




Xiao-Yun Zhou

Google scholar , LinkedIn , Homepage 

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Look for: research scientist/engineer on ML/CV/AI

WORK

Senior research scientist - PAII Inc. USA

2020–now

selected research: transformer, deep learning, machine learning, computer vision, artificial intelligence

EDUCATION

PhD - The Hamlyn Centre for Robotic Surgery, Imperial College London, UK 2015–2020

Department of computing - computer vision for medical robotics

selected research: deep learning, machine learning, computer vision and medical robotics

MRes - The Hamlyn Centre for Robotic Surgery, Imperial College London, UK 2014–2015

Department of surgery and cancer- 3D navigation and robotic path planning for RFCA

selected courses: medical imaging, minimally invasive surgery, image guided intervention and medical robotics

Master - Tsinghua University, China

2011–2014

Department of biomedical engineering- fast 3D reconstruction from point cloud

selected courses: image processing, machine learning and pattern recognition

Bachelor - Wuhan University of Technology, China

2007–2011

Department of communication engineering

selected courses: communication principle, information theory and coding, electronic circuit, digital signal processing, C++

EXPERIENCE

My work in PAII Inc. focuses mainly on developing computer aided diagnosis tools, including liver tumour identification from CT/MRI images, bone mineral density estimation from X-ray images, breast tumour detection from mammograms. I also work on video action recognition through the recent transformer technique, work on commercial projects with machine learning, collaborate with Shanghai Jiaotong University on the adversarial learning project, and collaborate with Tongji University on the venipuncture robot project.

My PhD research at the Hamlyn center for robotic surgery is to bring machine intelligence - deep learning, machine learning and computer vision into surgery, with main focus on pre-operative image/volume segmentation in both 2D and 3D, intra-operative 3D navigation with real-time 3D shape instantiation from a single intra-operative 2D projection, and 3D robotic path planning towards surgical autonomy.

In summary, for both research and engineer projects, I have strong background and experience in machine learning, computer vision and artificial intelligence. I am looking for a research scientist/engineer position working on related areas. I am a permanent resident holder, hence no need for visa sponsorship. During the work, I am gentle, collaborative, helpful and highly-motivated.

SKILLS

<i>Languages</i>	English, Mandarin
<i>Programming</i>	working knowledge: Python, PyTorch, Matlab, Tensorflow basic knowledge: C++, CUDA, Keras, Vtk, Qt, Opencv

AWARDS

IROS student travel award	2018
Hamlyn centre scholarship (Helen Hamlyn Trust)	2014-2020
Merit student (twice)	2008-2010
The first prize scholarship	2009-2010
Academic progress award	2007-2008

ACHIEVEMENTS

- Supervisor for three MRes individual projects
- Tutor for computer vision and image guided intervention course in 2016-2018
- Reviewer for CVPR, AAAI, TMI, ICCV, MICCAI, CMIG, ICRA, IROS and so on

INVITED TALKS

- Machine/Deep Learning for 3D Shape Instantiation (Keynote) - Emerging Learning Techniques for Robotics Workshop in conjunction with the Hamlyn Symposium on Medical Robotics, 2019

CHAIR EXPERIENCE

- Chair of the Hamlyn Symposium for Medical Robotics - Deep Learning Workshop 2018, 2019
- Program chair of MICCAI-MMMI2019, MICCAI-DART2019,2020,2021

SELECTED PUBLICATIONS

Please kindly check my [Google scholar](#) for the full list.

- 1 . Hsieh Chen-I, Kang Zheng, Chihung Lin, Ling Mei, Le Lu, Weijian Li, Fang-Ping, Chen, Yirui Wang, **Xiao-Yun Zhou**, Fakai Wang and others. Automated bone mineral density prediction and fracture risk assessment using plain radiographs via deep learning. *Nature communications*, 12(1), pp.1-9, 2021.
- 2 . Nanyang Ye, Jingxuan Tang, Huayu Deng, **Xiao-Yun Zhou**, Qianxiao Li, Zhenguo Li. Adversarial invariant learning. IEEE/CVF Conference on Computer Vision and Pattern Recognition (*CVPR*), pp. 12441-12449, 2021.
- 3 . Nanyang Ye, Qianxiao Li, **Xiao-Yun Zhou**, and Zhanxing Zhu. An Annealing Mechanism for Adversarial Training Acceleration. IEEE Transactions on Neural Networks and Learning Systems (*TNNLS*), 2021.

- 4 . Yirui Wang, Kang Zheng, Chi-Tung Cheng, **Xiao-Yun Zhou**, Zhilin Zheng, Jing Xiao, Le Lu, Chien-Hung Liao, and Shun Miao. Knowledge distillation with adaptive asymmetric label sharpening for semi-supervised fracture detection in chest x-rays. In International Conference on Information Processing in Medical Imaging (*IPMI*), pp. 599-610, 2021.
- 5 . Ruoxi Wang, Dandan Zhang, Qingbiao Li, **Xiao-Yun Zhou**, and Benny Lo.. Real-time Surgical Environment Enhancement for Robot-Assisted Minimally Invasive Surgery Based on Super-Resolution. IEEE International Conference on Robotics and Automation (*ICRA*), pp. 3434-3440, 2021.
- 6 . Nanyang Ye, Qianxiao Li, **Xiao-Yun Zhou**, and Zhanxing Zhu. Amata: An Annealing Mechanism for Adversarial Training Acceleration. In Proceedings of the AAAI Conference on Artificial Intelligence (*AAAI*), pp. 10691-10699, 2021.
- 7 . Yu Chen, Yuxuan Wang, Bolin Lai, Zijie Chen, Xu Cao, Nanyang Ye, Zhongyuan Ren, Junbo Zhao, **Xiao-Yun Zhou**, and Peng Qi., 2021. VeniBot: Towards Autonomous Venipuncture with Semi-supervised Vein Segmentation from Ultrasound Images. accepted by *IROS* 2021.
- 8 . Kang Zheng, Yirui Wang, Xiaoyun Zhou, Fakai Wang, Le Lu, Chihung Lin, Lingyun Huang et al., 2021. Semi-Supervised Learning for Bone Mineral Density Estimation in Hip X-ray Images. accepted by *MICCAI* 2021.
- 9 . **Xiao-Yun Zhou**, Guang-Zhong Yang, Su-Lin Lee. "A real-time and registration-free framework for dynamic shape instantiation", *Medical Image Analysis (MedIA)*, 44: 86-97, 2018.
- 10 . **Xiao-Yun Zhou***, Zhao-Yang Wang*, Peichao Li, Jian-Qing Zheng, Guang-Zhong Yang. "One-stage shape instantiation from a single 2D image to 3D point cloud", *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 30-38, 2019.
- 11 . **Xiao-Yun Zhou**, Guang-Zhong Yang. "Normalization in training U-Net for 2D biomedical semantic segmentation", *IEEE Robotics and Automation Letters (RAL)*, 4(2): 1792-1799 2019.
- 12 . **Xiao-Yun Zhou**, Celia Riga, Su-Lin Lee, Guang-Zhong Yang. "Towards automatic 3D shape instantiation for deployed stent grafts: 2D multiple-class and class-imbalance marker segmentation with equally-weighted focal U-Net", *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 1261-1267, 2018.
- 13 . **Xiao-Yun Zhou**, Jianyu Lin, Celia Riga, Guang-Zhong Yang, Su-Lin Lee. "Real-time 3D shape instantiation from single fluoroscopy projection for fenestrated stent graft deployment". *IEEE Robotics and Automation Letters (RAL)*, 3(2): 1314-1321, 2018.
- 14 . Jian-Qing Zheng*, **Xiao-Yun Zhou***, Celia Riga, Guang-Zhong Yang. "Real-time 3D shape instantiation of partially-deployed stent segment from a single 2D fluoroscopic image for fenestrated endovascular aortic repair". *IEEE Robotics and Automation Letters (RAL)*, 4(4): 3703-3710, 2019.
- 15 . **Xiao-Yun Zhou***, Jian-Qing Zheng*, Peichao Li, Guang-Zhong Yang. "ACNN: a full resolution DCNN for medical image segmentation". *IEEE International Conference on Robotics and Automation (ICRA)*, 8455-8461, 2020.
- 16 . **Xiao-Yun Zhou**, Sabine Ernst, Su-Lin Lee. "Path planning for robot-enhanced cardiac radiofrequency catheter ablation". *IEEE International Conference on Robotics and Automation (ICRA)*, 4172-4177, 2016.

- 17 . Zhao-Yang Wang*, **Xiao-Yun Zhou***, Peichao Li, Guang-Zhong Yang. "Instantiation-Net: 3D RV mesh instantiation from a single 2D MRI projection". *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 680-691, 2020.
- 18 . Peichao Li*, **Xiao-Yun Zhou***, Zhao-Yang Wang, Guang-Zhong Yang. "Z-Net: an asymmetric 3D DCNN for medical CT volume segmentation". accepted by **IROS 2020**.
- 19 . **Xiao-Yun Zhou**, Yao Guo, Mali Shen, Guang-Zhong Yang. "Application of artificial intelligence in surgery". **Frontier of Medicine**, 1-14, 2020.
- 20 . Jian-Qing Zheng, **Xiao-Yun Zhou**, Celia Riga, Guang-Zhong Yang. "Towards 3D path planning from a single 2D fluoroscopic image for robot assisted fenestrated endovascular aortic repair". *IEEE International Conference on Robotics and Automation (ICRA)*, 8747-8753, 2019.
- 21 . Yingjing Feng, Ziyang Guo, Ziyang Dong, **Xiao-Yun Zhou**, Ka-Wai Kwok, Sabine Ernst, Su-Lin Lee. "An efficient cardiac mapping strategy for radiofrequency catheter ablation with active learning". *International journal of computer assisted radiology and surgery (IJCARS)*, 12(7): 1199-1207, 2017.

* - equal contribution, J - journal, C - conference