# Peinan **Li**

Website: peinanli.com | peinan_li@163.com | RiseBun | WeChat: RiseBun

*Robotics, autonomous driving, and multimodal AI; cross-stack engineering from mechanics and control to algorithms and prototypes.*

## Summary

Undergraduate student in Mechatronics Engineering at Tongji University, focused on robotics, embodied intelligence, autonomous driving, and multimodal reasoning. Currently serving as captain of the Tongji Robocon team, research assistant at AutoLab, Shanghai Jiao Tong University, and CTO of Xingzhou Yinyue (Shanghai) Embodied Intelligent Robotics Co., Ltd.; experienced in bridging mechanics, electronics, localization and mapping, algorithm implementation, and product prototyping.

## Education

**School of Mechanical Engineering and Robotics, Tongji University** 2023.09 - 2027.07
**B.Eng. in Mechatronics Engineering**

- Coursework across robotics, intelligent systems, mechatronics, and AI engineering.
- Active in innovation competitions, robotics team rebuilding, research assistance, and engineering prototyping.

## Research Experience

**AutoLab, School of Artificial Intelligence, Shanghai Jiao Tong University** 2026.01 - 2026.05
**Research Assistant**

- Working on autonomous driving, embodied intelligence, multimodal reasoning, and interpretable AI systems.
- Turning research ideas into reproducible experiments and engineering prototypes around accident analysis, dynamic mapping, and driving decision interpretation.
- Represented AutoLab at the CGIS experts visit to Yinwang, joining exchanges on intelligent mobility and frontier engineering practice.

## Entrepreneurship

**Xingzhou Yinyue (Shanghai) Embodied Intelligent Robotics Co., Ltd.** Present
**CTO**

- Lead technical planning and early-stage engineering for embodied intelligent robotics products, spanning hardware platforms, perception and control, AI capabilities, and application scenarios.
- Drive system integration and prototype validation across robotics hardware, AI algorithms, and product requirements.

## Internship Experience

**Chongqing Shiwei Data Technology Co., Ltd. · NUS Collaboration** 2025.08 - 2026.01
**Algorithm Engineer**

- Led DP180 multi-camera loop-closure localization development, building a robust visual loop-closure and pose-constraint pipeline for complex scenes.
- Led long-range LiDAR 3D mapping development and participated in multi-sensor perception, map construction, and deployment validation.

**Hello Group, Shanghai Zaofu Technology Co., Ltd.** 2026.02 - 2026.05
**End-to-End Algorithm Engineer Intern**

- Worked on end-to-end algorithm pipelines across model training, data processing, evaluation, and engineering deployment.

## Research Publications

**Neuro-Causal Drive: Interpretable Traffic Accident Analysis** ICME 2026 · Accepted
**First Author, Oral**

- Independently wrote the paper and proposed a neuro-symbolic framework for long-horizon traffic accident analysis; accepted as an ICME 2026 Oral presentation.

**Evidential-LIO: Uncertainty-Aware Dynamic Mapping** — IROS 2026 · Accepted
**Accepted (First & Corresponding Author)**

**DriveNarrate: Decision Bottlenecks for Driving** — ACM MM 2026 · Submitted
**Submitted**

**Multimodal Learning for Defect Explanation** — ACM MM 2026 · Submitted
**Submitted**

**FlexPlanner: Adaptive Planner Selection for Driving** — NeurIPS 2026 · Submitted
**Submitted**

**Typed Budgets for Driving World Models** — IEEE TPAMI · Submitted
**Submitted**

## Project Experience

Built interdisciplinary projects across mechanics, electronics, and AI, covering robotic systems, autonomous driving algorithms, localization and mapping, and multimodal AI. Experienced in turning engineering ideas into real systems through concept design, software-hardware integration, competition validation, and deployment.

- Robotics: Robocon mechanical vehicle, humanoid 7-DOF robotic arm, and Zhiyuan robotic hand.
- Perception and algorithms: multi-camera/LiDAR fusion sensor, DP180 multi-camera loop closure, and long-range LiDAR 3D mapping.
- Full-stack delivery: integrated mechanical design, electrical control, localization and mapping, algorithm implementation, and product prototypes across multiple projects.

## Competitions & Honors

| | | |
|---|---|---|
| **Science and Innovation Star** | 2025 Science and Innovation Star, School of Mechanical Engineering and Robotics, Tongji University; only 10 selected | 2025 |
| **Second Prize** | 2025 China University Student Mechanical Engineering Innovation and Creativity Competition | 2025 |
| **Second Prize** | 14th Shanghai University Student Engineering Practice and Innovation Ability Competition | 2025 |
| **Second Prize** | 12th Shanghai University Student Mechanical Engineering Innovation Competition | 2024 |
| **Third Prize** | 2025 China University Student Mechanical Engineering Innovation and Creativity Competition, Logistics Technology Track | 2025 |
| **Third Prize** | 6th Global Campus Artificial Intelligence Algorithm Elite Competition | 2024 |
| **Second Prize** | 2nd Shanghai University Student Energy Conservation and Emission Reduction Competition | 2025 |
| **First Prize** | 2024 Intelligent Robot Innovation and Entrepreneurship Competition | 2024 |
| **Third Prize** | RAICOM Shanghai Division ROS Robot Virtual Simulation Competition | 2024 |
| **First Prize** | Tongji University Challenge Cup Selection | 2025 |
| **Gold Award** | China International College Students Innovation Competition, Tongji Campus Final | 2025 |
| **Silver Award** | Shanghai College Student Innovation and Entrepreneurship Competition, Smart Electric External Fixation Orthosis | 2025 |

## Patents

| | | |
|---|---|---|
| **First Inventor** | Force-controlled mechanically lockable electric push rod; Application No. 202510963355.9 | 2025.07.11 |
| **First Inventor** | Parallel end-effector multi-degree-of-freedom robotic arm; Application No. 202521461640.2 | 2025.07.11 |
| **First Inventor** | Human-assistive robotic arm, mobility assistance control method, and intelligent wheelchair; Application No. 202510931694.9 | 2025.07.07 |

## Special Experiences

**Tongji University Robocon Team** — 2024.03 - Present
**Captain**

- Rebuilt the team and organized technical docs, competition strategy, solution design, and member training.
- Connected mechanical design, electrical control, algorithms, and competition execution across more than ten robotics and engineering innovation contests.

**XbotPark Ningbo Base (Prof. Li Zexiang's ecosystem)** — Bootcamp
**Camp Participant**

- Joined intelligent-hardware startup training and project refinement under the Li Zexiang ecosystem.
- Led an intelligent-hardware startup project that received investment from Prof. Li Zexiang and other investors.