Li Zhang

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Research Interests

My research has primarily focused on computer vision, deep learning, and large language/vision models (foundation models). Key areas of my work include:

- **Data Synthesis:** Developed multi-level frameworks to optimize data augmentation for training more powerful semantic segmentation models.
- **Foundation Model Adaptation:** Fine-tuned vision foundation model for task-specific applications with extremely limited data by bi-level opmitzation.
- **Concept Attribution:** Identified the specific concepts that are responsible for creating particular features in the final image for the diffusion model.

Education

University of California, San Diego (UCSD) **Ph.D.** 09/2022 - 06/2027 (Anticipated)

- **Major:** Intelligence Systems, Robotics & Control

Zhejiang University, China (ZJU) **Master** 09/2019 - 03/2022

- **Major:** Control Science & Engineering

Zhejiang Sci-Tech University, China (ZSTU) **Bachelor** 09/2015 - 07/2019

- **Major:** Measurement & Control Technology **GPA:** 4.01/5.0 **Ranking:** 1/41

Publications

[1] **Li Zhang**, Shruti Agarwal, et al. *TokenTrace: Multi-Concept Attribution through Watermarked Token Recovery.* In Process.

[2] **Li Zhang**, Pengtao Xie *BLO-Inst: Bi-Level Optimization Based Alignment of YOLO and SAM for Robust Instance Segmentation.* In Process.

[3] **Li Zhang**, Basu Jindal, et al. *Generative AI Enables Medical Image Segmentation in Ultra Low-Data Regimes.* Nature Communication, 2025.

[4] **Li Zhang***, Han Guo*, Leah Schaffer, et al. *ProteinAligner: A Tri-Modal Contrastive Learning Framework for Protein Representation Learning.* Cell Reports Methods, Accepted in Principle.

[5] Yuchen Li, **Li Zhang**, et al. *AM-SAM: Automated Prompting and Mask Calibration for Segment Anything Model.* International Journal of Machine Learning and Cybernetics, 2025.

[6] **Li Zhang**, Youwei Liang, et al. *BLO-SAM: Bi-level Optimization Based Overfitting-Preventing Finetuning of SAM.* International Conference on Machine Learning (ICML), 2024.

[7] **Li Zhang**, Bhanu Garg, et al. *Learning From Mistakes: A Multi-level Optimization Framework.* IEEE Transactions on Artificial Intelligence, 2024

[8] Sai Ashish Somayajula, Youwei Liang, **Li Zhang**, et al. *Generalizable and Stable Finetuning of Pretrained Language Models on Low-Resource Texts.* NAACL, 2024

[9] Hosseini Ramtin, **Li Zhang**, et al. *Fair and accurate decision making through group-aware learning.* International Conference on Machine Learning (ICML), 2023.

[10] Bhanu Garg*, **Li Zhang***, et al. *Learning from Mistakes - A Framework for Neural Architecture Search.* AAAI Conference on Artificial Intelligence (AAAI), 2022. (*These authors contributed equally)

[11] Jie Yu, **Li Zhang**, et al. *An Integrated Bottom-Up Approach for Leak Detection in Water Distribution Networks Based on Assessing Parameters of Water Balance Model.* Water, 2021.

Work Experience

Research Scientist Intern, Adobe 06/2025 - 11/2025
Mentors: Dr. John Collomosse, Dr. Shruti Agarwal, Dr. Vishal Asnani *San Jose, CA, USA*

- Causal training concept attribution for the synthetic images generated by a generative model.
- The concepts are watermarked on the token-level to avoid the spatial limitation.

Research Assistant, MBZUAI 06/2023 - 09/2023
Mentors: Dr. Eric Xing, Dr. Pengtao Xie *Masdar City, Abu Dhabi, UAE*

- Train a large foundation model for protein domain in a distributed environment.
- Apply the pre-trained model to protein-related downstream tasks.

Research Intern, UCSD 03/2021 - 03/2022
Mentors: Dr. Pengtao Xie *San Diego, CA, USA*

- Formulated the idea about Learning from Mistakes as an end-to-end optimization framework that can be adapted to various Machine Learning methods and improve their performance.
- Evaluate the designed framework on the neural architecture search task and data re-weighting for a general neural network.

Hours and Awards

07/2021 Excellent graduate student & Academic Scholarship, ZJU
07/2020 Academic Scholarship, ZJU
07/2019 Outstanding Graduate, Zhejiang Province
07/2018 National Scholarship; Principal scholarship, ZSTU; Top ten college students, ZSTU
07/2018 Second prize, College innovation and entrepreneurship competition
02/2018 **Outstanding Award** (The highest honour, Top 0.16% of global participating teams) & **INFORMS Award** (One quota for each problem), Mathematical Contest in Modeling
11/2017 Second prize, Zhejiang Maker Education Base Alliance Competition
07/2016 Government Scholarship, Zhejiang Provincial

Leadership Experience

Head of the Organization Department, ZJU 03/2022-09/2019

- Organize the students to carry out the theme activities monthly.

Group leader, ZSTU 04/2016 - 07/2019

- Based on the self-designed underwater vehicle to detect contamination in the river. (Including the hardware and software designs)
- Awarded as "Xiaoping Science and Innovation team". (The highest honour of youth science and innovation in China, Head of the undergraduate group)

Class leader, ZSTU 09/2015-07/2019

- Organize the students to carry out the theme class meeting.
- Do a good job in the hub work among the department leaders, head teacher and students.

Teaching and Reviewing Experience

Teaching Assistant, UCSD 03/2025-06/2025

- ECE 285 (Deep Generative Models)

Reviewer for Top-Tier Conferences and Journals

- ICLR, NeurIPS, CVPR, ACL ARR, IJCNN, CHIL, MICCAI, Applied Intelligence, ACM Transactions on Computing for Healthcare, etc.

Co-orgainizer for Top-Tier conference workshop

- NeurIPS 2025 workshop on Multi-modal Foundation Models and Large Language Models for Life Sciences (FM4LS)