

# Liangqiong Qu

Gender: Female

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## 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 – Feb. 2016      **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**

## ACADEMIC EXPERIENCE

- Sep. 2019 – Now      Stanford University  
Postdoctoral Researcher  
Advisor: Daniel Rubin
- Jun. 2018 – Aug.2019      The University of North Carolina at Chapel Hill  
Postdoctoral Researcher  
Advisor: Dinggang Shen
- Jan. 2018 – May. 2018      Shenyang Institute of Automation, Chinese Academy of Sciences  
Research Assistant  
Advisor: Yandong Tang

## HONORS/AWARDS

- 2019      MICCAI oral presentation (Top 3% of submissions)
- 2017      The National scholarship for graduate student (Top %2 in the college)
- 2016      Natural Science Academic Achievement Award of Liaoning Province (1<sup>st</sup>)
- 2014~2016      Merit student of University of Chinese Academy of Sciences (Top %5 in the college)
- 2014      Natural Science Academic Achievement Award of Liaoning Province (2<sup>nd</sup>)
- 2013      Excellent student cadre and merit student of Chinese Academy of Sciences

2011	Outstanding graduate in Central South University (Top %5 in the college)
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 (Top %5 in the college)

## SELECTED PUBLICATIONS

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

### 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* 2022, 102424. (**MEDIA**, IF:8.545, TOP journal, JCR Q1).
- [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**. (TOP conference, CCF-A, accepted).
- [3] Feifei Wang<sup>#</sup>, **Liangqiong Qu**<sup>#</sup>, Ani Baghdasaryan<sup>#</sup>, 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. (TOP Journal, JCR Q1).
- [4] **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* 2020, 62: 101663. (**MEDIA**, IF: 8.545, TOP Journal, JCR Q1).
- [5] Kun Sun<sup>#</sup>, **Liangqiong Qu**<sup>#</sup>, 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. (IF: 3.954, JCR Q1).
- [6] **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)*. (TOP conference, **Oral Presentation**).
- [7] **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. (TOP conference, CCF-A, **Spotlight Oral, > 120 citations**).
- [8] **Liangqiong Qu**, Shengfeng He, Jiawei Zhang, Jiandong Tian, Yandong Tang, and Qingxiong Yang. "Saliency Detection via Deep Fusion." *IEEE Transactions on Image Processing (TIP)*. 2017, 26(5): 2274–2285. (IF: 9.34, TOP journal, CCF-A, JCR Q1, **ESI Highly Cited Papers, > 200 citations**).
- [9] **Liangqiong Qu**, Jiandong Tian, Huijie Fan, Wentao Li, and Yandong Tang, "Evaluation of Shadow Features," *IET Computer Vision*, 2017. (IF: 1.516, JCR Q2)
- [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. (IF: 3.895, JCR Q1)
- [11] **Liangqiong Qu**, Jiandong Tian, Zhi Han, and Yandong Tang. "Object Color Constancy for Outdoor Multiple Light Sources." *CCF Chinese Conference on Computer Vision*, 2015, 369-378.
- [12] 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. (IF: 7.19, JCR Q1).
- [13] 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 (IF: 9.4, TOP journal, JCR Q1)
- [14] 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. (IF: 6.685, TOP journal, JCR Q1)
- [15] 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). (IF: 4.42, JCR Q1)
- [16] 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. (IF: 16.65, TOP journal)
- [17] 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. (IF: 4.112, JCR Q1)
- [18] 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.
- [19] 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. (IF: 4.813, JCR Q1)
- [20] 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. (IF: 30.8, TOP journal, JCR Q1)
- [21] 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. (IF: 9.34, TOP journal, CCF-A, JCR Q1)
- [22] 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)*.
- [23] 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. (IF: 7.19, JCR Q1)

## 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] Niranjana 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)

### Meta-Reviewer

- ML4H 2021: Machine Learning for Health

### Topic Editor

- Frontiers in Radiology

## Student Advising

- Miao Zhang (Stanford, MS → Amazon, NYU PhD ): 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)