Curriculum Vitae

Dr. Liangqiong Qu, Ph.D.

1. Academic qualifications

2018.06	Ph.D. in Computer Science City University of Hong Kong
2018.01	Ph.D. in Pattern Recognition and Intelligent System University of Chinese Academy of Sciences
2011.06	B.S. in Automation Central South University

2. Previous academic positions held

2019.09-2022.11	Postdoctoral Scholar	Stanford University
2018.06-2019.08	Postdoctoral Scholar	University of North Carolina at Chapel Hill

3. Present academic position

2022.12-present	Assistant Professor	Department of Statistics and Actuarial Science The University of Hong Kong

4. Previous relevant research work

The PI has been actively involved in the research of artificial intelligent and medical image analysis, with a special focus on deep learning-driven medical image acquisition and reconstruction and the development of robust AI models via federated learning. Her research results have been published in 2 book chapter, and 50 peer-reviewed articles including top-tier venues such as **Nature Method, Nature Machine Intelligence, Cancer Cell, PNAS, MedIA, TMI, TIP, CVPR, ICLR, AAAI, MICCAI**. Through these studies, she has accumulated solid knowledge in deep learning in image acquisition and reconstruction, and rich experience in dealing with cutting-edge healthcare problems, providing a solid and strong foundation for the proposed project.

5. Selected Publications

Remark: * Co-first authors, # Corresponding or Co-corresponding authors

1) Pengxin Guo, Shuang Zeng, Yanran Wang, Huijie Fan, Feifei Wang, **Liangqiong Qu**[#]. "Selective Aggregation for Low-Rank Adaptation in Federated Learning". In ***Proc. ICLR.*** 2025.
2) Xiaodan Zhang, Yanzhao Shi, Junzhong Ji[#], Chengxin Zheng, **Liangqiong Qu**[#]. "MEPNet: Medical Entity-balanced Prompting Network for Brain CT Report Generation." In ***Proc. AAAI. (*Oral Presentation*).*** 2025.
3) Pengxin Guo, Shuang Zeng, Wenhua Chen, Xxiaodan, Zhang, Weihong Ren, Yuyin Zhou, and **Liangqiong Qu**[#]. A New Federated Learning Framework Against Gradient Inversion Attacks. ***In Proc. AAAI. 2025.***

4) Yujian Yuan, Yanting Zheng, and **Liangqiong Qu**[#]. "Benchmarking Radiology Report Generation From Noisy Free-Texts." ***IEEE J. Biomed. Health Inform.***, 2025. (SCI, IF: 6.8).
5) Junyuan Zhang, Shuang Zeng, Miao Zhang, Runxi Wang, Feifei Wang, Yuyin Zhou, Paul Pu Liang, and **Liangqiong Qu**[#]. "FLHetBench: Benchmarking Device and State Heterogeneity in Federated Learning". In ***Proc. CVPR***. 12098-12108, 2024.
6) Jiawei Liu, Qiang Wang, Huijie Fan[#], Yinong Wang, Yandong Tang, and **Liangqiong Qu**[#]. "Residual Denoising Diffusion Models". In ***Proc. CVPR***. 2773-2783, 2024.
7) **Liangqiong Qu**[#], Yongqin Zhang, Zhiming Cheng, Shuang Zeng, Xiaodan Zhang, and Yuyin Zhou. Medical Image Synthesis. CRC Press, 2024: 163-187.
8) Yan-Ran Wang[*], **Liangqiong Qu**[*], Natasha Diba Sheybani, Xiaolong Luo, Jiangshan Wang, Kristina Elizabeth Hawk, Ashok Joseph Theruvath, Sergios Gatidis, Xuerong Xiao, Allison Pribnow, Daniel Rubin, and Heike E Daldrup-Link. AI Transformers for Radiation Dose Reduction in Serial Whole-Body PET Scans. ***Radiol.: Artif. Intell.*** 5(3): e220246, 2023. (SCI, IF: **13.5**).
9) Yanzhao Shi, Junzhong Ji, Xiaodan Zhang[#], **Liangqiong Qu**[#], and Ying Liu. Granularity Matters: Pathological Graph-driven Cross-modal Alignment for Brain CT Report Generation. In ***Proc. EMNLP*** 2023 (**Oral Presentation**).
10) **Liangqiong Qu,** Yuyin Zhou, Paul Pu Liang, Yingda Xia, Feifei Wang, Ehsan Adeli, Li Fei-Fei, and Daniel Rubin. Rethinking Architecture Design for Tackling Data Heterogeneity in Federated Learning. In ***Proc. CVPR***. 10061-10071, 2022.
11) 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. ***Proc. Natl. Acad. Sci. USA* (*PNAS*)**. 119(15): e2123111119, 2022. (SCI, IF: **11.1**).
12) **Liangqiong Qu,** Niranjan Balachandar, Miao Zhang, and Daniel Rubin. Handling Data Heterogeneity with Generative Replay in Collaborative Learning for Medical Imaging. ***Med. Image Anal***. 78: 102424, 2022. (SCI, IF: **13.828**).
13) **Liangqiong Qu**, Yongqin Zhang, Shuai Wang, Pew-Thian Yap, and Dinggang Shen. Synthesizing 7T from 3T MRI via Deep Learning in Spatial and Wavelet Domains. ***Med. Image Anal***. 62: 101663, 2020. (SCI, IF:**13.828**).
14) **Liangqiong Qu**, Shuai Wang, Pew-Thian Yap, and Dinggang Shen. Wavelet-Based Semi-Supervised Adversarial Learning for Synthesizing Realistic 7T from 3T MRI. In ***Proc. MICCAI***. 786-794, 2019. (**Oral Presentation**).
15) Kun Sun[*], **Liangqiong Qu**[*], Chunfeng Lian, Dan Hu, and Dinggang Shen. High-Resolution Breast MRI Reconstruction Using a Deep Convolutional Generative Adversarial Network. ***J. Magn. Reson. Imaging.*** 2020, 52(6), 1852-1858.
16) **Liangqiong Qu**, Jiandong Tian, Shengfeng He, Yandong Tang, and Rynson WH Lau. Multi-Scale Embedding Deep Network for Shadow Removal. In ***Proc. CVPR***. 4067-4075, 2017.
17) **Liangqiong Qu**, Shengfeng He, Jiawei Zhang, Jiandong Tian, Yandong Tang, and Qingxiong Yang. Saliency Detection via Deep Fusion. ***IEEE Trans. Image Process.*** 26(5): 2274–2285, 2017. (ESI highly cited paper, IF: **10.6**).
18) **Liangqiong Qu,** Jiandong Tian, Zhi Han, and Yandong Tang. Pixel-wise Orthogonal Decomposition for Color Illumination Invariant and Shadow-free Image. ***Opt. Express***. 2016, 23(3): 2220–2239.
19) Zhiheng Cheng, Qingyue Wei, Hongru Zhu, Yan Wang, **Liangqiong Qu**, Wei Shao, and Yuyin Zhou. Unleashing the Potential of SAM for Medical Adaptation via Hierarchical Decoding. ***In Proc. CVPR.*** 2024: 3511-3522.
20) Yan-Ran (Joyce) Wang, Pengcheng Wang, Zihan Yan, Quan Zhou, Fatma Gunturkun, Peng Li,

Yanshen Hu, Wei Emma Wu, Kankan Zhao, Michael Zhang, Haoyi Lv, Lehao Fu, Jiajie Jin, Qing Du, Haoyu Wang, Kun Chen, **Liangqiong Qu**, Keldon Lin, Michael Iv, Hao Wang, Xiaoyan Sun, Hannes Vogel, Summer Han, Lu Tian, Feng Wu, and Jian Gong. "Advancing Presurgical Non-invasive Molecular Subgroup Prediction in Medulloblastoma Using Artificial Intelligence and MRI Signatures". ***Cancer Cell.*** 2024. (IF: 50.3).

21) Chengxin Zheng, Junzhong Ji, Yanzhao Shi, Xiaodan Zhang, Liangqiong Qu. "See Detail Say Clear: Towards Brain CT Report Generation via Pathological Clue-driven Representation Learning". In ***Proc. EMNLP Findings***. 16542–16552, 2024.
22) Sarthak Pati[*], Sourav Kumar[*], Amokh Varma[*], Brandon Edwards[*], Charles Lu, **Liangqiong Qu**, Justin Jiayi Wang, Anantharaman Lakshminarayanan, Shih-han Wang, Micah J Sheller, Ken Chang, Praveer Singh, Daniel Rubin, Jayashree Kalpathy-Cramer, and Spyridon Bakas. Privacy Preservation for Federated Learning in Healthcare. ***Patterns***. 2024.
23) Siyi Tang, Jared Dunnmon, **Liangqiong Qu**, Khaled Saab, Tina Baykaner, Christopher Lee-Messer, and Daniel Rubin. "Spatiotemporal Modeling of Multivariate Signals With Graph Neural Networks and Structured State Space Models". In ***Proc. CHIL.*** 50-71, 2023. (**Best Paper Award**).
24) Rui Yan, **Liangqiong Qu**, Qingyue Wei, Shih-Cheng Huang, Liyue Shen, Daniel Rubin, Lei Xing, Yuyin Zhou. "Label-Efficient Self-Supervised Federated Learning for Tackling Data Heterogeneity in Medical Imaging". ***IEEE Trans. Med. Imaging.*** 42(7): 1932 – 1943, 2023.
25) Xiaoyang Chen, Liangqiong Qu, Yifang Xie, Sahar Ahmad, and Pew-Thian Yap. A Paired Dataset of T1- and T2-Weighted MRI at 3 Tesla and 7 Tesla. ***Sci. Data,*** 10.1 (2023): 489.
26) Feifei Wang, Fuqiang Ren, Zhuoran Ma, **Liangqiong Qu**, Ronan Gourgues, Chun Xu, Ani Baghdasaryan, Jiachen Li, Iman Esmaeil Zadeh, Johannes W. N. Los, Andreas Fognini, Jessie Qin-Dregely, and Hongjie Dai. In vivo non-invasive confocal fluorescence imaging beyond 1,700 nm using superconducting nanowire single-photon detectors. ***Nat. Nanotechnol.*** 2022, 17: 653-660. (SCI, IF: 38.3, **ESI highly cited paper**)
27) Siyuan Liu, Kim-Han Thung, **Liangqiong Qu**, Weili Lin, Dinggang Shen, and Pew-Thian Yap, Learning MRI Artefact Removal with Unpaired Data. ***Nat. Mach. Intell.*** 2021 3 (1), 60-67. (SCI, IF: 23.8)
28) 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. Academic Press.2021, 181-215.
29) 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.
30) Shuai Wang, Yang Cong, Hancan Zhu, Xianyi Chen, **Liangqiong Qu**, Huijie Fan, Qiang Zhang, and Mingxia Liu. Multi-scale Context-guided Deep Network for Automated Lesion Segmentation with Endoscopy Images of Gastrointestinal Tract. ***IEEE J. Biomed. Health Inform.*** 2020, 25(2): 514-525. (SCI, IF: 6.8, **ESI highly cited paper**).
31) 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 Trans. Med. Imaging***, 2020: 2151-2162.
32) 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. In ***Proc. MICCAI. Workshop*** 2020
33) 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 Trans. Biomed. Eng.***, 2020, 39(6): 2151-2162.
34) 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. ***Nat. Methods***, 16(6): 545, 2019.

35) Yongqin Zhang, **Liangqiong Qu**, Jie-Zhi Cheng, Dinggang Shen, Pew-Thian Yap. Dual-Domain Convolutional Neural Networks for Improving Structural Information in 3T MRI. ***Magn. Reson. Imaging.*** 2019, 64: 90-100.
36) Jiawei Zhang, Jianbo Jiao, Mingliang Chen, **Liangqiong Qu**, Xiaobin Xu and Qingxiong Yang. 3D Hand Pose Tracking and Estimation Using Stereo Matching. In ***Proc. ICIP.*** 2017.
37) Zhi Han, Jiandong Tian, **Liangqiong Qu**, and Yandong Tang. A New Illumination-Invariant Color Space for Daytime Outdoor Images. ***IEEE Trans. Image Process***. 2017, 26(2): 1031-1039.
38) Jiandong Tian, Xiaojun Qi, **Liangqiong Qu**, and Yandong Tang. New Spectrum Ratio Properties and Features for Shadow Detection. ***Pattern Recogn.*** 2016, 51: 85-96.
39) Jiandong Tian, **Liangqiong Qu**, Zhanpeng Wang and Yandong Tang. "Shadow Detection based on pixel-wise orthogonal decomposition and an EM algorithm". Chinese Patent Numbers: 201410395335.8.

6. Research-related prizes and awards

2023	CHIL Best Paper Award
2017	The National Scholarship for Graduate Student
2016	Natural Science Academic Achievement Award of Liaoning Province (1st)
2014~2016	Merit student of University of Chinese Academy of Sciences
2014	Natural Science Academic Achievement Award of Liaoning Province (2rd)
2013	Excellent student cadre and merit student of Chinese Academy of Sciences
2011	Outstanding Graduate in Central South University
2009	National Undergraduate Mathematical Modeling Contest (2rd)
2009	Foxconn's Outstanding Student Scholarship
2009	EAST Power Electronic Scholarship
2008	The National Scholarship