

Yao DU

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Education

PhD, The Hong Kong University of Science and Technology Major: Electronic and Computer Engineering Advisor: Prof. Xiaomeng Li	2022.09 – Present
MPhil, The Hong Kong Polytechnic University Major: Structural Health Monitoring Advisor: Prof. Yong Xia	2019.09 – 2022.06
BEng, Northwestern Polytechnical University GPA: 91.88/100 Rank: 1/53	2015.09 – 2019.06

Research Directions

Precise Quantitative Perception in Physical & Biological Systems
Deep Regression · Medical Image Analysis · AI for Physical Systems

Publications

Deep Regression: From CNNs to VLMs and MLLMs

Regression and number understanding are fundamental for precise physical perception.

We aim to develop rigorous evaluation frameworks for measuring the quantitative reasoning and numerical understanding capabilities of MLLMs.

- Teach CLIP to Develop a Number Sense for Ordinal Regression.
[Yao Du](#), Qiang Zhai, Weihang Dai, Xiaomeng Li. [ECCV 2024](#)
- Semi-Supervised Contrastive Learning for Deep Regression with Ordinal Rankings from Spectral Seriation.
Weihang Dai, [Yao Du](#), Hanru Bai, Kwang-Ting Cheng, Xiaomeng Li. [NeurIPS 2023](#)
- Injecting Distributional Awareness into MLLMs via Reinforcement Learning for Deep Imbalanced Regression.
[Yao Du](#), Shanshan Song, Xiaomeng Li. [Submitted to ICML 2026](#)

Medical Image Analysis: Echocardiography and Computational Pathology

Parameter-efficient fine-tuning and multimodal representation learning for medical imaging.

We aim to develop data-efficient and clinically reliable AI systems for analyzing complex medical imaging data.

- CardiacCLIP: Video-based CLIP Adaptation for LVEF Prediction in a Few-shot Manner.
[Yao Du](#), Jiarong Guo, Xiaomeng Li. [MICCAI 2025](#) (Top Medical Imaging Conference)
- Beyond H&E: Unlocking Pathological Insights with Polarization Imaging.
[Yao Du](#), ..., Chao He, Lin Luo, Xiaomeng Li. [BIBM 2025](#) (Top Bioinformatics Conference)
- MUST: Multi-Style virtual STaining with incomplete pairs.
Jiaxin Zhuang, [Yao Du](#), ..., Hao Chen. [Submitted to TMI 2026](#) (Top Medical Image Journal)
- CardioInfuser: Multi-scale Semantic Infusion for Few-shot Echocardiogram Video Assessment.
[Yao Du](#), Marawan Elbatel, Jiewen Yang, Xiaomeng Li. [Submitted to MICCAI 2026](#)

- CardiacPULSE: Frequency-Aware Self-Supervised Cardiac Phase Detection in Echocardiography. Jiarong Guo, Jiewen Yang, **Yao Du**, Yi Qin, Xiaomeng Li. [Submitted to MICCAI 2026](#)
- SAMotion: A Generalizable Anatomical Structure-aware Unsupervised Framework for Cardiac Motion Tracking. Jiewen Yang, Jiarong Guo, **Yao Du**, Xiaomeng Li. [Submitted to MICCAI 2026](#)

Artificial Intelligence of Things (AIoT) / Structural Health Monitoring (SHM)

Infrastructure Sensor Anomaly Detection, Edge Computing, and AIoT Systems.

We aim to integrate AI with large-scale infrastructure sensing systems to enable intelligent monitoring and smart city applications.

- Convolutional Neural Network-based Data Anomaly Detection Considering Class Imbalance with Limited Data. **Yao Du**, Lingfang Li, ..., Yong Xia. [Smart Structures and Systems, 2022](#) (Top SHM Journal)
- Data Anomaly Detection through Semisupervised Learning Aided by Customized Data Augmentation Techniques. Xiaoyou Wang*, **Yao Du***, Xiaoqing Zhou, Yong Xia. [Structural Control and Health Monitoring, 2023](#) (Top SHM Journal)
- Wireless IoT Monitoring System in Hong Kong-Zhuhai-Macao Bridge and Edge Computing for Anomaly Detection. Xiaoyou Wang, Wanglin Wu, **Yao Du**, Jiannong Cao, Qianyi Chen, Yong Xia. [IEEE Internet of Things Journal, 2023](#) (Top AIoT Journal)

Professional Service

Conference Reviewer: CVPR2025, ICCV2025, NeurIPS2025, ICML2026, BMVC2026, MICCAI2026

Journal Reviewer: TNNLS

Awards

National Scholarship, 2016, 2017, 2018

Outstanding Reviewer, CVPR 2025