

Liangqiong Qu

Gender: Female

Date-of-Birth: Jul, 1990

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EMPLOYMENT

- Nov. 2022 – Now The University of Hong Kong
Assistant Professor
- Sep. 2019 – Nov. 2022 Stanford University
Postdoctoral Researcher
Advisor: Daniel Rubin
- Jun. 2018 – Aug.2019 The University of North Carolina at Chapel Hill
Postdoctoral Researcher
Advisor: Dinggang Shen

EDUCATION

- Sep. 2012 – Dec.2017 **University of Chinese Academy of Sciences, Shenyang, China**
Joint Ph.D. in Pattern Recognition and Intelligent System
Advisor: Prof. Yandong Tang
- Sep. 2014 – Jun. 2018 **City University of Hong Kong, Hong Kong, China**
Joint Ph.D. in Computer Science
Advisor: Prof. Qingxiong Yang and Prof. Rynson W.H. Lau
- Sep. 2011- Jun. 2012 **University of Science and Technology of China, Hefei, China**
Basic Courses
- Sep. 2007 – Jun. 2011 **Central South University, Changsha, China**
B.S. in Automation

HONORS/AWARDS

- 2017 The National Scholarship for Graduate Student
- 2016 Natural Science Academic Achievement Award of Liaoning Province (1st)
- 2014 Natural Science Academic Achievement Award of Liaoning Province (2nd)
- 2013 Excellent Student Cadre and Merit Student of Chinese Academy of Sciences
- 2011 Outstanding Graduate in Central South University
- 2009 Second Prize in the National Undergraduate Mathematical Modeling Contest

2009	Foxconn's Outstanding Student Scholarship and "EAST" Power Electronic Scholarship
2008	The National Scholarship

SELECTED PUBLICATIONS

(# denotes joint first-authors, * denotes co-corresponding authors)

Publications

- [1] **Liangqiong Qu**, Niranjana Balachandar, Miao Zhang, and Daniel Rubin, "Handling Data Heterogeneity with Generative Replay in Collaborative Learning for Medical Imaging," *Medical Image Analysis (MEDIA)* 2022, 102424.
- [2] **Liangqiong Qu**, Yuyin Zhou, Paul Pu Liang, Yingda Xia, Feifei Wang, Ehsan Adeli, Fei-Fei Li, Daniel Rubin "Rethinking Architecture Design for Tackling Data Heterogeneity in Federated Learning," **CVPR 2022**.
- [3] Feifei Wang[#], **Liangqiong Qu**[#], Ani Baghdasaryan[#], RuSiou Hsu, Peng Liang, Jiachen Li, Guanzhou Zhu, Zhuoran Ma and Hongjie Dai, "High Precision Tumor Resection Down to Few-Cell Level Guided by NIR-IIb Molecular Fluorescence Imaging", *Proceedings of the National Academy of Sciences of the United States of America (PNAS)* 2022, 119(15): e2123111119.
- [4] Miao Zhang[#], **Liangqiong Qu**^{*#}, Sharut Gupta, Praveer Singh, Ken Chang, Jayashree Kalpathy-Cramer, and Daniel Rubin^{*}, "SplitAVG: A Federated Deep Learning Method to Tackle Data Heterogeneity for Medical Imaging," *Journal of the American Medical Informatics Association (JBHI)* 2022.
- [5] **Liangqiong Qu**, Yongqin Zhang, Shuai Wang, Pew-Thian Yap, Dinggang Shen. "Synthesizing 7T from 3T MRI via Deep Learning in Spatial and Wavelet Domains." *Medical Image Analysis (MEDIA)* 2020, 62: 101663.
- [6] Kun Sun[#], **Liangqiong Qu**[#], Chunfeng Lian, Dan Hu, Dinggang Shen. "High-Resolution Breast MRI Reconstruction Using a Deep Convolutional Generative Adversarial Network". *Journal of Magnetic Resonance Imaging* 2020, 52(6), 1852-1858.
- [7] **Liangqiong Qu**, Shuai Wang, Pew-Thian Yap, Dinggang Shen. "Wavelet-Based Semi-Supervised Adversarial Learning for Synthesizing Realistic 7T from 3T MRI." *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2019)*. (**Oral Presentation**).
- [8] **Liangqiong Qu**, Jiandong Tian, Shengfeng He, Yandong Tang, and Rynson WH Lau. "Multi-scale embedding deep network for shadow removal." *IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2017)*, 4067-4075.
- [9] **Liangqiong Qu**, Shengfeng He, Jiawei Zhang, Jiandong Tian, Yandong Tang, and Qingxiang Yang. "Saliency Detection via Deep Fusion." *IEEE Transactions on Image Processing (TIP)*. 2017, 26(5): 2274–2285.
- [10] **Liangqiong Qu**, Jiandong Tian, Zhi Han, and Yandong Tang. "Pixel-wise Orthogonal Decomposition for Color Illumination Invariant and Shadow-free Image." **Optics Express**. 2016, 23(3): 2220–2239.
- [11] Jie Wei, Zhengwang Wu, Li Wang, Toan DucBui, **Liangqiong Qu**, Pew Thian Yap, Yong Xia, Gang Li, and Dinggang Shen, "A Cascaded Nested Network for 3T Brain MR Image Segmentation Guided by 7T Labeling." *Pattern Recognition (PR)*. 2022, 124: 108420.
- [12] Feifei Wang, Zhuoran Ma, Yeteng Zhong, Felix Salazar, Chun Xu, Fuqiang Ren, **Liangqiong Qu**, Anna M. Wu, and Hongjie Dai "In Vivo NIR-II Structured-Illumination Light-sheet Microscopy". *Proceedings of the National Academy of Sciences (PNAS)* 2021, 118, e2023888118.
- [13] Shuai Wang, Dong Nie, **Liangqiong Qu**, Yeqin Shao, Jun Lian, Qian Wang, and Dinggang Shen. "CT Male Pelvic Organ Segmentation via Hybrid Loss Network with Incomplete Annotation." *IEEE Transactions on Medical Imaging (TMI)* (2020): 2151-2162.

- [14] Shuai Wang, Qian Wang, Yeqin Shao, **Liangqiong Qu**, Chunfeng Lian, and Dinggang Shen. "Iterative Label Denoising Network: Segmenting Male Pelvic Organs in CT from 3D Bounding Box Annotations." *IEEE Transactions on Biomedical Engineering* (2020).
- [15] Siyuan Liu, Kim-Han Thung, **Liangqiong Qu**, Weili Lin, Dinggang Shen, and Pew-Thian Yap, "Learning MRI Artefact Removal with Unpaired Data". *Nature Machine Intelligence* **2021 3 (1), 60-67**.
- [16] Shuai Wang, Yang Cong, Hancan Zhu, Xianyi Chen, **Liangqiong Qu**, Huijie Fan, Qiang Zhang, Mingxia Liu. "Multi-scale Context-guided Deep Network for Automated Lesion Segmentation with Endoscopy Images of Gastrointestinal Tract". *IEEE Journal of Biomedical and Health Informatics (JBHI)* 2020.
- [17] Holger R. Roth, Ken Chang, Praveer Singh, Nir Neumark, Wenqi Li, Vikash Gupta, Sharut Gupta, **Liangqiong Qu** and etc. "Federated Learning for Breast Density Classification: A Real-World Implementation". *MICCAI Workshop* 2020.
- [18] Yongqin Zhang, **Liangqiong Qu**, Jie-Zhi Cheng, Dinggang Shen, Pew-Thian Yap. "Dual-Domain Convolutional Neural Networks for Synthesizing 7T from 3T MRI." *Magnetic Resonance Imaging* 2020.
- [19] Feifei Wang, Hao Wan, Zhuoran Ma, Yeteng Zhong, Qinchao Sun, Ye Tian, **Liangqiong Qu**, Haotian Du, Mingxi Zhang, Lulin Li, Huilong Ma, Jian Luo, Yongye Liang, Wen Jung Li, Guosong Hong, Lianqing Liu, and Hongjie Dai. "Light Sheet Microscopy in the Near-Infrared II Window". *Nature Method* 2019, 16(6): 545.
- [20] Zhi Han, Jiandong Tian, **Liangqiong Qu**, and Yandong Tang. "A New Illumination-Invariant Color Space for Daytime Outdoor Images." *IEEE Transactions on Image Processing (TIP)*. 2017, 26(2): 1031-1039.
- [21] Jiawei Zhang, Jianbo Jiao, Mingliang Chen, **Liangqiong Qu**, Xiaobin Xu and Qingxiong Yang. "3D Hand Pose Tracking and Estimation Using Stereo Matching." *IEEE International Conference on Image Processing (ICIP 2017)*.
- [22] Jiandong Tian, Xiaojun Qi, **Liangqiong Qu**, and Yandong Tang. "New Spectrum Ratio Properties and Features for Shadow Detection." *Pattern Recognition (PR)*. 2016, 51: 85-96.

BOOK & BOOK CHAPTER

Hancan Zhu, Shuai Wang, **Liangqiong Qu** and Dinggang Shen. "Hippocampus Segmentation in MR Images: Multiatlas Methods and Deep Learning Methods" *Big Data in Psychiatry# x0026; Neurology* (pp. 181-215). Academic Press.

PATENTS

- [1] Niranjan Balachandar, Daniel L. Rubin and **Liangqiong Qu**. "Systems and Methods for Robust Federated Training of Neural Networks". *U.S. Patent* Application 16/993,872[P]. 2021-2-18.
- [2] Jiandong Tian, **Liangqiong Qu**, Zhanpeng Wang and Yandong Tang. "基于正交分解和 EM 算法的阴影检测方法." *Chinese patent*. CN105447843A., 2018-06-12

Academic Services

Journal Referee

- *IEEE Transaction on Image Processing (TIP)*
- *IEEE Transactions on Medical Imaging (TMI)*
- *IEEE Transactions on Cybernetics*
- *IEEE Transactions on Circuits and Systems for Video Technology*
- *IEEE Reviews in Biomedical Engineering*
- *Journal of the American Medical Informatics Association (JAMIA)*
- *Pattern Recognition (PR)*
- *Neurocomputing*

Conference Referee

- Computer Vision and Pattern Recognition (CVPR)
- European Conference on Computer Vision (ECCV)
- International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)
- International Joint Conference on Artificial Intelligence (IJCAI)
- Asian Conference on Computer Vision (ACCV)
- Medical Image Understanding and Analysis
- IEEE International Conference on Image Processing (ICIP)

Area Chair

- ML4H 2021/2022: Machine Learning for Health

Topic Editor

- Frontiers in Radiology

Student Advising

- Miao Zhang (Stanford, MS → Amazon, NYU PhD Candidate): Federal learning
- Justin Wang (Stanford, MS → Amazon): Federal learning
- Vivian Zhu (Senior at Saint Francis High School): Incorporating XNAT to the FL platform
- Wei Zhang (Shenyang Jianzhu Uni., MS → UCAS PhD Candidate)