YIWEN YING

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ACADEMIC EXPERIENCES

Southern University of Science and Technology **2022.08-2026.06**

Information Engineering, Department of Electronic and Electrical Engineering

- **GPA:** 94.52/100 | 3.92/4.0 | 80% credits A/A+ **Rank:** 2/43 **English:** CET6 - 604 (2023.12)
- Calculus (96+94) Linear Algebra (95) Probability and Statistics (97) Digital System Design (97) Introduction to C Programming (98) Data Structures and Algorithm Analysis (95) AI and Machine Learning (98) Mobile Robot Navigation and Control (94) Robotic Motion and Control (93)

RESEARCH EXPERIENCES

FAST LAB	Coll. of CSE, ZJU	Supervisor: Prof. Fei Gao	2025.01-Present
CV-AI LAB	Dept. of EE, THU	Supervisor: Prof. Liangrui Peng	2024.08-2024.11
RCV LAB	Dept. of EE, SUSTech	Supervisor: Prof. Hong Zhang	2023.06-Present

- **MoMaIK: Diverse and Collision-Free Inverse Kinematics Solver for Mobile Manipulators, first author paper, proposed submitted to ICRA 2026**

Introduction: A framework for precise joint-space inverse kinematics solutions in a 10-DOF mobile manipulator, incorporating nonlinear constraints, achieving coverage of solution space.

My Contribution: Designed the diffusion framework, utilizing MLP and attention block, with consistency distillation and numerical iterative methods, to generate expected outcomes.

Outcome: Improved solution space coverage and obstacle avoidance ability, while maintaining accuracy and efficiency, surpassing traditional methods in high-DOF manipulator motion planning.

- **MfNeuPAN: Proactive End-to-End Navigation in Dynamic Environments via Direct Multi-Frame Point Constraints, first author paper, under review by ROBIO 2025**

Introduction: An efficient local planner based on point constraints for dynamic environments.

My Contribution: Utilized multi-frame observations by DBSCAN clustering and nearest neighbour to estimate obstacle states, and employed Gaussian Mixture Models to predict multi-frame future trajectories. Incorporated it with point-constrained local planner, NeuPAN, to navigate the robot.

Outcome: Achieved shorter and more efficient paths, outperforming baseline methods.

- **Fully Automatic Task-Oriented Air-Ground Cooperative Robot System, selected as national level project by College Students' Innovative Entrepreneurial Training Plan Program**

Introduction: An autonomous task-oriented system integrating UAV and wheeled robots.

My Contribution: Led the usage of OpenCV, YOLO, OpenMV to build visual perception system. Developed the wheeled robot platform using UWB localization, A* planning, STM32 micro-controller, and stepper motors. Implemented a ground station GUI and wireless communication system to ensure real-time information exchange and synchronized operations between aerial and ground platforms.

Outcome: Successfully demonstrated target recognition and synchronized air-ground operations.

- **SD-Loc: Global Localization in Challenging Semi-Dynamic Environment, third author paper, proposed submitted to ICRA 2026**

Introduction: A re-localization algorithm by loss-weight registration for SLAM in semi-dynamic environments such as warehouses and parking lots, resulting in improved accuracy.

My Contribution: Led the implementation of methods based on FAST-LIO and LIO-SAM to conduct simulation. Completed the physical experiment data collection and validation, the automated simulation environment generation and streamlined experimental workflows.

Outcome: Enhanced localization accuracy in challenging environments.

- **Universal Building Delivery Robot, selected as school level project by Guangdong Science and Technology Innovation Strategy Special Programs**

Introduction: A universal delivery robot capable of pressing the elevator button itself, instead of using a receiver in each elevator. The university-enterprise cooperation project with Meituan.

My Contribution: Utilizing the OCR-RCNN based button recognition system to recognize the button.

Outcome: Achieved high-precision elevator interaction and navigation, with a pending patent.

- **Precise 3D Reconstruction System from High-Precision Object Images**

Introduction: A 3D reconstruction system for ultra-high-precision object.

My Contribution: Optimized the DUSt3R by gradient descent methods, and integrated ROI-focused strategies, for improved reconstruction accuracy.

Outcome: Achieved superior 3D reconstruction precision and smoothness compared to traditional methods. With digital-born and scanned results to build 3D-OCR datasets.

RESEARCH INTERESTS

My research interests focus on **learning-based robot motion planning**. I possess comprehensive capabilities in full-stack robotics development, with expertise in trajectory planning, SLAM, machine learning, and computer vision. My programming expertise spans Python, C++ and MATLAB, I am also familiar with deep learning (Diffusion) and embedded systems (STM32, Raspberry Pi).

HONORS & AWARDS

- 2024, **Student Model of Excellence**, SUSTech (Top 7 among all undergraduates, 4000±)
- 2024, **Outstanding Student Scholarship Second Prize**, SUSTech (Top 15%)
- 2024, **Outstanding Project**, Dept. of EE., SUSTech (Top 5 out of 107, individual)
- 2023, **Outstanding Student**, SUSTech (Top 489 among all undergraduates, 3700±)
- 2023, **Outstanding Student Scholarship Second Prize**, SUSTech (Top 15%)
- 2023, **First Prize**, Guangdong Province, National University Mathematics Competition (Top 7%)
- 2024, **National Class 1 Athlete** (Mass Category), Women's 100m Breaststroke Swimming
- 2024, **National Class 1 Athlete** (Mass Category), Women’s 50m Freestyle Swimming

SOCIAL WORK

- President of the Student Union, Dept. of EE., SUSTech
- Peer Mentor of Undergraduate Course, Signal and System, Dept. of EE., SUSTech