

Linying Bai

Undergraduate

Zhejiang University, Automation

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SUMMARY

I am currently a third-year undergraduate student at Zhejiang University, majoring in Automation and guided by Prof. RongHao Zheng. My research interests lie primarily in Legged Robot, Reinforcement Learning and Computer Vision. I am also passionate about exploring more research areas.

EDUCATION

2023 - 2027 Automation at **Zhejiang University**
College of Electrical Engineering
Advisor: Prof. RongHao Zheng
Major GPA: 4.78/5.0 (Top 2%) Overall GPA: 3.99/4.0

HONORS & AWARDS

2024, 2025 **First Prize**, National University Robot Competition "RoboMaster Super Match - National Championship"
2024 (National Top 4), 2025 (National Top 8)

2025 **First Prize**, National University Robot Competition "RoboMaster Super Match - Sentinel Robot Competition Award"

2025 **Provincial Government Scholarship** (Top 5% Students), Zhejiang University

2024, 2025 **First Prize**, Chinese University Dragon and Lion Dance Championship

PROJECTS

RoboMaster Competition: Autonomous Sentry Robot Control Systems Oct 2024 - Aug 2025

Spearheaded the full-stack system architecture for Sentry Robot. Responsibilities spanned from foundational hardware engineering (circuit design and soldering) to high-level software implementation, establishing a low-latency system for autonomous host command execution. Deployed classical control algorithms (PID and LQR) on the physical robot; Establishing state-space models, successfully suppressed dynamic oscillations in the Coarse-Fine Dual-Yaw gimbal and significantly improved tracking accuracy. This experience bridged the gap between theoretical modeling and engineering practice, solidifying my embedded programming foundation while deepening my passion for advanced robot control research.

RoboMaster Competition: Vision-Based Guided Dart System Aug 2025 - Present

Contributed to the GNC architecture for a Precision-Guided Dart System. Responsibilities spanned from hardware integration to computer vision deployment, establishing a real-time loop for autonomous target acquisition. Deployed aerodynamic control algorithms and Proportional Navigation, successfully transitioning the system from static open-loop ballistics to active terminal homing. Currently advancing the platform by integrating active ducted-fan propulsion and Stereo VIO to enable active loitering capability and enriched sensory feedback, thereby significantly extending the effective guidance range. Significantly refined my capability to model and control complex dynamic systems, honed practical computer vision skills

HW-Components: Universal Robot Control Library

Oct 2024 - Present

As a Core Contributor, architected a high-performance communication framework leveraging C++ template metaprogramming to automate protocol ID allocation. Implemented multi-rate scheduling, enabling precise frequency division and sequenced transmission for diverse data streams. Furthermore, developed an energy-model-based algorithm that dynamically regulates torque output relative to supercapacitor status and competition power limits, maximizing maneuvering agility, energy utilisation efficiency. Enhanced my engineering mindset and templated programming capabilities.

RESEARCH EXPERIENCE

Multi-Robot Coordination under Temporal Logic Constraints

June 2025 - Present

- Analyzed the Linear Temporal Logic (LTL) framework to master formal modeling methods for complex sequential tasks.
- Reproduced SMT-based algorithms to understand the optimization mechanism for minimizing collaborative waiting times.
- Conducted simulation experiments to validate the logical correctness of coordination strategies.
- Gained foundational understanding of neural networks and reinforcement learning for dynamic robot control applications.
- Enhanced practical proficiency in simulation, algorithmic modeling, and implementation using Python and PyTorch.

Research Intern @ HICAI-ZJU

June 2024 - Sep 2024

- Analyzed LLM limitations, specifically identifying hallucinations and reasoning errors in medical QA tasks.
- Structured 50k+ data samples using Python, ensuring high-quality formatting for model benchmarking.
- Accelerated inference by self-learning `asyncio`, resolving API rate limits and latency for large-scale evaluation.
- Refined system prompts to enhance model accuracy on complex reasoning and safety judgment tasks.
- Executed full research workflow, from defining scientific taxonomies to performing quantitative analysis.

SKILLS

Programming Languages	C/C++, Python, MATLAB
Robotics Tools	ROS2, OpenCV, Isaac Gym, CMake, Git, Linux
Control Theory	PID, LQR, MPC, EKF, Adaptive Control
Machine Learning	PyTorch, Reinforcement Learning (PPO)
Embedded Systems	STM32, Raspberry Pi