Suzy Zhou

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 suzy.zhou27@gmail.com, Target: staff/senior research scientist on ML/AI/LLM

WORK & EDUCATION

Senior applied scientist - Amazon USA 2024−now
  role: lead the design and development of machine learning systems for non-compliant product detection, collaborating cross-functionally with operations, science, data, seller appeal, and software engineering teams.
Applied scientist - Amazon USA 2022−2024
  projects: multi-modality machine learning for non-compliant product detection
Senior research scientist - PAII Inc.(PingAn Tech.) USA 2020−2022
  projects: deep/machine learning, computer vision for cancer diagnosis
PhD - Department of computing, Imperial College London, UK 2015−2020
  research: deep/machine learning, computer vision, medical robotics and graph learning
MRes - Medical robotic navigation, Imperial College London, UK 2014−2015
Master - Biomedical engineering, Tsinghua University, China 2011−2014
Bachelor - Comm. eng., Wuhan University of Tech., China, GPA 3.5/4.0 2007−2011

PROJECT EXPERIENCE

Non-compliant product detection

- lead ML system design and technical strategy for detecting non-compliant products across a multi-disciplinary organization, protecting customer experience at scale.

- partner cross-functionally with ops, seller appeal, legal, rule writing, and software engineering teams to build scalable, ML-powered compliance workflows.

- drove model evolution/delivery from traditional CNNs (e.g., ResNet, Swin Transformer) to multi-modal models combining image and text, and further to LLMs capable of understanding full product pages with ambiguous compliance risks (e.g., misleading claims).

- deep familiarity with AWS services and ML infrastructure, including LLM deployment, scalable cloud-based pipelines, and multi-agent system

- acted as technical reviewer, decision-maker, conflict resolution on research direction, model architecture, and system integration for all science efforts in the organization.

Deep/machine learning and computer vision:

- BMD estimation from plain X-rays [1, 4, 8, 24] (delivered), liver tumour identification from CT/MRI images [22, 23], adversarial learning [2, 3, 6], pre-operative image/volume segmentation in both 2D and 3D [11, 12, 15, 18], breast tumour detection from mammograms (delivered), high-value customer mining based on multi-modality data, including video, audio, text and meta data.

Robotic vision:

- intra-operative 3D navigation with real-time 3D shape instantiation from a single intra-operative 2D projection [5, 9, 10, 13], 3D robotic path planning towards surgical autonomy [7, 16, 20, 21].

Graph learning:

- 3D mesh/deformation reconstruction from a single 2D image [14, 17, 24].

SKILLS

Programming	proficient: Claude, Python, PyTorch, SQL, Huggingface
	basic knowledge: Longchain, ChatGPT, Spark, C++, Keras, CUDA
Language	English, Mandarin
Softskills	collaboration, communication, vision
Reviewer	CVPR, AAAI, TMI, ICCV, MICCAI, CMIG, ICRA, IROS and so on

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, Guotong Xie, Jing Xiao, Shun Miao and Chang-Fu Kuo. 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 and Zhenguo Li. Adversarial invariant learning. ***CVPR***, pp.12441-12449, 2021.

3 . Nanyang Ye, Qianxiao Li, **Xiao-Yun Zhou** and Zhanxing Zhu. An Annealing Mechanism for Adversarial Training Acceleration. ***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. ***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. ***ICRA***, pp.3434-3440, 2021.

6 . Nanyang Ye, Qianxiao Li, **Xiao-Yun Zhou** and Zhanxing Zhu. Amata: An Annealing Mechanism for Adversarial Training Acceleration. ***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. VeniBot: Towards Autonomous Venipuncture with Semi-supervised Vein Segmentation from Ultrasound Images. accepted by ***IROS*** 2021.

8 . Kang Zheng, Yirui Wang, **Xiao-Yun Zhou**, Fakai Wang, Le Lu, Chihung Lin, Lingyun Huang, Guotong Xie, Jing Xiao, Chang-Fu Kuo and Shun Miao. Semi-Supervised Learning for Bone Mineral Density Estimation in Hip X-ray Images. ***MICCAI***, pp.33-42, 2021.

9 . **Xiao-Yun Zhou**, Guang-Zhong Yang and Su-Lin Lee. A real-time and registration-free framework for dynamic shape instantiation. ***MedIA***, 44: 86-97, 2018.

10 . **Xiao-Yun Zhou***, Zhao-Yang Wang*, Peichao Li, Jian-Qing Zheng and Guang-Zhong Yang. One-stage shape instantiation from a single 2D image to 3D point cloud. ***MICCAI***, 30-38, 2019.

11 . **Xiao-Yun Zhou** and Guang-Zhong Yang. Normalization in training U-Net for 2D biomedical semantic segmentation. ***RAL***, 4(2): 1792-1799 2019.

12 . **Xiao-Yun Zhou**, Celia Riga, Su-Lin Lee and 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. ***IROS***, 1261-1267, 2018.

13 . **Xiao-Yun Zhou**, Jianyu Lin, Celia Riga, Guang-Zhong Yang and Su-Lin Lee. Real-time 3D shape instantiation from single fluoroscopy projection for fenestrated stent graft deployment. ***RAL***, 3(2): 1314-1321, 2018.

14 . Jian-Qing Zheng*, **Xiao-Yun Zhou***, Celia Riga and Guang-Zhong Yang. Real-time 3D shape instantiation of partially-deployed stent segment from a single 2D fluoroscopic image for fenestrated endovascular aortic repair. ***RAL***, 4(4): 3703-3710, 2019.

15 . **Xiao-Yun Zhou***, Jian-Qing Zheng*, Peichao Li and Guang-Zhong Yang. ACNN: a full resolution DCNN for medical image segmentation. ***ICRA***, 8455-8461, 2020.

16 . **Xiao-Yun Zhou**, Sabine Ernst and Su-Lin Lee. Path planning for robot-enhanced cardiac radiofrequency catheter ablation. ***ICRA***, 4172-4177, 2016.

17 . Zhao-Yang Wang*, **Xiao-Yun Zhou***, Peichao Li and Guang-Zhong Yang. Instantiation-Net: 3D RV mesh instantiation from a single 2D MRI projection. ***MICCAI***, 680-691, 2020.

18 . Peichao Li*, **Xiao-Yun Zhou***, Zhao-Yang Wang and Guang-Zhong Yang. Z-Net: an asymmetric 3D DCNN for medical CT volume segmentation. accepted by ***IROS 2020***, pp 2906-2913, 2020.

19 . **Xiao-Yun Zhou**, Yao Guo, Mali Shen and Guang-Zhong Yang. Application of artificial intelligence in surgery. ***Frontier of Medicine***, 1-14, 2020.

20 . Jian-Qing Zheng, **Xiao-Yun Zhou**, Celia Riga and Guang-Zhong Yang. Towards 3D path planning from a single 2D fluoroscopic image for robot assisted fenestrated endovascular aortic repair. ***ICRA***, 8747-8753, 2019.

21 . Yingjing Feng, Ziyan Guo, Ziyang Dong, **Xiao-Yun Zhou**, Ka-Wai Kwok, Sabine Ernst and Su-Lin Lee. An efficient cardiac mapping strategy for radiofrequency catheter ablation with active learning. ***IJCARS***, 12(7): 1199-1207, 2017.

22 . Bolin Lai, Yuhsuan Wu, Xiaoyu Bai, **Xiao-Yun Zhou**, Peng Wang, Jinzheng Cai, Yuankai Huo, Lingyun Huang, Yong Xia, Jing Xiao, Le Lu, Heping Hu and Adam Harrison. Liver Tumor Localization and Characterization from Multi-phase MR Volumes Using Key-Slice Prediction: A Physician-Inspired Approach. ***MICCAI-PRIME***, pp. 47-58 2021.

23 . Bolin Lai, Yuhsuan Wu, **Xiao-Yun Zhou**, Peng Wang, Le Lu, Lingyun Huang, Mei Han, Jing Xiao, Heping Hu and Adam P Harrison. Hetero-Modal Learning and Expansive Consistency Constraints for Semi-Supervised Detection from Multi-Sequence Data. ***MICCAI-MLMI*** pp 296-305, 2021

24 . **Xiao-Yun Zhou**, Bolin Lai, Weijian Li, Yirui Wang, Kang Zheng, Fakai Wang, Chihung Lin, Le Lu, Lingyun Huang, Mei Han, Guotong Xie, Jing Xiao, Kuo Chang-Fu, Adam Harrison, Shun Miao. Scalable Semi-supervised Landmark Localization for X-ray Images using Few-shot Deep Adaptive Graph. ***MICCAI-DALI*** pp 145-153, 2021

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