# CHEN LIU

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## EDUCATION

**South China University of Technology (SCUT)** Guangzhou, China
S.Eng. Software Engineering GPA: 3.85/4 Rank: 15/278 June 2024
**The Hong Kong Polytechnic University (PolyU)** Hong Kong, China
Ph.D. in Nursing (Research in Medical AI) Sep 2025 – Present

## PUBLICATIONS & SUBMISSION

- **Chen Liu**, Wenfang Yao, Kejing Yin, William K. Cheung, Jing Qin "Multimodal Disease Progression Modeling via Spatio-temporal Disentanglement and Multiscale Alignment". **NeurIPS-25 Spotlight (∼3%)**
- Wenfang Yao*, **Chen Liu***, Kejing Yin, William K. Cheung, Jing Qin "Addressing Asynchronicity in Clinical Multimodal Fusion via Individualized Chest X-ray Generation". **NeurIPS-24**. (* These authors contributed equally.)
- Qi Chen, Xinze Zhou, **Chen Liu**, Hao Chen, Wenxuan Li, Zekun Jiang, Ziyan Huang, Yuxuan Zhao, Dexin Yu, Junjun He, Yefeng Zheng, Ling Shao, Alan Yuill, Zongwei Zhou " Scaling Tumor Segmentation: Best Lessons from Real and Synthetic Data". **ICCV-25**.

## RESEARCH EXPERIENCE

### Research Assistant at Center for Smart Health

**School of Nursing, Hong Kong Polytechnic University** Hong Kong, China
*Supervisor Prof. Harry QIN* Dec 2024 - Aug 2025

- Managed to generate up-to-date individualized CXR images based on latent diffusion model, conditioning on a previous reference image and the EHR data in between, integrating information regarding anatomical structures and disease courses accordingly.
- Developed DiPro, a framework disentangling dynamic and static information from longitudinal CXRs, integrating multi-scale multimodal fusion with EHR data, achieving state-of-the-art performance on disease progression and ICU prediction tasks.

### Intern at Computational Cognition, Vision, and Learning (CCVL) Group

**Computer Science, Johns Hopkins University** Remote
*Supervisor Prof. Alan L. Yuille and Dr. Zongwei Zhou* April 2024 - Dec 2024

- Conducted a comparative analysis of segmentation errors in AI models across three pancreatic tumor subtypes. Identified unique patterns in hard cases, developing critical strategies to support more realistic and subtype-specific tumor synthesis.
- Developed synthetic models for pancreatic tumors with varied characteristics using conditional diffusion models. These models significantly enhanced training datasets, improving the Computer-Aided Detection and Diagnosis of different pancreatic tumor types.
- Contributed to building a large-scale, publicly available CT lesion dataset AbdomenAtlas2.0 (10k scans, 60k lesions across six organs) and evaluated data scaling effects on lesion segmentation and detection using generative and segmentation models.

### Research Assistant at Artificial Intelligence and Big Data Laboratory

**School of Software Engineering, South China University of Technology** Guangzhou, China
*Supervisor Prof. Chen Jian* May 2022 - July 2024

- Converted Length-Controllable Image Captioning (LaBERT) from a non-autoregressive model to an autoregressive model and modified the iterative refinement inference method used in the original model to beam search, achieving comparable results to the original model.

- Extracted semantic masks using MedSAM, which was integrated with input data as prior knowledge to facilitate the report generation.
- Designed a novel clinical loss function based on image classification to enable the model to be more finding-aware, and proposed a new way of extracting topic-related finding knowledge based on pre-trained report generation model.

## HONORS

*National Encouragement Scholarship* (Top 5%) 2023
*The Second Prize Scholarship* (Top 10% ) 2022
*National Encouragement Scholarship* (Top 5%) 2021
*Merit Student* 2021
*Excellent Student Cadre* 2021

## SKILLS

- Programming Languages: Python, C++, Go, R
- Technologies: Artificial Neural Networks/Machine Learning (PyTorch, Sklearn), Data Processing, SQL, Git, LaTeX
- English proficiency: IELTS 7.0

## OTHERS

- Developed a puzzle game called "Soma Cube" using QT, inspired by the TV show "The Brain" , which challenges players to observe a complex Asymmetric Cube and identify its three views from a set of distracting elements.
- First prize in the "Ten Top Proposals" competition (school level).
- Second prize in the School Golden Sunshine Cup Volleyball Competition.
- Participated in the "2023 Half Mountain Marathon" held in Guangzhou Baiyun Mountain, and finished the race in 2 hours and 37 minutes successfully.