.S in Electrical  
Engineering**  
09/2017 – 01/2019

**Stevens Institute of Technology, Hoboken, NJ, USA**  
GPA:3.9/4.0  
Advisor: Professor Shucheng Yu

**B.S. in Communication  
Engineering**  
09/2012 – 06/2016

**Jimei & Chung Yuan Christian University, China.**  
GPA:3.5/4.0

## Research & Publications

### Refereed Journal Papers

#### (Under review)

[1] **J. Hong**, W. Qian, Y. Chen, and Y. Zhang, “A geometric approach to  $k$ -means,” submitted

#### (In Preparation)

[2] **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.

[3] **J. Hong**, W. Wang, and L. Najafizadeh, “A Mind-Controlled Speller System Incorporating NLP Technique and P300-Based Brain-Computer Interfaces,” in preparation.

## Refereed Conference Papers

### (Under review)

[1] **J. Hong** and L. Najafizadeh, "TopoEEG: a TimeSformer-Based Topographic Image Representation Method for Early Single-Trial Detection of P300," submitted.

### (Accepted/Published)

[1] **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.

[2] **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.

[3] **J. Hong**, W. Wang and L. Najafizadeh, "ChatBCI: A Fast P300 Speller Brain-Computer Interface Incorporating Generative AI-Based Word Prediction," 2024 IEEE Brain Discovery and Neurotechnology Workshop. (Spotlight) – Machine Learning and Computer Paradigms for Brain Discovery

## Scholarships and Awards

IEEE Brain Discovery &  
Neurotechnology  
09/2024

Travel Award of 2024 IEEE Brain Discovery & Neurotechnology  
Workshop.

Rutgers University  
05/2024

The best TA of the Semester Award for Fall 2023

## Working Experience

Research Intern  
09/2024-12/2024

AI/ML Specialist (Foundation Model) @EMOTIV

Course Instructor  
06/2022 – 08/2022

Linear Systems and Signals @Rutgers University

Teaching Assistant  
02/2020 – 05/2024

Digital Signal Processing @Rutgers University  
Digital Signal Processing Lab @Rutgers University  
Linear Systems and Signals @Rutgers University

## 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