Jiawei Yang

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RESEARCH INTEREST

Representation Learning; Neural Fields; Self-supervised Learning; Computer Vision; Medical Image Analysis

"Make things as simple as possible, but not simpler." — At the heart of my research philosophy is the power of simplicity and scalability. I am drawn to ideas that are elegantly simple yet have the potential to scale effectively and make a significant impact.

EDUCATION

University of Southern California   Aug. 2023 – Now
PhD. student in Department of Computer Science

University of California, Los Angeles   Sep. 2021 – Jun. 2023
M.S. student in Department of Electrical & Computer Engineering

Southeast University   Sep. 2016 – Jun. 2020
B.Eng in Computer Science and Engineering

PUBLICATIONS (*: equal contribution | First/co-first author papers in blue)

In-submission

21. [CVPR'24] **Jiawei Yang***, Katie Z. Luo*, Jiefeng Li, Kilian Q. Weinberger, Yonglong Tian, Yue Wang. "Denosing Vision Transformers". [pdf, webpage, code]

Conference

20. [ICLR'24] **Jiawei Yang**, Boris Ivanovic, Or Litany, Xinshuo Weng, Seung Wook Kim, Boyi Li, Tong Che, Danfei Xu, Sanja Fidler, Marco Pavone, Yue Wang. "EmerNeRF: Emergent Spatial-Temporal Scene Decomposition via Self-Supervision". *International Conference on Learning Representations, 2024.* [pdf, webpage, code]

19. [CVPR'23] **Jiawei Yang**, Marco Pavone, Yue Wang "FreeNeRF: Improving Few-shot Neural Rendering with Free Frequency Regularization." *Proceedings of the IEEE/CVF International Conference on Computer Vision 2023.* [pdf, code, webpage]

18. [IPMI'23] Wentao Pan*, Jiangpeng Yan*, Hanbo Chen*, Jiawei Yang, Zhe Xu, Xiu Li, and Jianhua Yao. "Human-machine Interactive Tissue Prototype Learning for Label-efficient Histopathology Image Segmentation." *Information Processing in Medical Imaging 2023*

17. [NeurIPS'22] Hanbo Chen*, **Jiawei Yang***, Daniel Maxim Iascone, Lijuan Liu, Lei He, Hanchuan Peng, and Jianhua Yao. "TreeMoCo: Contrastive Neuron Morphology Representation Learning." *Advances in Neural Information Processing Systems, 2022* [pdf, code]

16. [ECCV'22] **Jiawei Yang**, Hanbo Chen, Yuan Liang, Junzhou Huang, Lei He, and Jianhua Yao. "ConCL: Concept Contrastive Learning for Dense Prediction Pre-training in Pathology Image." *European Conference on Computer Vision, 2022* [pdf, code]

15. [MICCAI'22] **Jiawei Yang***, Hanbo Chen*, Yu Zhao, Fan Yang, Yao Zhang, Lei He, and Jianhua Yao. "ReMix: A General and Efficient Framework for Multiple Instance Learning based Whole Slide Image Classification." *International Conference on Medical Image Computing and Computer Assisted Intervention, 2022.* **Early Accept (Top 13%)** [pdf, code]

14. [MICCAI'22] Yao Zhang, Nanjun He, **Jiawei Yang**, Yuexiang Li, Dong Wei, Yawen Huang, Yang Zhang, Zhiqiang He, and Yefeng Zheng. "mmFormer: Multimodal Medical Transformer for Incomplete Multimodal Learning of Brain Tumor Segmentation." *International Conference on Medical Image Computing and Computer Assisted Intervention, 2022* [pdf, code]

13. [ICLR'22] **Jiawei Yang***, Hanbo Chen*, Jiangpeng Yan, Xiaoyu Chen, Jianhua Yao. "Towards Better Understanding and Better Generalization of Low-shot Classification in Histology Images with Contrastive Learning." *International Conference on Learning Representations, 2022* [pdf, code]

12. [MICCAI'21] **Jiawei Yang***, Yao Zhang*, Yuan Liang, Lei He, Yang Zhang, and Zhiqiang He. "TumorCP: A Simple but Effective Object-Level Data Augmentation for Tumor Segmentation." *International Conference on Medical Image Computing and Computer Assisted Intervention, 2021* [pdf, code]

11. [MICCAI'21] Yao Zhang, **Jiawei Yang**, Jiang Tian, Zhongchao Shi, Cheng Zhong, Yang Zhang, and Zhiqiang He. "Modality-aware Mutual Learning for Multi-modal Medical Image Segmentation." *International Conference on Medical Image Computing and Computer Assisted Intervention, 2021.* **Early Accept (Top 13%)** [pdf, code]

10. [ISBI'21][Oral] **Jiawei Yang***, Yuan Liang*, Yao Zhang, Weinan Song, Kun Wang, and Lei He. "Exploring Instance-Level Uncertainty for Medical Detection." *International Symposium on Biomedical Imaging, 2021* [pdf, code]

9. [ISBI'21] Weinan Song, Yuan Liang, **Jiawei Yang**, Kun Wang, and Lei He. "T-Net: Learning Feature Representation with Task-specific Supervisions in Biomedical Image Analysis" *International Symposium on Biomedical Imaging, 2021.* [pdf]

8. [IUI'21] Yuan Liang, Liang Qiu, Tiancheng Lu, Zhujun Fang, Dezhan Tu, **Jiawei Yang**, Tiandong Zhao, Yiting Shao, Kun Wang, Xiang 'Anthony' Chen, and Lei He. "OralViewer: 3D Demonstration of Dental Surgeries for Patient Education with Oral Cavity Reconstruction." *Conference on Intelligent User Interfaces, 2021* [pdf]

7. [AAAI'21] Weinan Song*, Yuan Liang*, **Jiawei Yang**, Kun Wang, and Lei He. "Oral-3D: Reconstructing the 3D Structure of Oral Cavity from Panoramic X-ray." *AAAI Conference on Artificial Intelligence, 2021.* [pdf]

6. [ACML'20] Yuan Liang, Weinan Song, **Jiawei Yang**, Liang Qiu, Kun Wang, and Lei He. "Atlas-aware ConvNet for Accurate yet Robust Anatomical Segmentation." *Asian Conference on Machine Learning, 2020.* [pdf]

5. [MICCAI'20] Yuan Liang, Weinan Song, **Jiawei Yang**, Liang Qiu, Kun Wang, and Lei He. "X2teeth: 3D teeth reconstruction from a single panoramic radiograph." *International Conference on Medical Image Computing and Computer Assisted Intervention, 2020* [pdf]

Journal

4. [Medical Physics] Yao Zhang, **Jiawei Yang**, Jiang Tian, Yang Liu, Siyun Wang, Cheng Zhong, Zhongchao Shi, Yang Zhang and Zhiqiang He. "Decoupled Pyramid Correlation Network for Liver Tumor Segmentation." *Medical Physics, 2022* [pdf]

3. [Medical Image Analysis] Nicholas Heller, Fabian Isensee, Klaus H. Maier-Hein, Xiaoshuai Hou, Chunmei Xie, Fengyi Li, Yang Nan, Guangrui Mu, Zhiyong Lin, Miofei Han, Guang Yao, Yaozong Gao, Yao Zhang, Yixin Wang, Feng Hou, **Jiawei Yang**, Guangwei Xiong, Jiang Tian, Cheng Zhong, Jun Ma, Jack Rickman, Joshua Dean, Bethany Stai, Resha Tejpaul, Makinna Oestreich, Paul Blake, Heather Kaluzniak, Shaneabbas Raza, Joel Rosenberg, Keenan Moore, Edward Walczak, Zachary Rengel, Zach Edgerton, Ranveer Vasdev, Matthew Peterson, Sean McSweeney, Sarah Peterson, Arveen Kalapara, Niranjan Sathianathen, Nikolaos Papanikolopoulos, and Christopher Weight "The state of the art in kidney and kidney tumor segmentation in contrast-enhanced CT imaging: Results of the KiTS19 Challenge." *Medical Image Analysis, 2021. IF=13.828.* [pdf]

Workshop

2. [MICCAI STACOM'20] Yao Zhang, **Jiawei Yang**, Feng Hou, Yang Liu, Yixin Wang, Jiang Tian, Cheng Zhong, Yang Zhang, and Zhiqiang He. "Semi-supervised Cardiac Image Segmentation via Label Propagation and Style Transfer." *International Workshop on Statistical Atlases and Computational Models of the Heart, 2020* [pdf]

1. [MICCAI KiTS'19] [**Oral**] Yao Zhang, Yixin Wang, Feng Hou, **Jiawei Yang**, Guangwei Xiong, Jiang Tian, Cheng Zhong. "Cascaded Volumetric Convolutional Network for Kidney Tumor Segmentation from CT Volumes." *MICCAI Grand Challenge, 2019* [pdf]

EXPERIENCE (Outcome listed in parentheses)

Autonomous Vehicle Group, Nvidia Research   July 2023 – Aug 2023
Research Intern   Mentor: Prof. Yue Wang and Prof. Marco Pavone

- Spatial-temporal scene decomposition via self-supervised neural radiance fields (ICLR'24).

Tencent AI Lab   May 2021 – Sep 2022
Research Intern   Mentor: Dr. Hanbo Chen and Dr. Jianhua Yao

- Self-supervised learning for neuron morphology representations (NeurIPS'22).
- Self-supervised learning for dense prediction tasks in histological image analysis (ECCV'22).
- Latent space augmentation in few-shot / multiple instance learning problems (ICLR'22, MICCAI'22).
- Difference of generalization and robustness gap between natural images and histology images (ICLR'22).

Tencent YouTu Lab   Nov. 2020 – Mar. 2021
Research Intern   Mentor: Dr. Wei Zhuo

- Self-supervised learning; extensive exploration in BYOL, SimSiam, MoCo, SimCLR, SwAV and DeepCluster.
- Multi-modal feature (RGB-D, optical flow) fusion, industrial product.

PROFESSIONAL SERVICES

Conference reviewer: CVPR, ICCV, ECCV, NeurIPS, ICLR, ICML, MICCAI

Journal reviewer: IEEE Transactions on Medical Imaging (TMI), IEEE Transactions on Artificial Intelligence (TAI)

Teaching: Teaching Assistant, CS 188: Deep Learning for Computer Vision, ULCA, Spring 2023. **Instructor**: Bolei Zhou