Chia-Hsiang (Aaron) Kao

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Research

- **Ongoing Projects**
  - **LLM + reasoning:** Building a multi-modal (text, image, code), self-reflective scientific question-answering LLM model for remote sensing questions.
  - **Diffusion**: Accurate text-in-image generation in diffusion model
  - **AI for biology:** De novo peptide sequencing for mass spectrometry with LLM
- **Research Interests**
  - Reasoning with long context, multi-modality, and unstructured data
  - Deep learning algorithm design[2,6]
  - Applications in remote sensing[5] and bio-medicine (DNA[3,4], proteomics, medical imaging[1])

Education

Cornell University, *Ithaca, NY, USA* *2023 - Present*

- Ph.D. Student in Computer Science
- Advisor: Prof. Bharath Hariharan and Prof. Kavita Bala

National Yang-Ming University, *Taipei, Taiwan* *2015 - 2022*

- Doctor of Medicine
- Advisor: Prof. Wei-Chen Chiu and Dr. Pin-Yu Chen

Selected Publications

[6] Counter-Current Learning: A Biologically Plausible Dual Network Approach for Deep Learning.
Chia-Hsiang Kao, Bharath Hariharan.
In NeurIPS 2024.

[5] AllClear: A Comprehensive Dataset and Benchmark for Cloud Removal in Satellite Imagery.
Chia-Hsiang Kao*, Hangyu Zhou*, Cheng Perng Phoo, Utkarsh Mall, Bharath Hariharan, Kavita Bala.
In NeurIPS Datasets and Benchmarks Track 2024.

[4] Caduceus: Bi-Directional Equivariant Long-Range DNA Sequence Modeling.
Yair Schiff, ***Chia-Hsiang Kao***, Aaron Gokalsan, Tri Dao, Albert Gu, Volodymyr Kuleshov.
In ICML 2024.

[3] Advancing DNA Language Models: The Genomics Long-Range Benchmark.
Chia-Hsiang Kao*, Evan Trop*, McKinley Polen*, Yair Schiff*, Bernardo P. de Almeida, Aaron Gokaslan, Thomas Pierrot, Volodymyr Kuleshov.
In AAAI (workshop) 2023.

[2] MAML Is a Noisy Contrastive Learner in Classification.
Chia-Hsiang Kao, Wei-Chen Chiu, Pin-Yu Chen.
In ICLR 2022.

[1] Demystifying T1-MRI to FDG18-PET Image Translation via Representational Similarity.
Chia-Hsiang Kao, Yong-Sheng Chen, Li-Fen Chen, Wei-Chen Chiu.
In MICCAI 2021.

Honors & Awards

- Student Travel Award, MICCAI 2021 *2020*
- Undergraduate Research Fellowship, National Science and Technology Council, Taiwan *2018, 2020*
- Summer Research Fellowship, National Health Research Institutes *2018*

Services

Conference Reviewer: NeurIPS'21 workshop, AutoML'22, NeurIPS'24, ICLR'25, AAAI'25, AISTAT'25
Journal Reviewer: CVIU (2022), Comput. Electr. Eng. (2024), IEEE TETCI (2024)