Lebin LIANG

+86-13610140855 lb.liang@siat.ac.cn | LebinLiang.github.io

LebinLiang | LebinLiang |

Shenzhen, Guangdong, China

Objective

Actively seeking overseas PhD positions for Fall 2026 enrollment or later, with a dedicated research focus on Human-Computer Interaction (HCI) and Human-Robot Interaction (HRI).

Experience

- **Sony China Research Institute (RDC Shenzhen) [🌐]** *Jan 2025 - Present*
  Robotics Inter Shenzhen, China
  - Designed and developed lower-level systems for legged robots, focusing on multi-joint motor and servo control using STM32.
  - Responsible for PCB hardware design of driver boards, incorporating CAN, high-speed RS485, and EtherCAT communication protocols.
  - Engaged in dynamics modeling, reinforcement learning for motion control, and Sim2Real deployment for legged robots within the Isaac Lab environment.
  - Implemented safety features including online disconnection-reconnection detection, emergency power-off, and power monitoring systems.
- **DJI RoboMaster High School Robotics Camp [🌐]** *Summer/Winter 2020 - 2023*
  Embedded Systems Teaching Assistant Shenzhen, China
  - Planned and organized multiple STEAM robotics camps (100+ students each) focusing on robotics and embedded systems.
  - Designed and delivered an embedded systems curriculum centered on an "Indoor Robot Logistics and Transportation" theme.
  - Developed ROS (Robot Operating System) driver packages for RoboMaster EP robots and created comprehensive teaching materials.

Education

- **University of Chinese Academy of Sciences (UCAS)** *Sept 2023 - June 2026 (Expected)*
  M.S. in Electronic Information Beijing and Shenzhen, China
  - GPA: 3.77/4.0
  - Admitted through Postgraduate Recommendation Program (Tuition-Waiver Scholarship)
  - Shenzhen Institutes of Advanced Technology (SIAT)
- **South China Agricultural University (SCAU)** *Sept 2019 - June 2023*
  B.Eng. in Agricultural Mechanization and Automation Guangzhou, China
  - GPA: 4.36/5.0 (Major Rank: 1st/Department)
  - Institution part of the "Double First-Class University Initiative"

Projects

- **4WD-4WS Autonomous Sprayer Navigation Control System** *2021 - 2023*
  Project Lead, National Student Innovation Program Video
  - Led the development of a 4-wheel-drive, 4-wheel-steering agricultural sprayer with RTK-GPS & IMU for precise autonomous row shifting and omnidirectional path tracking in large-scale fields.
  - Constructed an 8-DOF chassis kinematic model and implemented PID-based trajectory tracking algorithms.
  - Designed the embedded controller (STM32-based) and a comprehensive vehicle communication system integrating CAN bus and USB.
  - Outcome: Project received "Excellent" completion status, secured 1 software copyright, and co-authored 1 EI-indexed research paper.
- **Indoor Autonomous Quadrotor UAV System with RGBD & LiDAR Fusion** *2022 - 2023*
  Individual Project Video
  - Developed VIO (Visual-Inertial Odometry) localization utilizing an RGBD camera for robust indoor UAV positioning.
  - Implemented precise UAV indoor position control based on VIO data; integrated single-line LiDAR for basic navigation and 3D environmental reconstruction using ROS.
  - Managed UAV hardware selection (PX4 flight controller), component integration, and system assembly.

- Deployed and calibrated VINS-Mono; conducted comparative analysis of VIO algorithms including ORB-SLAM2.
- Engineered LiDAR point cloud projection transformation and constructed occupancy grid maps for navigation.

- **Autonomous Infantry Robot Development (RoboMaster Competition)** *2021 - 2022*
  Navigation Team Lead, Taurus Robotics Team (SCAU) Video
  - Led a team of [Number, e.g., 5] students in developing navigation and perception systems for autonomous infantry robots in the RoboMaster AI Challenge.
  - Implemented full-field localization and autonomous navigation using Mecanum wheel encoder odometry, IMU, and LiDAR data fusion within a ROS framework.
  - Utilized computer vision (OpenCV) for enemy armor plate recognition and fully autonomous target tracking and engagement.
  - Built and maintained the ROS-based software architecture, including a Gazebo simulation platform, and managed low-level hardware (STM32) and high-level software communication.

- **National University Smart Car Competition** *2020 - 2021*
  Team Captain (2021) / Member (2020) Video
  - **As Captain (2021, iFlytek Smart Restaurant Group):** Led team to develop a Mecanum wheel robot; implemented indoor localization and multi-task allocation (QR code recognition, target detection) using LiDAR & IMU; built ROS-based multi-task scheduling framework. (National First Prize)
  - **As Member (2020, Outdoor Opto-Electronic Group):** Contributed to Ackermann steering car for indoor localization & path planning; designed its embedded controller.

Patents and Publications

C=Conference, J=Journal, P=Patent, S=In Submission, T=Thesis

[1]] **Lebin Liang**, Haotian Rao, Guohao Shen. (2023). **A Real-time Framework for UAV Indoor Self-Positioning and 3D Mapping Base on 2D Lidar, Stereo Camera and IMU**. In *Proceedings of the IEEE International Conference on Real-time Computing and Robotics (RCAR 2023)*, pp. Datong, China. DOI: 10.1109/RCAR58764.2023.10249971. (**First Author**)

[2]] Z. Zhou, X. Yu, **Lebin Liang**, et al. (2023). **Design and Experiment of Navigation Control System for Translational Row Shifting of Four-Wheel Steering Boom Sprayer**. *Transactions of the Chinese Society for Agricultural Machinery*, 54(7), 12-22. DOI: 10.6041/j.issn.1000-1298.2023.07.007. (Second Student Author)

Skills

- **Languages:** English (Proficient, CET-6), Mandarin (Native), Cantonese (Native)
- **Programming:** C++, Python, C, Shell Scripting
- **Technologies & Software:** ROS (Melodic, Noetic), Linux (Ubuntu), Git, Docker, STM32 Microcontrollers, FreeRTOS, ESP32, TensorFlow, PyTorch (Basic)
- **Robotics & AI:** SLAM (VINS-Mono, ORB-SLAM2), Visual-Inertial Odometry (VIO), Path Planning (A*, Dijkstra), Computer Vision (OpenCV), Control Systems (PID), Reinforcement Learning (Fundamentals), Sensor Fusion (LiDAR, IMU, Camera)
- **CAD/EDA Tools:** Altium Designer, SolidWorks, AutoCAD, KiCad (Basic), MATLAB, Gazebo, Isaac Lab

Honors and Awards

- **IEEE ICRA 2024 RoboMaster University Sim2Real Challenge** *June 2024*
  Awarded by IEEE International Conference on Robotics and Automation [🌐]
  - Achieved **Second Prize** in a competitive university-level Sim2Real robotics challenge.

- **21st National Collegiate RoboMaster Competition - Super Confrontation** *Aug 2022*
  Organized by DJI [🌐]
  - Secured **National First Prize** as a key member of the university team.

- **21st National Collegiate RoboMaster Competition - University League (Automated Infantry)** *Nov 2022*
  Organized by DJI [🌐]
  - Awarded **First Prize** for performance in the automated infantry robot category.

- **16th National University Smart Car Competition - iFlytek Smart Restaurant Group** *Aug 2021*
  Organized by Ministry of Education, China [🌐]
  - Achieved **National First Prize**, demonstrating excellence in autonomous systems and task completion.

- **Guangdong Provincial Collegiate Electronic Design Contest** *Oct 2020*
  Education Department of Guangdong Province [🌐]
  - Awarded **Provincial First Prize** for innovative electronic system design.

Leadership Experience

- **Navigation Team Lead** *2021 - 2022*
  Taurus Robotics Team, South China Agricultural University
  - Led a team of 5 students in developing and implementing navigation and perception algorithms for RoboMaster autonomous robots.
  - Coordinated algorithm development (SLAM, path planning, obstacle avoidance), simulation in Gazebo, and field testing, significantly improving robot autonomy and competitive performance.
  - Responsible for technical documentation, new member training, and strategic planning for the navigation sub-team.
- **Project Lead** *2021 - 2023*
  4WD-4WS Autonomous Sprayer (National Student Innovation Program)
  - Directed all project phases from conceptualization and system design to final implementation, testing, and paper publication.
  - Managed team tasks, resources, and timelines for 3 core members, leading to successful project completion and "Excellent" evaluation.
- **Team Captain** *2020 - 2021*
  National University Smart Car Competition (iFlytek Smart Restaurant Group)
  - Led a team of 4 in system design, algorithm development (ROS-based multi-task scheduling, navigation), and competition strategy, achieving National First Prize.
  - Coordinated interdisciplinary efforts for robot construction, programming (C++/Python), and debugging under tight deadlines.

Additional Information

- **Interests:** Robotics (Legged, Mobile, UAVs), AI for Robotics, Embedded Systems Design, Autonomous Navigation, Computer Vision, Control Systems, Contributing to Open-Source Robotics Projects.
- **Portfolio:** LebinLiang.github.io
- **Availability for PhD:** Fall 2026 or later.