

Jiabin Yang

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Education

Zhejiang University, Hangzhou, China

Aug 2022 – Present

Bachelor of Engineering in Automation (Control Science and Engineering)

GPA: 3.67/4.00

Relevant coursework: Robot Modeling and Control, Principles of Automatic Control, Modern Control System, Linear Algebra, Calculus, Probability

Projects and Experience

Trajectory planning AGV

Phase I: ROS1-based trajectory planning AGV

Mar 2024 – May 2025

FabLab, College of Control Science and Engineering, Zhejiang University

Team Leader, 3 members and a supervisor

- Spearheaded the full-stack AGV goods transfer system, covering hardware (motor drivers, Raspberry Pi, laser radar) and ROS-noetic-based software (SLAM via hector-slam and trajectory planning via A*).
- Delivered a robust mobile robot prototype capable of real-time environment mapping and autonomous navigation, achieving a 'Good' evaluation (top 12%) in the final report.

Phase II: ROS2-based Full System Migration and Optimization

Jul 2025 – Present

Team Leader, 3 members

- Migrating the AGV system to ROS 2 Jazzy, restructuring software modules in Python and C++ with improved ROS 2 practices.
- Optimizing encoder motor rotation with P control, and re-implementing SLAM using slam-toolbox.
- Enhancing communication robustness via launch configuration and TF tree structure for better scalability.

Risk Analysis of Distributed Energy Integration into Distribution Networks

May 2025 – Present

Team Leader, 4 members

- Led the development of mathematical models (Monte Carlo simulation, AC power flow and Newton-Raphson) to quantify lostload and overload risks in a 62-node distribution network with distributed PV integration.
- Created photovoltaic generation curve models to accurately simulate PV output variability for risk assessment.
- Qualified for the **National Final Round** of Shenzhen Cup 2025 (Problem C).

Mobile Robot Simulation: Path Planning and Obstacle Avoidance

Feb 2025 – Mar 2025

Participant, 3 members

- Implemented a Dynamic Window Approach (DWA) algorithm in Python for real-time local obstacle avoidance.
- Integrated A* algorithm for global path planning, enabling simulated robot to navigate complex environments (11 static, 5 dynamic obstacles) with a 100% success rate across 200+ simulation trials and ranked 1st among 10+ teams.
- Explored an innovative "drift-style" maneuver, achieving stable control even without explicit velocity or acceleration constraints, demonstrating algorithmic robustness and adaptability in loosely modeled environments.

Skills

- **Programming:** C (Experienced), Python, MATLAB, VHDL, Ladder Logic (LD)
- **Tools & Frameworks:** ROS (ROS1/ROS2, Experienced), OpenCV, RViz, SLAM (gmapping, hector-slam and slam-toolbox), Git
- **Hardware:** Arduino, Raspberry Pi, FPGA Board, STM32
- **Algorithms:** A*, DWA (Dynamic Window Approach), PRM (Probabilistic Roadmap), PID Control, Greedy Algorithm, Monte Carlo Simulation, Power Flow Analysis
- **Languages:** English (IELTS 7.0), Chinese, Mongolian

Awards

- **Qualified for National Level (2025)**, Shenzhen Cup (China University Student Mathematical Modeling Summer Camp) - Problem C
- **Second Prize (University Level, 2025) and Qualified for Provincial Level**, 8th China University Robotics Innovation Competition
- **Second Prize (University Level, 2024)**, "Zhongkong Cup" UAV Competition (Zhejiang Province)
- **Third Prize (University Level, 2025)**, Zhejiang University Mathematical Modeling Competition - Problem A
- **Outstanding Student Cadre (2023-2025)**, Zhejiang University

Extracurricular Activities

- **Participant**, Summer Exchange Program in NUS, NTU, SUTD and A*STAR, Singapore, 2024
- **Class League Secretary**, Zhejiang University, 2024 – Present
- **Student Leader**, 5-Day visit for Shanghai Electric and ABB Robotics, Shanghai, 2024
- **Vice Captain**, Social Research Program in Beijing-Tianjin Region, 2023
- **Volunteer**, 3rd National Forum on Robotics Engineering Education, 2023
- **Lead Vocalist**, New Year Gala of College of Control Science and Engineering, 2023
- **Member**, ZJU Smartlink AIoT Club (Partnered with Huawei)
- **Member**, ZJU Robotics Association

References

- Prof. Qinyuan Ren, College of Control Science and Engineering, Zhejiang University
Email: renqinyuan@zju.edu.cn
Role: Instructor of "Robot Modeling and Control"; leading teacher of Singapore summer exchange program
- Dr. Dongxia Wang, Distinguished Researcher, College of Control Science and Engineering, ZJU
Email: dxwang@zju.edu.cn
Role: Class advisor