

## Curriculum Vitae



### Qiqi Lu

**Date of Birth:** Oct. 1996.

**Location:** Guangzhou, China; **Hometown:** Shandong, China

**Phone/WeChat:** (+86) 13192680430. **e-mail:** [136303971@qq.com](mailto:136303971@qq.com)

**Personal Homepage:** <https://qiqi-lu.github.io/about>

**GitHub:** <https://github.com/qiqi-lu>

## Research Summary

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Ph.D. candidate in Biomedical Engineering at Southern Medical University with research experience in fluorescence microscopy image restoration, artificial intelligence-based medical image analysis, and quantitative magnetic resonance imaging. My research focuses on developing deep learning algorithms and computational methods for biomedical applications, including foundation models, image restoration, image reconstruction, multimodal medical AI, and quantitative MRI.

## Education

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| <b>Southern Medical University</b>                                                                                                                                                                                                                | Guangzhou, China  |
| <b>Ph.D.</b> in Biomedical Engineering                                                                                                                                                                                                            | 2023.09 – 2026.12 |
| <ul style="list-style-type: none"><li>• <b>Research Focus:</b> Fluorescence microscopic image restoration; Deep learning; Medical image analysis and processing</li><li>• <b>Advisor:</b> Prof. Shenghua Cheng</li></ul>                          |                   |
| <b>Southern Medical University</b>                                                                                                                                                                                                                | Guangzhou, China  |
| <b>M.S.</b> in Biomedical Engineering                                                                                                                                                                                                             | 2019.09 – 2023.06 |
| <ul style="list-style-type: none"><li>• <b>Research Focus:</b> Quantitative MR image reconstruction; Deep Learning; Magnetic resonance imaging (MRI); Medical image analysis and processing</li><li>• <b>Advisor:</b> Prof. Yanqiu Feng</li></ul> |                   |
| <b>Southern Medical University</b>                                                                                                                                                                                                                | Guangzhou, China  |
| <b>B.E.</b> in Biomedical Engineering                                                                                                                                                                                                             | 2015.09 – 2019.06 |

## Skills

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- **Programming:** Python, MATLAB, C++, PyTorch, TensorFlow
- **Biomedical Imaging:** Fluorescence microscopy image processing, MRI reconstruction, quantitative MRI, Medical image analysis
- **AI Methods:** Deep learning, foundation models, multimodal learning, image restoration

## Publications

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1. **Qiqi Lu**, Xiuli Liu, Qianjin Feng, Shaoqun Zeng\*, Shenghua Cheng\*. A foundation model for multi-task cross-distribution restoration of fluorescence microscopy images. *Nature Communications* 17, 3729 (2026).
2. **Qiqi Lu**, Jialong Li, Zifeng Lian, Xinyuan Zhang, Qianjin Feng, Wufan Chen, Jianhua Ma, Yanqiu Feng\*. A model-based MR parameter mapping network robust to substantial variations in acquisition settings. *Medical Image Analysis* 94, 103148 (2024).

3. **Qiqi Lu**, Qianjin Feng, Shaoqun Zeng, Shenghua Cheng\*. Building artificial intelligence virtual tissue (AIVT) for tissue state representation, feature prediction, and dynamic simulation. Preprint at <https://doi.org/10.48550/arXiv.2606.29883> (2026). **【under submission】**
  4. **Qiqi Lu**, Hua Ye, Xiuli Liu, Shaoqun Zeng, Qianjin Feng\*, Shenghua Cheng\*. Kernel learning enables fluorescence microscopic image deconvolution with enhanced performance and speed. (2026) **【under submission】**
  5. **Qiqi Lu**, Changqing Wang, Zifeng Lian, Xinyuan Zhang, Wei Yang, Qianjin Feng, Yanqiu Feng\*. Cascade of Denoising and Mapping Neural Networks for MRI R2\* Relaxometry of Iron-Loaded Liver. *Bioengineering* 10, 209 (2023).
  6. **Qiqi Lu**, Zifeng Lian, Jialong Li, Wenbin Si, Zhaohua Mai, Yanqiu Feng\*. Magnetic Resonance R2\* Parameter Mapping of Liver Based on Self-supervised Deep Neural Network. *Chinese Journal of Magnetic Resonance* 40, 258–269 (2023).
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7. Hua Ye, Shijie Liu, Lanjie Pei, Jiaxin Bai, **Qiqi Lu**, Junbo Hu, Li Chen, Jing Cai, Xi Feng, Yuwei Xiao, Shaoqun Zeng, Xiuli Liu\*, Shenghua Cheng\*. CervixFM: A General Foundation Model for Cervical Cytology Image Analysis. *Nature Communications* (2026). **【under revision】**
  8. Jialong Li, Zhicheng Zhang, Yunwei Chen, **Qiqi Lu**, Ye Wu, Xiaoming Liu, Qianjin Feng, Yanqiu Feng, Xinyuan Zhang\*. Reliable deep diffusion tensor estimation: Rethinking the power of data-driven optimization routine. *Engineering Applications of Artificial Intelligence* 181, 115781 (2026).
  9. Chengyu Wang, Qiang Yang, Qi Hong, Peiqi Zhuang, Jinfa Huang, Hui Qiao, **Qiqi Lu**, Xinyi Liu, Xiwen Zhang, Jing Cai, Ping Yang, Kaixian Deng, Shenghua Cheng. Development and validation of a traceable reasoning multi-agent framework for simulating real-world gynecological outpatient diagnosis. *npj Precision Oncology* (2026). **【under revision】**
  10. Shijie Liu, Hongtao Kang, Hui Qiao, Yuwei Xiao, Qi Hong, **Qiqi Lu**, Junbo Hu, He Wu, Hua Ye, Ziheng Yu, Yang Liu, Xi Xiong, Ping Yang, Tingwei Quan, Jing Cai, Shaoqun Zeng, Li Chen, Xiuli Liu, Shenghua Cheng\*. CytoGPT: A Multimodal Generative Assistant for Interpretable Cervical Cytology Analysis (2026). **【under submission】**
  11. Qi Hong, Shijie Liu, Liying Wu, **Qiqi Lu**, Pinglan Yang, Dingyu Chen, Gong Rao, Xinyi Liu, Hua Ye, Peiqi Zhuang, Wenxiu Yang, Shaoqun Zeng, Qianjin Feng, Xiuli Liu\*, Jing Cai\*, Shenghua Cheng\*. Evaluating the performance of large language & visual-language models in cervical cytology screening. *npj Precision Oncology* 9, 153 (2025).
  12. Yunwei Chen, Jialong Li, **Qiqi Lu**, Ye Wu, Xiaoming Liu, Yuanyuan Gao, Yanqiu Feng, Zhicheng Zhang, Xinyuan Zhang\*. Spherical Harmonics-Based Deep Learning Achieves Generalized and Accurate Diffusion Tensor Imaging. *IEEE Journal of Biomedical and Health Informatics* 29, 456–467 (2025).
  13. Zifeng Lian, **Qiqi Lu**, Bingquan Lin, Lingjian Chen, Peng Peng, Yanqiu Feng\*. MRI Deep Learning-Based Automatic Segmentation of Interventricular Septum for Black-Blood Myocardial T2\* Measurement in Thalassemia. *Journal of Magnetic Resonance Imaging* 60, 651–661 (2024).
  14. Zifeng Lian, **Qiqi Lu**, Bingquan Lin, Lingjian Chen, Jian Gong, Qiugen Hu, Huafeng Wang, Yanqiu Feng\*. A fully automatic parenchyma extraction method for MRI T2\* relaxometry of iron loaded liver in transfusion-dependent patients. *Magnetic Resonance Imaging* 109, 18–26 (2024).
  15. Qiang Liu, Zhongbiao Xu, Kaixuan Zhao, W Scott Hoge, Xinyuan Zhang, Yingjie Mei, **Qiqi Lu**, Thoralf Niendorf, Yanqiu Feng\*. Diffusion-weighted magnetic resonance imaging in rat kidney using two-dimensional navigated, interleaved echo-planar imaging at 7.0 T. *NMR in Biomedicine* 35, (2022).

## Conference

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1. Jialong Li, Qiqi Lu, Yanqiu Feng, Xinyuan Zhang\*. Diffusion Tensor Estimation Using Model-Based Deep Learning. **2023 ISMRM & ISMRT Annual Meeting & Exhibition** (2023).
2. Zifeng Lian, Qiqi Lu, and Yanqiu Feng\*. A Fully Automatic Data Processing Method for MRI T2\* Relaxometry of Iron Loaded Liver. **2023 ISMRM & ISMRT Annual Meeting & Exhibition** (2023).
3. Jialong Li, Qiqi Lu, Qiang Liu, Yanqiu Feng, Xinyuan Zhang\*. Efficient six-direction DTI tensor estimation using model-based deep learning. **Joint Annual Meeting ISMRM-ESMRMB & ISMRT 31st Annual Meeting** (2022).
4. Qiang Liu, Yingjie Mei, Quan Tao, Qiqi Lu, Xinyuan Zhang, Yanqiu Feng\*. DPG-BUDA: Distortion-free diffusion-weighted renal MRI in small rodents. **Joint Annual Meeting ISMRM-ESMRMB & ISMRT 31st Annual Meeting** (2022).
5. Qiang Liu, Yuanbo Yang, Xinyuan Zhang, Yingjie Mei, Qiqi Lu, Guoxi Xie, Yanqiu Feng\*. Distortion-free high-resolution diffusion weighted imaging of mouse brain using diffusion-prepared 3D VF-RARE. **2021 ISMRM & ISMRT Annual Meeting & Exhibition** (2021).
6. Jiehong Liu, Danlin Lin, Qiqi Lu, Yuanyao Xie, Haolin Chen, Chao Ke, Jing Li, Xiaofei Lv, Yanqiu Feng\*. Game theory-based fusion of multimodal magnetic resonance imaging features for glioma grading. in **International Conference on Future of Medicine and Biological Information Engineering** (MBIE 2024) (eds Yao, Y., Li, X. & Yu, X.) 42 (SPIE, Shenyang, China, 2024).

## Awards

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| 2026 | <b>Second Prize</b> , The 11 <sup>th</sup> National Biomedical Engineering Innovation Design Competition for College Students (Foundation Model for Fluorescence Microscopy Image Restoration)           |
| 2026 | <b>Second Prize</b> , The 11 <sup>th</sup> National Biomedical Engineering Innovation Design Competition for College Students (AI-Assisted Diagnosis System for Nephritis Based on Multimodal Data)      |
| 2025 | <b>Best Poster Award</b> , The 17 <sup>th</sup> International Conference on Photonics and Imaging in Biology and Medicine (PIBM)                                                                         |
| 2024 | <b>First Prize</b> , The 9 <sup>th</sup> National Biomedical Engineering Innovation Design Competition for College Students (Rapid Deconvolution Algorithm for Fluorescence Microscopy Images)           |
| 2024 | <b>Third Prize</b> , The 9 <sup>th</sup> National Biomedical Engineering Innovation Design Competition for College Students (Evaluation and Application of Multimodal LLMs in Cervical Cancer Screening) |
| 2025 | Outstanding Graduate Student Leader, Southern Medical University                                                                                                                                         |
| 2024 | Outstanding Graduate Student Leader, Southern Medical University                                                                                                                                         |
| 2024 | Scholarship under the National Scholarship Supplementary Program                                                                                                                                         |
| 2021 | Outstanding Graduate Student, Southern Medical University                                                                                                                                                |
| 2020 | Outstanding Graduate Student, Southern Medical University                                                                                                                                                |
| 2016 | Outstanding Student, Southern Medical University                                                                                                                                                         |