Peiran Li

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EDUCATION

B.Sc. Computer Science — Anticipated Graduation: July 2025
The Chinese University of Hong Kong
Major GPA: 3.765/4.0

- **Relevant Coursework:** Data Structures, Design and Analysis of Algorithms, Database System, Fundamentals of Artificial Intelligence, Software Engineering, Computational imaging and vision, Statistics for Engineers, Data Analytics for Personalized Genomics and Precision Medicine, Neuroengineering

ACADEMIC INTERESTS

Computer Vision, AI-Driven Healthcare Solutions, Trustworthy Artificial Intelligence

HONOR & AWARD

Dean's List — 2023 - 2024
Summer Research Grant, HKD 10,000, The Chinese University of Hong Kong — 2024
Outstanding Volunteer Educator, Three Heart Club — 2022

RESEARCH & PROJECTS

The Chinese University of Hong Kong — September 2024 - Present
Research Assistant(under Prof. Qi Dou)

- Developed a scheme for collecting dense weak supervision for medical image segmentation, utilizing a gaze annotation scheme paired with a contrastive learning approach.
- Employed eye-tracking devices to gather gaze data, subsequently processing this data to enhance model training. This approach leveraged natural human observation patterns to inform and improve AI-driven analysis.
- Conducted comparative studies against traditional manual annotation methods, demonstrating a significant reduction in the costs associated with medical image segmentation.

The Chinese University of Hong Kong — June 2024 – August 2024
Research Assistant(under Prof. Tsung-Yi Ho)

- Investigated existing OOD detection methods to identify their advantages and limitations, setting the direction for research.
- Developed a post-hoc activation shaping method based on neural network features, including the design of 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. This approach enhanced the interpretability and trustworthiness of machine learning models in critical applications.

- Validated the effectiveness of the method across multiple datasets (CIFAR-100, SVHN, ImageNet), enhancing the neural networks' capability to distinguish OOD data while maintaining classification accuracy.
- Presented the OOD project at a faculty-wide poster presentation in August 2024, showcasing innovative findings and methodologies to academic peers.

The Chinese University of Hong Kong Feb 2024 – May 2024
Content-Oriented Website Developer
- Leveraged React for advanced front-end development and JavaScript for robust back-end services, achieving a seamless responsive design and engaging user interactions.
- Engineered and administered a MongoDB-based user database, significantly improving data efficiency and performance in storage and retrieval operations.
- Developed and launched a sophisticated web platform that enables dynamic social interactions like posting, commenting, and user engagement.

The Chinese University of Hong Kong June 2023 – August 2023
Research Assistant(under Prof. Yu Li)
- Conducted a thorough literature review to identify and critically analyze the latest advances in RNA detection, enhancing the foundational knowledge for the project and ensuring up-to-date methodologies were incorporated.
- Developed and implemented a streamlined and effective RNA-FM classification model to predict lncRNA-disease interactions, enhancing the understanding of ncRNA roles in disease mechanisms.
- Implemented machine learning algorithms to refine RNA-disease association predictions, resulting in models that are both more accurate and efficient in processing large datasets.

LEADERSHIP EXPERIENCE

Three Heart Club of CUHK September 2021 - February 2023
Vice President
- Spearheaded the recruitment of over 100 volunteers, effectively boosting support for educational initiatives across various regions.
- Orchestrated multiple voluntary education projects, showcasing strong leadership and a deep commitment to community service.
- Successfully liaised with the Office of Student Affairs (OSA) at CUHK, Tin Ka Ping Education Foundation, Pui Wah Foundation, and other crucial organizations to secure vital funding for diverse programs.

PROFESSIONAL AFFILIATIONS

Institute of Electrical and Electronics Engineers Engineering in Medicine and Biology Society

Biomedical Engineering Society (BMES)

TECHNICAL SKILLS

Statistics Software: STATA, R Language
Office Software: Microsoft Windows, OpenOffice, Apache OpenOffice, LaTeX
Programming Languages: Python, Java, C++, C Language, SQL, JavaScript,
Database Technologies: MongoDB, MySQL