Ziyu Jiang

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RESEARCH INTERESTS
Self Supervised Learning, Efficient Training, Adversarial Robustness, Indoor Scene Occlusion Reasoning, Semantic Segmentation

EDUCATION

Texas A&M University, TX, USA

Ph.D. in Computer Science, Jan 2019 - Dec 2022
- Advisor: Zhangyang Wang

M.S. in Computer Science, Aug 2017 - Dec 2018
- Advisor: Zhangyang Wang

Harbin Institute of Technology, Harbin, China

B.E. in Electronic and Communication Engineering, Sep 2013 - July 2017
- Thesis: Automatic License Plate Recognition System

PUBLICATIONS

Ziyu Jiang*, Xuxi Chen*, Xueqin Huang, Xianzhi Du, Denny Zhou, Zhangyang Wang. Back Razor: Memory-Efficient Transfer Learning by Self-Sparsified Backpropogation. Advances in Neural Information Processing Systems (Neurips). 2022. Acceptance ratio: 25.6%.

Hanxue Liang*, Zhiwen Fan*, Rishov Sarkar, **Ziyu Jiang**, Tianlong Chen, Kai Zou, Yu Cheng, Cong Hao, Zhangyang Wang. M^3ViT: Mixture-of-Experts Vision Transformer for Efficient Multi-task Learning with Model-Accelerator Co-design. Advances in Neural Information Processing Systems (Neurips). 2022. Acceptance ratio: 25.6%.

Ziyu Jiang, Tianlong Chen, Xuxi Chen, Luowei Zhou, Lu Yuan, Ahmed Awadallah, Zhangyang Wang. DnA: Improve Few-Shot Transfer Learning with Low-Rank Decompose and Align. Europen Conference on Compute Vision (ECCV). 2022. Acceptance ratio: 19.8%.

Ziyu Jiang, Tianlong Chen, Ting Chen, Zhangyang Wang. Improving Contrastive Learning on Imbalanced Data via Open-World Sampling. Advances in Neural Information Processing Systems (Neurips). 2021. Acceptance ratio: 26%.

Ziyu Jiang, Tianlong Chen, Bobak Mortazavi, Zhangyang Wang. Self-Damaging Contrastive Learning. International conference on machine learning (ICML). 2021. Acceptance ratio: 21%.

Ziyu Jiang, Zhenhua He, Xueqin Huang, Zibin Yang, Pearl Tan. CE-PeopleSeg: Real-time people segmentation with 10% CPU usage for video conference. 2021 IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW). IEEE, 2021.

Ziyu Jiang, Tianlong Chen, Ting Chen, Zhangyang Wang. Robust Pre-Training by Adversarial Contrastive Learning. Advances in Neural Information Processing Systems (Neurips). 2020. Acceptance ratio: 20.1%.

Ziyu Jiang, Buyu Liu, Samuel Schulter, Zhangyang Wang, Manmohan Chandraker. Peek-a-Boo: Occlusion Reasoning in Indoor Scenes With Plane Representations. Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2020 (**ORAL**). Acceptance ratio: 22%.

Yue Wang*, **Ziyu Jiang***, Xiaohan Chen*, Pengfei Xu, Yang Zhao, Yingyan Lin, Zhangyang Wang. E^2-Train: Training State-of-the-art CNNs with Over 80% Less Energy. Advances in Neural Information Processing Systems (Neurips) 2019. Acceptance ratio: 21.2%.

Wuyang Chen*, **Ziyu Jiang***, Zhangyang Wang, Kexin Cui, Xiaoning Qian. Collaborative Global-Local Networks for Memory-Efficient Segmentation of Ultra-High Resolution Images. Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2019 (**ORAL**). Acceptance ratio: 25%.

Ziyu Jiang, Kate Von Ness, Julie Loisel, Zhangyang Wang. ArcticNet: A Deep Learning Solution to Classify Arctic Wetlands. 2019 IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW). IEEE, 2019.

Ziyu Jiang*, Randy Ardywibowo*, Aven Samereh, Heather Evans, Bill Lober, Xiangyu Chang, Xiaoning Qian, Zhangyang Wang, Shuai Huang. A Roadmap for Automatic Surgical Site Infection (SSI) Detection and Evaluation using User-Generated Wound Images. Surgical infections (2019).

EXPERIENCE

Research Intern Microsoft, Seattle, WA   May 2022 - Aug 2022
Position: Research Intern with Yinpeng Chen.
Co-supervised by Dongdong Chen, Mengchen Liu, Xiyang Dai and Zhangyang Wang
Improving self-supervised training in dense prediction downstream tasks

- Our aim is to combine the benefits of both Mask Image Modeling and Contrastive Learning for further boosting the performance of downstream dense prediction tasks.

Research Intern Microsoft, Seattle, WA   May 2021 - Aug 2021
Position: Research Intern with Luowei Zhou and Yu Cheng
Improving self-supervised training in terms of few-shot performance

- We propose a simple alignment method for mitigating the domain gaps between pre-training and downstream transfer, in order to enhance the few-shot transferability of self-supervised pre-trained models.
- We draw inspirations from the classical low rank and sparse decomposition algorithm and design an algorithm that can mitigate the potential catastrophic forgetting during the alignment.

Research Intern Bytedance, Mountain View, CA   June 2020 - Nov 2020
Position: Research Intern with Linjie Yang
Co-supervised by Longyin Wen, Ding Liu and Zhangyang Wang
Efficient semi-supervised video object segmentation

- Explore efficient semi-supervised video object segmentation algorithm with SoTA performance

Research Assistant NEC laboratories america inc, San Jose, CA   June 2019 - August 2019
Position: Research Assistant with Dr Buyu Liu
Co-supervised by Samuel Schulter, Zhangyang Wang, Manmohan Chandraker
Peek-a-boo: Occlusion Reasoning in Indoor Scenes with Plane Representations

- Extend Plane-RCNN to predict the occluded part of planes in indoor scenes with plane representation.
- Design a novel network architecture (DualRPN) and training objective (plane-warp) specifically designed for the task of occlusion reasoning.
- Generate ground truth of semantics and geometry in occluded areas automatically from the ScanNet dataset.
- Propose an evaluation metric for analyzing the prediction quality of occlusions.

Texas A&M University, College Station, TX   Sep 2018 - Dec 2022
Position: Graduate Research Assistant with Dr Zhangyang Wang