

Peiran Li

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EDUCATION

Dartmouth College Expected Aug 2027

Master of Science, Computer Science

- **Award:** 50% Tuition Scholarship by Dartmouth College

The Chinese University of Hong Kong July 2025

Bachelor of Science, Computer Science

Major GPA: 3.77/4.0

- **Award:** Dean's List in Faculty of Engineering 2023-2024 (Top 10%), Summer Research Grant (10,000 HKD), Honorable Mention of Microsoft Challenge Competition (2022)

ACADEMIC INTERESTS

Computer Vision, Computational Photography, AI-Driven Healthcare Solutions

PUBLICATIONS

Peiran Li, Fei Chen, Xixin Wu. "EEG-based Speech Decoding Based on Multi-mode Joint Modeling", *Interspeech 2025*

Rohit Banerjee, **Peiran Li**, Sarah Friday, Sotiris Nousias, Adithya Pediredla. "Towards Bandwidth-Limited Imaging with Generative Priors", *submitted to ICCP 2026*

RESEARCH EXPERIENCE

Dartmoth College August 2025 – Present

Towards Bandwidth-Limited Imaging with Generative Priors

Research Assistant (under Prof. Adithya Pediredla)

- Developed and evaluated diffusion model baselines (SD3/MM-DiT) for full-resolution image reconstruction from 6.25% sparse pixel observations.
- Implemented spectral analysis pipeline to characterize aliasing properties of periodic vs. aperiodic sampling operators, including 2D FFT visualization and radially averaged PSD curves.
- Conducted hardware experiments to validate the proposed stratified sampling scheme on real sensor data.

Centre for Perceptual and Interactive Intelligence June 2025 – August 2025

Text-to-Gloss Translation System for the Hong Kong Observatory (HKO)

Research Assistant (under Prof. Xixin Wu)

- Built a text-to-gloss translation system for Hong Kong Sign Language (HKSL) in collaboration with the Hong Kong Observatory.

- Cleaned and merged both sources into high-quality text–gloss pairs, and constructed standardized training and testing splits.
- Developed a baseline system using in-context learning, achieving 68% BLEU on the held-out test set.

The Chinese University of Hong Kong

December 2024 – March 2025

Attention-Driven Model Enhancement for EEG-Based Speech Processing

Research Assistant(under Prof. Xixin Wu)

- Conducted comprehensive EEG signal acquisition and analysis from 11 participants, focusing on three modes: imagined speech, intended speech, and spoken speech.
- Developed an advanced model to integrate temporal and spatial EEG signal features, augmenting the EEGNet framework with dynamic masking mechanisms to achieve 34.95% classification accuracy for imagined speech across four vowel categories.
- Investigated the multimodal transitions in EEG-based speech brain-computer interfaces, aiming to facilitate their applicability in real-world scenarios.

The Chinese University of Hong Kong

September 2024 – November 2024

Gaze-Based Weak Supervision for Medical Image Segmentation

Research Assistant(under Prof. Qi Dou)

- Developed a weak supervision scheme for medical image segmentation by combining gaze annotation with a multi-level learning from discriminative attention approach.
- Employed eye-tracking devices to gather gaze data, subsequently preprocessing this data by utilizing the Conditional Random Fields method to enhance model training performance.
- Reduced annotation time from 12 hours to 2.2 hours compared to full manual annotation, while preserving segmentation accuracy.

The Chinese University of Hong Kong

June 2024 – August 2024

Out-Of-Distribution (OOD) Detection in Neural Networks

Summer Research Internship(under Prof. Tsung-Yi Ho)

- Developed a post-hoc activation shaping method based on neural network features, including designing a specialized algorithm.
- Utilized advanced visualization techniques, including Gradient-weighted Class Activation Mapping (Grad-CAM) and loss landscape analysis, to elucidate the decision-making processes of the proposed methods.
- Validated the method's effectiveness across multiple datasets (SVHN, ImageNet), enhancing the neural network's ability to distinguish out-of-distribution (OOD) data while preserving classification accuracy, achieving an AUROC score of 0.97 on the SVHN dataset.

SKILLS

Programming: Python, C/C++, MATLAB, Java, JavaScript, and SQL

Tools: LaTeX, Conda, Git, Linux, Spark and Vim

Language: English (Proficient), Mandarin (Native) and Cantonese (Intermediate)