LEI ZHANG

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EDUCATION

University of California, San Diego *Incoming (Fall 2024)*
Ph.D. in Computer Science

Zhejiang University *Sep. 2021 – Jun. 2024*
M.S. in Computer Science

South China University of Technology *Sep. 2017 – Jun. 2021*
B.S. in Software Engineering
• Rank: Top 7%

INTERSHIP

University of California Santa Cruz. *Mar. 2023 – Jun.2024*
Research Intern
• Supervisor: Prof. Cihang Xie
• Research focus: Multimodal Learning with Human Knowledge.

Alibaba, Taobao. *May. 2023 – Jun. 2024*
Research Intern
• Research focus: Video-Audio Multimodal Large Language Model.

Microsoft Research Asia. *Dec.2022 – Feb.2023*
Research Intern
• Supervisor: Dr. Xun Guo
• Research focus: Text-to-3d with Diffusion Model.

PUBLICATIONS

[PREPRINT PAPERS]

Compress & Align: Human Knowledge for Curating Image-Text Data
***Lei Zhang**, Fangxun Shu, Sucheng Ren, Hao Jiang, Cihang Xie.*
• In submission to NIPS 2024.

Audio-Visual LLM for Video Understanding
Fangxun Shu, **Lei Zhang***, Hao Jiang, Xu Liu. (* for equal contribution)*
• In submission to NIPS 2024.

[PEER-REVIEWED PAPERS]

Accelerating Dataset Distillation via Model Augmentation
***Lei Zhang**, Jie Zhang, Bowen Lei, Subhabrata Mukherjee, Xiang Pan, Bo Zhao, Caiwen Ding, Yao Li, Dongkuan Xu.*
• Published on ***CVPR 2023 (Highlight, Acceptance 2.5%)***

Towards Fairness-aware Adversarially Network Pruning
***Lei Zhang**, Zhibo Wang, Xiaowei Dong, Yunhe Feng, Xiaoyi Pang, Zhifei Zhang, Kui Ren.*
• Published on ***ICCV 2023***

Towards Efficient Data Free Black-Box Adversarial Attack
*Jie Zhang, Bo Li, Jianghe Xu, Shuang Wu, Shouhong Ding, **Lei Zhang**, Chao Wu.*
• Published on ***CVPR 2022***

Adversarial Examples for Good: Adversarial Examples Guided Imbalanced Learning
Jie Zhang, **Lei Zhang***, Gang Li, Chao Wu. (* for equal contribution)*

• Published on ***ICIP 2022***

RESEARCH EXPERIENCE

Effective Vision-language Data with Human Knowledge *Jun. – Dec. 2023*

Supervised by Prof. Cihang Xie from UCSC.

• Proposed to integrate human knowledge with the definition of visual-textual alignment and evaluation of alignment of image-text pairs and learn the human knowledge via training a reward model.

• Utilized reward model as a human-like referee to compact large-scale and noisy image-text datasets to compact and well-aligned compressed datasets.

• Performance of vision-language model outperforms full-size training dataset with only 15% training data.

• The corresponding paper is in submission to NIPS 2024.

Multimodal Large Language Model for Visual-Audio Understanding *July – Dec.2023*

Cooperated with Research Fangxun Shu from Alibaba.

• Proposed to support image, video, audio and visual-audio understanding uniformly.

• Perform two-stage training: pretraining and instruction-tuning, to guarantee model the ability of both capturing general knowledge and following human intentions.

• The corresponding paper is in submission to NIPS 2024.

Efficient Gradient-Matching Dataset Distillation. *Jun. – Nov. 2022*

• Proposed two model augmentation techniques, i.e. using early-stage models and weight perturbation to learn an informative distilled dataset with significantly reduced training cost. Extensive experiments demonstrated that our method achieves up to **20× speedup.**

• **The corresponding paper is accepted by CVPR 2023 as a highlight paper.**

Fairness-aware Network Pruning. *Aug. – Nov. 2022*

Supervised by Dr. Zhifei Zhang from Adobe.

• Investigated on mitigating demographic fairness of pruned models via adversarially network pruning.

• Improved fairness by around **50%** compared to SOTA, while pruning up to **95%** model weights and maintaining comparable performance.

• **The corresponding paper is accepted by ICCV 2023.**

PROFESSIONAL SERVICE

CVPR 2024, NIPS 2024, CVPR 2023, TPAMI

Reviewer

HONORS & AWARDS

2023 Zhejiang University Outstanding Graduate Student scholarship
2020 South China University of Technology scholarship
2020 Excellent visiting student of West Lake University
2019 Excellent student of South China University of Technology

SKILLS

Programming Python, C++, Pytorch, Go, LaTex
English GRE 325+3.0, TOEFL 105