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Research Interests	I build the future systems for computer-assisted diagnosis and surgery. Especially, I am interested in computer-vision and machine learning techniques for pre-operative planning and intra-navigation solutions that are embedded in medical robotics.	
Professional Employment	Associate Professor , Tenure Track Assistant Professor , Tenure Track Shanghai Jiao Tong University , Department of Automation Core Faculty, Institute of Medical Robotics Core Faculty, Institute of Image Processing and Pattern Recognition	01/2023 – now 01/2020 – 12/2022
Education	Ph. D. in Biomedical Engineering Shanghai Jiao Tong University <i>Thesis: Machine Learning for Endomicroscopy Imaging and Analysis</i> With Prof. Jie Yang and Prof. Guang-Zhong Yang	09/2015 – 06/2019
	Joint Ph. D. in Medical Robotics Imperial College London, Hamlyn Centre With Prof. Guang-Zhong Yang and Prof. Pallav Shah	10/2016 – 11/2018
	M. Eng. in Control Engineering Shanghai Jiao Tong University <i>Thesis: Multimodal Feature Representation Learning</i> With Prof. Jie Yang	09/2013 – 05/2015
	B. Eng. in Control Engineering Xi'an Jiao Tong University <i>Thesis: False Data Detection for Smart Grid</i> With Prof. Xiaohong Guan	09/2009 – 06/2013
Awards	Honorable Award, Machine Learning for CAI	2023

For paper “*Deep Anatomy Learning for Lung Airway and Artery-vein Modeling with Contrast-enhanced CT Synthesis*” at IPCAI 2023

Best Bench-to-Beside Award 2022

For paper “*LTSP: Long-Term Slice Propagation for Accurate Airway Segmentation*” at IPCAI 2022

Lee Chieh-Ku Thesis Award 2019

For Ph. D. thesis “*Machine Learning for Endomicroscopy Imaging and Analysis*”

Runner-Up, Excellence Teaching Award at SEIEE, SJTU 2023

Challenge Runner-Up, AIIB23 at MICCAI 2023

Challenge Runner-Up, LNQ23 at MICCAI 2023

Challenge Runner-Up, AMOS22 at MICCAI 2022

Services

Associate Editor

Pattern Recognition (PR) 2024-now

IEEE Journal of Biomedical and Health Informatics (JBHI) 2024-now

Computerized Medical Imaging and Graphics (CMIG) 2024-now

Area Chair

International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI) 2023, 2024

International Conference on Information Processing for Computer Assisted Intervention (IPCAI) 2024, 2025

Co-Organizer 2023, 2024

International Workshop of Foundation Models for General Medical AI (MedAGI)

Organizer 2022

International Challenge for Multi-Site Multi-Domain Airway Tree Modeling (ATM'22)

Journal Reviewer 2018-now

I regularly review for *IEEE Transactions on Medical Imaging*, *Medical Image Analysis*, *IEEE Transactions on Robotics*, *IEEE Robotics and Automation Letters*, *IEEE Transactions on Biomedical Engineering*, *IEEE Journal of Biomedical and Health Informatics*, and the *International Journal of Computer Assisted Radiology and*

Surgery, among other journals related to medical imaging analysis and surgical vision.

Conference Reviewer 2018-now

I regularly review for *Medical Image Computing and Computer Assisted Intervention (MICCAI)*, *Information Processing in Computer Assisted Interventions (IPCAI)*, and *IEEE Computer Vision and Pattern Recognition (CVPR)*, *IEEE International Conference on Robotics and Automation (ICRA)* among others.

Publication Summary I have (first/last/co)-authored 60+ journal articles and conference papers. Further, I am an inventor on 7 patents or patent applications in various stages of the process. A detailed list is available on my **Homepage**.

Journal Papers in recent five years Xin You, Junjun He, Jie Yang, Y. Gu, Learning with Explicit Shape Priors for Medical Image Segmentation, *IEEE Transactions on Medical Imaging (TMI)*, 2024.

Puyang Wang, Dazhou Guo, Dandan Zheng, Minghui Zhang, Haogang Yu, Xin Sun, Jia Ge, Y. Gu, Le Lu, Xianghua Ye, Dakai Jin, Accurate Airway Tree Segmentation in CT Scans via Anatomy-aware Multi-class Segmentation and Topology-guided Iterative Learning, *IEEE Transactions on Medical Imaging (TMI)*, 2024.

C. Zhang, Y. Yang, H. Zheng, Y. Huang, Y. Zheng, Y. Gu, Normalization as a Shortcut to Adaptation: A Unified Framework for Transferability Measurement in Medical Image Analysis, *Pattern Recognition (PR)*, 153:110528, 2024

M. Zhang, Y. Gu, Towards Connectivity-Aware Pulmonary Airway Segmentation, *IEEE Journal of Biomedical and Health Informatics (JBHI)*, 28(1): 321-332, 2024.

M. Zhang, ..., Y. Gu, Multi-site, Multi-domain Airway Tree Modeling, *Medical Image Analysis (MedIA)*, 90:102957, 2023

Chao Xia, Jiyue Wang, Yulei Qin, Juan Wen, Zhaojiang Liu, Ning Song, Lingqian Wu, Bing Chen, Y. Gu, Jie Yang, KaryoNet: An End-to-End Combinatorial Optimization Method for Chromosome Recognition in Metaphase Cell Images, *IEEE Transactions on Medical Imaging (TMI)*, 42(10): 2899-2911, 2023.

C. Zhang, H. Zheng, Y. Gu , Dive into the Details of Self-supervised Learning for Medical Image Analysis, *Medical Image Analysis (MedIA)* , 89:102879, 2023

C. Zhang, G.Z. Yang, Y. Gu , Contrastive Adversarial Learning for Unsupervised Endomicroscopy Image Super-Resolution, *IEEE Journal of Biomedical and Health Informatics (JBHI)* , 27(8):3994-4005, 2023

Y. Gu , Single-shot Focus Estimation for Microscopy Imaging with Kernel Distillation, *IEEE Transactions on Computational Imaging (TCI)* , 9, 542-550, 2023

Y. Gu , J. Yang and G.-Z. Yang, Towards Occlusion-Aware Pose Estimation of Surgical Suturing Threads , *IEEE Transactions on Biomedical Engineering (TBME)* , 70(2): 581-591, 2023.

H. Zhang, L. Chen, X. Gu, M. Zhang, Y. Qin, F. Yao, Z. Wang, Y. Gu and G.-Z. Yang, Trustworthy learning with (un)sure annotation for lung nodule diagnosis with CT, *Medical Image Analysis (MedIA)* , 83: 102627, 2023

W. Yu, H. Zheng, Y. Gu , F. Xie, J. Yang, J. Sun and G.-Z. Yang, TNN: Tree Neural Network for Airway Anatomical Labeling, *IEEE Transactions on Medical Imaging (TMI)* , 42(1):103-118, 2023

Y. Gu , C. Gu, J. Yang, J. Sun and G.-Z. Yang, Vision-Kinematics-Interaction for Robotic-Assisted Bronchoscopy Navigation, *IEEE Transactions on Medical Imaging (TMI)* , 41(12): 3600-3610, 2022.

Y. Gu , Y. Xu, J. Yang, W. Xue and G.-Z. Yang, Towards Robust Feature Embedding for Endomicroscopy Image Classification, *IEEE Transactions on Medical Imaging (TMI)* , 41(11): 3242-3252, 2022.

H Zheng, Y Qin, Y. Gu , F Xie, J Yang, J Sun, G.-Z. Yang, Alleviating class-wise gradient imbalance for pulmonary airway segmentation, *IEEE Transactions on Medical Imaging (TMI)* , 40(9): 2452-2462, 2021.

Y Qin, H Zheng, Y. Gu , X Huang, J Yang, L Wang, F Yao, YM Zhu, G.Z Yang, Learning tubule-sensitive CNNs for pulmonary airway and artery-vein segmentation in CT, *IEEE Transactions on Medical Imaging (TMI)* , 40(6): 1603-1617, 2021

Y. Gu, K. Vyas, M. Shen, J. Yang, and G.-Z. Yang, Deep Graph-Based Multimodal Feature Embedding for Endomicroscopy Image Retrieval, *IEEE Transactions on Neural Networks and Learning Systems (TNNLS)*, 32(2): 481-492, 2020

Y. Gu, K. Vyas, J. Yang, and G.-Z. Yang, Transfer Recurrent Feature Learning for Endomicroscopy Image Recognition, *IEEE Transactions on Medical Imaging (TMI)*, 38(3): 791-801, 2019.

Y. Gu, M. Shen, J. Yang, and G.-Z. Yang, Reliable Label-Efficient Learning for Biomedical Image Recognition, *IEEE Transactions on Biomedical Engineering (TBME)*, 66(9): 2423-2432, 2019.

Y. Gu and J. Yang, "Densely-Connected Multi-Magnification Hashing for Histopathological Image Retrieval," *IEEE Journal of Biomedical and Health Informatics (JBHI)*, 23(4): 1683-1691, 2019

Conference Papers in recent five years M. Zhang, H. Zhang, X. You, G.-Z. Yang, Y. Gu, "Implicit Representation Embraces Challenging Attributes of Pulmonary Airway Tree Structures", *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 2024.

X. You, Y. Gu, Y. Wu, M. Zhang, M. Ding, Y. Yu, J. Yang, "Semantic difference guidance for the uncertain boundary segmentation of CT left atrium appendage", *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 2023.

H. Yue, Y. Gu "TCL: Triplet Consistent Learning for Odometry Estimation of Monocular Endoscope", *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 2023.

Y. Yang, M. Wei, J. He, J. Yang, J. Ye and Y. Gu, "Pick the Best Pre-trained Model: Towards Transferability Estimation For Medical Image Segmentation", *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 2023, Early Accepted.

W. Yu, H. Zheng, Y. Gu, F. Xie, J. Sun, J. Yang, "AirwayFormer: Structure-Aware Boundary-Adaptive Transformers for Airway Anatomical Labeling", *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 2023, Early Accepted.

J. Xu, T. Zhang, Y. Wu, J. Yang, G.-Z. Yang and Y. Gu, “CDFI: Cross Domain Feature Interaction for Robust Bronchi Lumen Detection” *International Conference on Robotics and Automation (ICRA)*, 2023.

H. Zhang, M. Zhang, Y. Gu and G-Z. Yang, “Deep Anatomy Learning for Lung Airway and Artery-vein Modeling with Contrast-enhanced CT Synthesis” *International Conference on Information Processing in Computer-Assisted Interventions (IPCAI)*, 2023. Machine Learning for CAI Award.

M. Zhang, H. Zhang, G.-Z. Yang, Y. Gu, “CFDA: Collaborative Feature Disentanglement and Augmentation for Pulmonary Airway Tree Modeling of COVID-19 CTs,” *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 2022, Early Accepted, Student Travel Award.

C. Xia, J. Wang, Y. Qin, Y. Gu, B. Chen, J. Yang, “An End-to-End Combinatorial Optimization Method for R-band Chromosome Recognition with Grouping Guided Attention,” *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 2022, Early Accepted.

Y. Wu, M. Zhang, W. Yu, H. Zheng, J. Xu, and Y. Gu, “LTSP: Long-Term Slice Propagation for Accurate Airway Segmentation,” *International Conference on Information Processing in Computer-Assisted Interventions (IPCAI)*, 2022. Best Bench-to-Bedside Paper Award.

H Zheng, Y Qin, Y. Gu, F Xie, J Sun, J Yang, GZ Yang, “Refined Local-imbalance-based Weight for Airway Segmentation in CT,” in *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 2021, pp. 410–419.

C. Zhang, Y. Gu, J. Yang, and G.-Z. Yang, “Diversity-Aware Label Distribution Learning for Microscopy Auto Focusing,” in *IEEE International Conference on Robotics and Automation (ICRA)*, with RAL submission, vol. 6, no. 2, pp. 1942–1949, 2021.

J. Liu, Y. Qiao, J. Yang, G.-Z. Yang, and Y. Gu, “Discriminative Asymmetric Learning for Efficient Surgical Instrument Parsing,” in *IEEE International Conference on Robotics and Automation (ICRA)*, 2021, pp. 13546–13552.

H. Zhang, Y. Gu, Y. Qin, F. Yao, and G.-Z. Yang, "Learning with sure data for nodule-level lung cancer prediction," in *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 2020, pp. 570–578.

H. Zheng, Z. Zhuang, Y. Qin, Y. Gu, J. Yang, and G.-Z. Yang, "Weakly supervised deep learning for breast cancer segmentation with coarse annotations," in *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 2020, pp. 450–459.

Y Qin, H Zheng, Y. Gu, X Huang, J Yang, L Wang, YM Zhu, "Learning bronchiole-sensitive airway segmentation CNNs by feature recalibration and attention distillation," in *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 2020, pp. 221–231. Early Accepted

M. Shen, Y. Gu, N. Liu, and G.-Z. Yang, "Context-aware depth and pose estimation for bronchoscopic navigation," in *IEEE International Conference on Robotics and Automation (ICRA)* with RAL submission, vol. 4, no. 2, pp. 732–739, 2019.

Y Qin, M Chen, H Zheng, Y. Gu, M Shen, J Yang, X Huang, YM Zhu, GZ Yang, "Airwaynet: a voxel-connectivity aware approach for accurate airway segmentation using convolutional neural networks," in *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 2019, pp. 212–220.

Y. Gu, B. Walter, J. Yang, A. Meining, and G.-Z. Yang, "Triplet Feature Learning on Endoscopic Video Manifold for Online GastroIntestinal Image Retargeting," in *International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 2019, pp. 38–46.