Zinan Li

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Research Interests: Robot Learning · Visuo-Tactile Perception · Multimodal Learning

Education

University of Southern California Jan 2025 – Expected Dec 2026
Master of Science in Computer Science | GPA: 3.91/4.0 *Los Angeles, USA*

Southern University of Science and Technology Aug 2020 – Jun 2024
Bachelor of Engineering in Computer Science and Technology | GPA: 3.64/4.0 *Shenzhen, China*

Publications

Z. Li, Y. Ling, Y. Gu, B. Huang, C. Liang, S. Islam, H. Bedri, J. Chirikjian, Y. Li, S. Nikolaidis, and D. Seita, "FELT: Generating Tactile Signals from Vision for Visuo-Tactile Manipulation" [arXiv]. Under review at *ICRA 2027*. **Oral Spotlight**, RSS Workshop on Tactile Sensing for Robotic Foundation Models, 2026.

H. Li, Z. Lin, Z. Qiu, **Z. Li**, K. Niu, N. Guo, H. Fu, Y. Hu, and J. Liu, "Enhancing and Adapting in the Clinic: Source-Free Unsupervised Domain Adaptation for Medical Image Enhancement," *IEEE Transactions on Medical Imaging*, vol. 43, no. 4, pp. 1323–1336, 2024.

Y. Lin, H. Li, H. Liu, H. Shu, **Z. Li**, Y. Hu, and J. Liu, "Domain Adaptative Retinal Image Quality Assessment with Knowledge Distillation Using Competitive Teacher-Student Network," *IEEE ISBI*, 2023.

Research Experience

Graduate Research Assistant Apr 2025 – Present
SLURM Lab, University of Southern California *Los Angeles, USA*

- Led the development of FELT, a sensor-topology-aware framework that generates per-finger tactile maps and learns contact-aware representations from wrist-mounted RGB observations.
- Designed and deployed a synchronized visuo-tactile data pipeline on an xArm7 robot, collecting 240 demonstrations comprising approximately 520K synchronized RGB, tactile, and action frames across four manipulation tasks.
- Integrated FELT features into Diffusion Policy, improving real-robot success rates by 15–22.5 percentage points over vision-only baselines across four contact-rich tasks, evaluated over 40 trials per task.
- Leading a Starpilot.ai-funded collaboration on bimanual wire manipulation from egocentric observations, developing teleoperation, data-collection, and Policy training pipelines for contact-rich deformable-object manipulation.

Research Assistant Sep 2022 – Mar 2024
Southern University of Science and Technology *Shenzhen, China*

- Conducted research on medical image enhancement, domain adaptation, and quality assessment, resulting in publications in IEEE Transactions on Medical Imaging and IEEE ISBI.
- Developed an uncertainty-aware dual-branch enhancement model with a Jeffreys-prior objective, achieving a 20% improvement in PSNR and the best performance among evaluated methods on the DRIVE dataset.
- Built a unified evaluation framework benchmarking 11 state-of-the-art algorithms across three clinical imaging tasks and collaborated with a hospital team to acquire and annotate more than 1,000 fundus images.

Research Intern, Visual Image Enhancement Dec 2023 – Feb 2024
Beijing HiDream Future Technology Co., Ltd. *Beijing, China*

- Reproduced and adapted diffusion-based image super-resolution methods, modifying model components and tuning latent-noise settings to investigate their effects on reconstruction quality and fine-detail recovery.

Technical Skills

Programming: Python, C/C++, Bash
Libraries & Middleware: PyTorch, NumPy, ROS 2, OpenCV
Tools & Platforms: Weights & Biases, Linux, Docker, Conda, Git, Jupyter