

# Ruoqi Wang

Ph.D. Candidate

The Hong Kong University of Science and Technology (Guangzhou)  
No.1 Du Xue Rd, Nansha District, Guangzhou, China

Email: [rwang280@connect.hkust-gz.edu.cn](mailto:rwang280@connect.hkust-gz.edu.cn)

Phone: (+86)13202067930

URL: <https://wang-rq.github.io>

GitHub: <https://github.com/wang-rq>

Google Scholar: [Ruoqi Wang](#)

Orcid: [0009-0005-3513-1945](#)

## Education

---

**The Hong Kong University of Science and Technology (Guangzhou), Ph.D. Student.** **Aug. 2022 – Jun. 2026 (Expected)**

- **Program:** Ph.D. in Data Science and Analytics
- **GPA:** 3.9/4.0

**Sun Yat-sen University, B.Eng.**

**Sept. 2018 – Jun. 2022**

- **Major:** Computer Science and Technology
- **GPA:** 3.8/4.0
- **Awards and Honors:**
  - Academic Excellence Scholarship, Sun Yat-sen University, 2020 & 2021
  - Student Elite Representative, School of Computer Science and Engineering, Sun Yat-sen University, 2021
  - Excellent Undergraduate Thesis (**rank 1/444**), Sun Yat-sen University, 2022

## Research Interests

---

*Theme: Trustworthy & efficient machine learning for scientific and real-world application.*

- **Scientific & Physics-Guided ML:** inverse problems; data reconstruction; physical priors; computational imaging
- **Foundation & Multi-modal Models:** vision–language models; cross-domain alignment; scientific foundation models
- **Reliable & Efficient Learning:** robustness/generalization; semi-/self-/weak supervision; domain adaptation
- **AI Applications:** astronomy, healthcare and industry

## Publications

---

### Conference Papers:

- Ruoqi Wang, Haitao Wang, Qiong Luo, "GalaxAlign: Mimicking Citizen Scientists' Multimodal Guidance for Galaxy Morphology Analysis", arXiv preprint [arxiv.org/abs/2411.19475](https://arxiv.org/abs/2411.19475), accepted by 33rd ACM International Conference on Multimedia (ACM MM 2025).
- Ruoqi Wang, Haitao Wang, Qiong Luo, Feng Wang, Hejun Wu, "VisRec: A Semi-Supervised Approach to Radio Interferometric Data Reconstruction", Proceedings of the AAAI Conference on Artificial Intelligence. Vol. 39. No. 1. 2025.
- Ruoqi Wang, Zhuoyang Chen, Jiayi Zhu, Qiong Luo, Feng Wang, "PolarRec: Improving Radio Interferometric Data Reconstruction Using Polar Coordinates", The IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), pages 12841-12850, 2024.
- Ruoqi Wang, Zhuoyang Chen, Qiong Luo, Feng Wang, "A Conditional Denoising Diffusion Probabilistic Model for Radio Interferometric Image Reconstruction", 26th European Conference on Artificial Intelligence (ECAI), pages 2499 - 2506, 2023.
- Ruoqi Wang, Ziwang Huang, Haitao Wang, Hejun Wu, "AMMASurv: Asymmetrical Multi-Modal Attention for Accurate Survival Analysis with Whole Slide Images and Gene Expression Data", IEEE International Conference on Bioinformatics and Biomedicine (BIBM), pages 757-760, 2021.
- Ziwang Huang, Hua Chai, Ruoqi Wang, Haitao Wang, Yuedong Yang and Hejun Wu, "Integration of Patch Features through Self-Supervised Learning and Transformer for Survival Analysis on Whole Slide Images", International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI), pages 561–570, 2021.

### Ongoing Papers:

- Ruoqi Wang, Haitao Wang, Shaojie Guo, Qiong Luo, "Improving Out-of-Domain Robustness with Targeted Augmentation in Frequency and Pixel Spaces", arXiv preprint [arxiv.org/abs/2505.12317](https://arxiv.org/abs/2505.12317), 2025.
- Zhuoyang Chen, Ruoqi Wang, Qiong Luo, "ProtAug: Utilizing Self-Supervised Protein Language Models for Effective Protein Sequence Augmentation", 2025.

## Research Experience

### Ph.D. Phase

2022–Present

Topic: *Machine Learning for Astronomical Data Reconstruction and Analysis*

- **Problem:** Sparse/noisy visibilities, artifact-prone imaging, label scarcity, limited robustness, and poor generalization.
- **Method:** **VIC-DDPM** (spectral+spatial diffusion), **PolarRec** (polar transformer), **VisRec** (semi-supervised); **GalaxAlign** for morphology classification & retrieval; **Pixel-Frequency Connect** for domain adaptation across different measuring instruments.
- **Impact:** End-to-end pipeline from low-level reconstruction to high-level analysis; scalable and robust galaxy morphology studies.

### Undergraduate Phase

2020–2022

Topic: *Machine-Learning–Based Survival Analysis on Multi-modal Medical Data*

- **Problem:** Prior WSI + gene expression survival models ignore whole-slide context, assume equal modality importance, and are sensitive to noisy gene expression.
- **Method:** **AMMASurv** with **AMMA**—heterogeneous directed graphs; WSI-guided attention induces gene-expression features (asymmetric information flow).
- **Impact:** Improved multi-modal survival prediction on two public cancer datasets.

## Teaching & Mentoring

- Teaching Assistant:
  - *Deep Learning in Data Science*, The Hong Kong University of Science and Technology (Guangzhou). Spring 2025
  - *Physical Education — Tennis*, The Hong Kong University of Science and Technology (Guangzhou). Fall 2024
- Invited Lecturer:
  - *Artificial Intelligence Practice 2025*, Sun Yat-sen University. Summer 2025

## Skills

- **Programming:** Python; C/C++; MATLAB; JavaScript.
- **Libraries/Tools:** Includes PyTorch; OpenCV; NumPy; Scipy; Torchvision; Pandas; Scikit-learn; Matplotlib; Seaborn.
- **Systems/HPC:** CUDA; multi-GPU (DDP/Deepspeed); Slurm; Docker/conda; OpenMP, Open MPI.
- **Astro:** Astropy; radio interferometry simulators; FFT pipelines; FITS/HDF5.
- **Languages:** Mandarin (native); English (fluent)
- **Hobbies:** Tennis; Reading; Traveling

## Service

- Conference Reviewer: CVPR 2024-2025, ICCV 2025, ICML 2025, NeurIPS 2024-2025, ICLR 2025-2026, AAAI 2024-2025, ACM MM 2025.
- Journal Reviewer: Publications of the Astronomical Society of Australia.

## References

- **Prof. Dr. Qiong Luo**, Email: [luo@ust.hk](mailto:luo@ust.hk)  
Ph.D. advisor, Department of Computer Science and Engineering, The Hong Kong University of Science and Technology
- **Prof. Dr. Hejun Wu**, Email: [wuhejun@mail.sysu.edu.cn](mailto:wuhejun@mail.sysu.edu.cn)  
Undergraduate Advisor, School of Computer Science and Engineering, Sun Yat-sen University
- **Prof. Dr. Feng Wang**, Email: [fengwang@gzhu.edu.cn](mailto:fengwang@gzhu.edu.cn)  
Collaborator, Center for Astrophysics, Guangzhou University