

# Xiaoqing GUO

Room G2325, AC1, City University of Hong Kong, Kowloon, Hong Kong.

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## Education

**City University of Hong Kong (CityU)**, Hong Kong Sep. 2018 - Aug. 2022

*Ph.D. in Electrical Engineering (EE)*

Supervisor: Prof. Yixuan Yuan

Thesis: Towards Annotation-efficient Deep Learning for Automated Medical Image Analysis

Honor: ***Outstanding Research Thesis Award***

**Beihang University (BUAA)**, Beijing, China Sep. 2014 - Jun. 2018

*B.E. in Biomedical Engineering (BME)*

Supervisor: Prof. Yu Wang

Thesis: 2D/3D Medical Image Registration Using Convolutional Neural Network

Honor: ***Outstanding Undergraduate Thesis Award***

## Work Experience

**University of Oxford**, United Kingdom Jan. 2023 - Dec. 2024

*PostDoc Fellow in Department of Engineering Science*

Project: Visual AI

Supervisor: Prof. Alison Noble

**City University of Hong Kong (CityU)**, Hong Kong Sep. 2022 - Dec. 2022

*PostDoc Fellow in Department of Electrical Engineering*

Supervisor: Prof. Yixuan Yuan

**Tsinghua University**, Beijing, China Sep. 2017 - Jul. 2018

*Research Assistant in Department of Electrical Engineering*

Supervisor: Prof. Yongfeng Huang

## Research Interests

**Key words:** medical image analysis, computer vision, deep learning, and machine learning.

My research interest is in the interdisciplinary field of medical image analysis, computer vision, and machine learning, aiming to create innovative intelligent systems that can support the high-quality medical diagnosis and interventions.

Recently, I am dedicated to multi-modal learning with vision, text, audio, and gaze in ultrasound imaging. Previously, I mainly focus on developing annotation-efficient deep learning solutions, such as data augmentation, semi-supervised learning, domain adaptation, learning with noisy labels, to achieve trustworthy and effective intelligent systems.

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**PUBLICATIONS** (Google Scholar)

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**Journal Papers**

1. **Xiaoqing Guo**, Jie Liu, Tongliang Liu, Yixuan Yuan. "Handling Open-set Noise and Novel Target Recognition in Domain Adaptive Semantic Segmentation." *IEEE Transactions on Pattern Analysis and Machine Intelligence*, (TPAMI, IF: 24.314)
2. **Xiaoqing Guo**, Zhen Chen, Jun Liu, Yixuan Yuan. "Non-Equivalent Images and Pixels: Confidence-Aware Resampling with Meta-Learning Mixup for Polyp Segmentation." *Medical Image Analysis*, vol. 78, p. 102394, 2022. (MedIA, IF: 13.828)
3. **Xiaoqing Guo**, Jie Liu, Yixuan Yuan. "Semantic-oriented Labeled-to-unlabeled Distribution Translation for Image Segmentation." *IEEE Transactions on Medical Imaging*, vol. 41, no. 2, pp. 434-445, 2022. (TMI, IF: 11.037)
4. **Xiaoqing Guo**, Chen Yang, Yixuan Yuan. "Dynamic-Weighting Hierarchical Segmentation Network for Medical Images." *Medical Image Analysis*, vol. 73, p. 102196, 2021. (MedIA, IF: 13.828)
5. **Xiaoqing Guo**, Chen Yang, Yajie Liu, Yixuan Yuan. "Learn to Threshold: ThresholdNet with Confidence-Guided Manifold Mixup for Polyp Segmentation." *IEEE Transactions on Medical Imaging*, vol. 40, no. 4, pp. 1134-1146, 2021. (TMI, IF: 11.037)
6. **Xiaoqing Guo**, Yixuan Yuan. "Semi-supervised WCE Image Classification with Adaptive Aggregated Attention." *Medical Image Analysis*, vol. 64, p. 101733, 2020. (MedIA, IF: 13.828)
7. Qiushi Yang, **Xiaoqing Guo**, Zhen Chen, Peter Y.M. Woo, Yixuan Yuan. "D2-Net: Dual Disentanglement Network for Brain Tumor Segmentation with Missing Modalities." *IEEE Transactions on Medical Imaging*, vol. 41, no. 10, pp. 2953-2964, 2022. (TMI, IF: 11.037)
8. Chen Yang, **Xiaoqing Guo**, Zhen Chen, Yixuan Yuan. "Source Free Domain Adaptation for Medical Image Segmentation with Fourier Style Mining." *Medical Image Analysis*, vol. 79, p. 102457, 2022. (MedIA, IF: 13.828)
9. Jie Liu, **Xiaoqing Guo**, Yixuan Yuan. "Graph-based Surgical Instrument Adaptive Segmentation via Domain-Common Knowledge." *IEEE Transactions on Medical Imaging*, vol. 41, no. 3, pp. 715-726, 2022. (TMI, IF: 11.037)
10. Chen Yang, **Xiaoqing Guo**, Meilu Zhu, Bulat Ibragimov, Yixuan Yuan. "Mutual-Prototype Adaptation for Cross-Domain Polyp Segmentation." *IEEE Journal of Biomedical and Health Informatics*, vol. 25, no. 10, pp. 3886-3897, 2021. (JBHI, IF: 7.021)
11. Xinyu Liu, **Xiaoqing Guo**, Yajie Liu, Yixuan Yuan. "Consolidated domain adaptive detection and localization framework for cross-device colonoscopic images." *Medical Image Analysis*, vol. 71, p. 102052, 2021. (MedIA, IF: 13.828)
12. Zhen Chen, **Xiaoqing Guo**, Peter Y. M. Woo, Yixuan Yuan. "Super-Resolution Enhanced Medical Image Diagnosis with Sample Affinity Interaction." *IEEE Transactions on Medical Imaging*, vol. 40, no. 5, pp. 1377-1389, 2021. (TMI, IF: 11.037)
13. Peter YM Woo, Desiree KK Wong, Yixuan Yuan, **Xiaoqing Guo**, Michael KW See, Matthew Tam, Alain KS Wong, Kwong-Yau Chan. "A Morphometric Analysis of Commonly Used Cran-

iometric Approaches for Freehand Ventriculoperitoneal Shunting.” *Operative Neurosurgery*, 2021. (IF: 2.817)

14. Zhongliang Yang, **Xiaoqing Guo**, Ziming Chen, Yongfeng Huang, Yujin Zhang. “RNN-stega: Linguistic steganography based on recurrent neural networks.” *IEEE Transactions on Information Forensics and Security*, 14(5): 1280-1295, 2019. (TIFS, IF: 7.231)

## Conference Papers

1. **Xiaoqing Guo**, Jie Liu, Tongliang Liu, Yixuan Yuan. “SimT: Handling Open-set Noise for Domain Adaptive Semantic Segmentation.” *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2022)*, New Orleans, USA.
2. **Xiaoqing Guo**, Yixuan Yuan. “Joint Class-Affinity Loss Correction for Robust Medical Image Segmentation with Noisy Labels.” *The 25th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2022)*, Singapore.
3. **Xiaoqing Guo\***, Chen Yang\*, Baopu Li, Yixuan Yuan. “MetaCorrection: Domain-aware Meta Loss Correction for Unsupervised Domain Adaptation in Semantic Segmentation.” *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2021)*.
4. **Xiaoqing Guo**, Zhen Chen, Yixuan Yuan. “Complementary Network with Adaptive Receptive Fields for Melanoma Segmentation.” *The 17th IEEE International Symposium on Biomedical Imaging (ISBI 2020)*, Iowa City, Iowa, USA.
5. **Xiaoqing Guo**, Chen Yang, Pak Lun Lam, Peter Y.M. Woo, Yixuan Yuan. “Domain Knowledge Based Brain Tumor Segmentation and Overall Survival Prediction.” *Brain Lesion (BrainLes) workshop of MICCAI 2019*, Shenzhen, China.
6. **Xiaoqing Guo**, Yixuan Yuan. “Triple ANet: Adaptive Abnormal-aware Attention Network for WCE Image Classification.” *The 22nd International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2019)*, Shenzhen, China.
7. Jie Liu, **Xiaoqing Guo**, Yixuan Yuan. “Unknown-Oriented Learning for Open Set Domain Adaptation.” *The 17th European Conference on Computer Vision (ECCV 2022)*, Tel-Aviv.
8. Yuanyuan Chen, **Xiaoqing Guo**, Yong Xia, Yixuan Yuan. “Disentangle then Calibrate: Selective Treasure Sharing for Generalized Rare Disease Diagnosis.” *The 25th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2022)*, Singapore.
9. Jie Liu, **Xiaoqing Guo**, Baopu Li, Yixuan Yuan. “COINet: Adaptive Segmentation with Co-Interactive Network for Autonomous Driving.” *IEEE International Conference on Intelligent Robots and Systems (IROS 2021)*, Prague, Czech Republic.
10. Jie Liu, **Xiaoqing Guo**, Yixuan Yuan. “Prototypical Interaction Graph for Unsupervised Domain Adaptation in Surgical Instrument Segmentation.” *The 24th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2021)*, Strasbourg, France.
11. Wuyang Li, Chen Yang, Jie Liu, Xinyu Liu, **Xiaoqing Guo**, Yixuan Yuan. “Joint Polyp Detection and Segmentation with Heterogeneous Endoscopic Data.” *The 3rd International Endoscopy Computer Vision Challenge and Workshop (EndoCV) of ISBI 2021, Nice, France*. (Ranked 1st place in polyp detection)

12. Zhen Chen, **Xiaoqing Guo**, Chen Yang, Bulat Ibragimov, Yixuan Yuan. “Joint Spatial-Wavelet Dual-Stream Network for Super-Resolution.” *The 23rd International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2020)*, Lima, Peru.
13. Yixuan Yuan, Wenjian Qin, **Xiaoqing Guo**, Mark Buyyounouski, Steve Hancock, Bin Han, Lei Xing. “Prostate Segmentation with Encoder-Decoder Densely Connected Convolutional Network (ED-DenseNet).” *The 16th IEEE International Symposium on Biomedical Imaging (ISBI 2019)*, Venice, Italy.

### Patents

1. Hanke Feng, Tong Ge, **Xiaoqing Guo**, Yixuan Yuan, Cheng Wang. “Integrated lithium niobate microwave photonic processing engine.” 2023
2. **Xiaoqing Guo**, Yixuan Yuan. “Unsupervised Domain Adaptive Model for 3D Prostate Zonal Segmentation.” 2021

### Preprints

1. Siyuan Shan, Wen Yan, **Xiaoqing Guo**, Eric I Chang, Yubo Fan, Yan Xu. “Unsupervised End-to-end Learning for Deformable Medical Image Registration.” *arXiv*, <https://arxiv.org/abs/1711.08608>

### Selected Awards

- **Chow Yei Ching School of Graduate Studies Outstanding Doctoral Research Award** (*only 5 awardees in the history of CityU before 2022*), City University of Hong Kong 2022
- **Outstanding Research Thesis Award** (*only 8 awardees at CityU in 2022*), City University of Hong Kong 2022
- **MSRA Fellowship Nomination Award** (*28 students in Asia*), Microsoft 2021
- **Outstanding Academic Performance Award (OAPA)**, City University of Hong Kong 2021
- **Research Tuition Scholarship (RTS)**, City University of Hong Kong 2021 - 2022
- **First in polyp detection**, 3rd International Endoscopy Computer Vision Challenge and Workshop (EndoCV2021) 2021
- **Outstanding Academic Performance Award (OAPA)**, City University of Hong Kong 2020
- **Research Tuition Scholarship (RTS)**, City University of Hong Kong 2020 - 2021
- **Outstanding Academic Performance Award (OAPA)**, City University of Hong Kong 2019
- **Research Tuition Scholarship (RTS)**, City University of Hong Kong 2019 - 2020
- **Honorable Mention**, Mathematical Contest in Modeling (MCM) 2016
- **Grand Prize**, the 25th “Feng Ru Cup” Competition of Innovation (*top 9/1707*), BUAA 2015

## Professional Activities

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### Journal Reviewers

- IEEE Transactions on Medical Imaging (IEEE TMI)
- IEEE Transactions on Image Processing (IEEE TIP)
- Pattern Recognition
- Medical Physics

### Conference Reviewers

- CVPR 2023, MICCAI 2023, ICCV 2023, ICML 2023
- CVPR 2022, MICCAI 2022, ECCV 2022
- ISBI 2021, MICCAI 2021
- MICCAI 2019

### Conference Presentations

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|--------------------------------|-----------|
| • MICCAI 2022, Singapore       | Sep. 2022 |
| • CVPR 2022, Virtual           | Jun. 2022 |
| • CVPR 2021, Virtual           | Jun. 2021 |
| • MICCAI 2019, Shenzhen, China | Oct. 2019 |
| • ISBI 2019, Venice, Italy     | Apr. 2019 |

## CONFERENCE ORGANIZER

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- Deep Generative Models workshop @ MICCAI 2022

## TEACHING ASSISTANT

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|--|-------------------------------------|
| • EE4211 Computer Vision                       | Spring 2020, Fall 2020, Spring 2022 |
| • EE4146 Data Engineering and Learning System  | Spring 2021, Fall 2021              |
| • EE3919 Medical Imaging and Signal Processing | Fall 2019                           |