JINGHAO ZHENG

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EDUCATION

Shanghai Jiao Tong University (SJTU) Sept. 2021 – June 2025

B.E. in Automation, Minor in Finance

• Major GPA:3.82/4.3 • Centesimal grade average:89.23/100

Related Courses: Probability and Statistics (99), Linear Algebra (92), Data Structure (90), Pattern Recognition (96), Machine Learning and Knowledge Discovery (89.5), Robotics (93), Principles of Automatic Control (94)

PUBLICATION

Z. Huang, X. Cheng, **J. Zheng,** H. Wang, Z. He, T. Li, and X. Huang. Unified Gradient-Based Machine Unlearning with Remain Geometry Enhancement. Neural Information Processing Systems (NeurIPS), 2024. (Accepted as a spotlight)

PROJECTS & RESEARCH EXPERIENCE

Fewer Generated Images for Better Augmentation

Research Assistant July 2024 – Present

Advisor: **Baharan Mirzasoleiman,** Assistant Professor, Computer Science Department, UCLA

- Leveraged the GLIDE, a text-to-image model, with real guidance strategies to diversify the training datasets.
- Conducted experiments on multiple datasets using upsampling and Diffusion-based data augmentation techniques.
- Improved the classification accuracy by 1% than that without augmentation and training efficiency by 70% than $2\times$ scale Diffusion-based data augmentation using selectively incorporating generated data.

Unified Gradient-Based Machine Unlearning (MU) with Remain Geometry Enhancement

Co-author Mar. 2024 – June 2024

Advisor: **Xiaolin Huang,** Professor, Vice Dean, Department of Automation, SJTU

- Proposed using KL divergence on the remaining output distribution, instead of Euclidean distance in vanilla methods, as the manifold metric to prevent deviations in the model output on the remaining set, improving MU performance.
- Conducted experiments and parameter tuning to compare the performance of our algorithm with other MU methods in image classification and generation across various datasets and models of different architectures.
- Improved the averaging disparity by 1.8% on average in random subset forgetting on CIFAR-10 in image classification and the FID by 80 on average in class-wish forgetting on ImageNet in image generation.

Polyp Detection and Segmentation Augmented by Diffusion Model

Sole Researcher Feb. 2024 – June 2024

Advisor: **Manhua Liu,** Professor, Artificial Intelligence Research Institute, SJTU

- Implemented yolov10 and ResUnet++ as baselines to finish object detection and segmentation on medical images.
- Proposed using Diffusion-based generative models to generate synthetic data for data augmentation, which improved the mAP0.5@0.95 in the object detection by 1% and the IoU in the segmentation by 5%.

Implementation and Comparison of Gas Tracing Algorithms for Dual Robots in Confined Space

Project Leader Mar. 2023 – Feb. 2024

Advisor: **Liufang Wang,** Senior Engineer, Student Innovation Center, SJTU

- Proposed a bionics-based gas tracing algorithm for dual robots in a confined space and conducted experiments to simulate and validate our algorithm, which improved the success rate by 1.5% and the search efficiency by 9%.
- Developed control code for Raspberry Pi to ensure precise movement and implemented ROS2 communication protocols for real-time data exchange between the robots and the main computer.

HONORS & AWARDS

3rd Prize, TI Cup National Undergraduate Electronic Design Contest Shanghai area 2023

3rd Prize, Academic Scholarship of SJTU 2022 & 2023

2nd Prize, Chinese Physics Olympiad Zhejiang Area 2019

SKILLS

- Programming: Python, C/C++, ROS2, Matlab, LaTeX
- Languages: Chinese (native), English (proficient)
- Leadership Experience: Head of Sports Department, School of Electronic Information and Electrical Engineering(SEIEE) Student Union, Shanghai Jiao Tong University