

Research Interest

- My research focuses on **scene representation and perception** for robotic manipulation. I am interested in developing unified frameworks that combine geometric reconstruction, object detection and tracking, and articulation reconstruction to enable robots to understand and interact with complex environments.

Education

Southern University of Science and Technology (SUSTech) *Sep 2022 –Present*
Department of Electrical and Electronic Engineering, Information Engineering GPA: 3.90/4.00, 93.29/100

Research Experience

Research Intern, Hong Kong University of Science and Technology (HKUST) *Mar 2026 –Present*
Supervisor: Prof. Fangneng Zhan, World Mind Lab

- Developed a closed-loop articulated manipulation system featuring VLM-based zero-shot planning for articulated manipulation (e.g., operating cabinets). Designed an online screw-parameter refinement strategy that leverages robot kinematic and visual feedback to realign articulation axes in real-time; this active-sensing approach provided critical calibration for concurrent visual reconstruction modules.

Research Intern, AdaComp Lab, National University of Singapore *Jan 2025 –Present*
Supervisor: Prof. David Hsu, School of Computing

- Designed and implemented a **real-time robotic perception system** that integrates object detection, segmentation, tracking, pose estimation, and geometric reconstruction within a unified scene representation framework. The system leverages manipulator pose feedback to improve robustness in dynamic pose estimation and runs in real time on physical robotic platforms.

Project Leader, Climbing Program for Innovation and Research, SUSTech *Sep 2024 –Sep 2025*
Supervisor: Prof. Hong Zhang, Department of Electrical and Electronic Engineering

- Led the “**General In-Building Delivery Robot**” project, responsible for designing the system architecture and implementing core modules for an autonomous indoor delivery robot, focusing on open-vocabulary semantic mapping and object-level representation to enhance scene understanding and task planning in structured environments.

Projects

UWB-Based Indoor Air-Ground Collaborative System *Jan 2024 –Aug 2024*
National College Students’ Innovation and Entrepreneurship Training Program

- Developed the **UWB localization module** and implemented **motion control** for ground robots, enabling coordinated navigation with UAVs in GPS-denied environments.

FPGA-Based Neural Network for Handwritten Digit Recognition *Apr 2025 –Jun 2025*
SUSTech EE332 Digital System Design Course Project

- Implemented a feed-forward neural network in **VHDL** for MNIST recognition, featuring parallel MAC units and pipelined modules for on-chip inference acceleration.

ARide –AR Motorcycle Navigation Module *Jul 2023*
2023 Shaoyin Cup Global Undergraduate Engineering Research and Practice Summer School –Gold Award

- Led the Sports Glasses team to develop an AR-based motorcycle navigation prototype integrating GPS data and HUD visualization.

Honors and Awards

- First-Class Academic Scholarship, SUSTech
- Member of the Wolong Program

Language

- IELTS: 6.5 / 9.0 | CET-6: 562 / 710 | CET-4: 615 / 710