Jiajie Zhang

Mobile Autonomous Robotic Systems(MARS) Lab , ShanghaiTech University

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Experience

AI R&D Center, Central Research Institute, Wolong Electric **July 2025 - Oct. 2025**
Research Assistant Shanghai, China

- Supervised by Alexander Kleiner

ShanghaiTech University **Sept. 2024 - Jan. 2025**
Teaching Assistant Shanghai, China
https://robotics.shanghaitech.edu.cn/teaching/moma2024

Mobile Manipulation

Education

ShanghaiTech University **Sep 2023 - Present**
Computer Science and Technology Master of Science
3.51/4.0 GPA

- Selected Courses: Robotics, Mobile Manipulation, Deep Learning
- Supervised by Professor Soeren Schwertfeger

Zhengzhou University **Sep 2019 - Jun. 2023**
Automation Bachelor of Engineering
3.66/4.0 GPA

Publications

From Observation to Action: Latent Action-based Primitive Segmentation for VLA Pre-training in Industrial Settings **Nov. 2025**
Submitted to CVPR2026
https://jiajiezhang7.github.io/latent-action-primitive-segmenter/

Jiajie Zhang†, Sören Schwertfeger, and Alexander Kleiner

Generation of Indoor Open Street Maps for Robot Navigation from CAD Files **July 2025**
Submitted to ICRA 2026
https://arxiv.org/abs/2507.00552

JiajieZhang†, ShenruiWu, Xu Ma and Sören Schwertfeger

Intelligent LiDAR Navigation: Leveraging External Information and Semantic Maps with LLM as Copilot **Mar. 2025**
Accepted by IROS 2025
https://arxiv.org/abs/2409.08493

Fujing Xie†, **Jiajie Zhang** and Sören Schwertfeger

Neural Surfel Reconstruction: Addressing Loop Closure Challenges in Large-Scale 3D Neural Scene Mapping **Oct. 2024**
Sensors (Basel, Switzerland)
https://www.mdpi.com/1424-8220/24/21/6919

Jiadi Cui†, **Jiajie Zhang†**, Laurent Kneip and Sören Schwertfeger

Projects

(Master Thesis) AGLoc++: WiFi-Fused Global Localization and Monte Carlo Enhanced Tracking in Hierarchical Area Graph Nov. 2024 - Present

https://jiajiezhang7.github.io/portfolio/AGLoc/

- **Led AGLoc++ development**: Ported Area Graph LiDAR localization system to ROS2, integrated with the Nav2 stack, implemented WiFi-aided kidnap recovery, developed odometry-fused Monte Carlo tracking with advanced re-localization.
- **Enhance Robustness:** implement techniques such as clutter filtering, architectural matching, weighted ICP, corridor-aware downsampling,ensuring robust, high-precision localization in dynamic indoor environments.

Campus Autonomy: Building and Navigating Autonomous Robots with Navigation2 Sept. 2024 - Jan. 2025

https://jiajiezhang7.github.io/portfolio/campus-autonomy-robot/

- Integrated advanced hardware, including the Agile X HUNTER SE **Ackermann** robot, **Hesai PandarQT64** Lidar, and **Insta360 Air** panoramic camera etc.
- Integrated navigation functionalities using the **ROS2** framework and **Navigation2** package, with testing performed in Gazebo simulator and on physical robots.
- Specialized in motion planning and control, applying and evaluating global planning algorithms (**Dijkstra, Hybrid A*, RRT***) for pathfinding within the Nav2 stack.

SLAM with Vertical Plane Segmentation for Lifelong Indoor Mapping Mar. 2024 - Jul. 2024

https://jiajiezhang7.github.io/portfolio/slam_project/

- Integrated ROS1 Noetic with **PCL** and **Gmapping**
- Developed a RANSAC-based algorithm to extract permanent vertical structures (e.g., walls) from 3D LiDAR point clouds, filtering out temporary obstacles to produce clean, long-lasting indoor maps

HRI Voice Interaction Robot: 360° Perception and Proactive Dialogue on ROS2 Feb. 2025- May 2025

https://jiajiezhang7.github.io/projects/6_hri_project/

- **Developed an end-to-end HRI pipeline** on **ROS2 Iron**, integrating **360° fisheye perception**, **YOLOv8**, and **MTCNN** for robust face detection and servo-driven gaze tracking to maintain eye contact.
- **Engineered proactive dialogue capabilities** using **Volcano Engine LLM** for reasoning and Bilingual ASR/TTS (Baidu/StepFun), achieving **<3s latency** and natural intent analysis for elevator service scenarios.
- **Designed a modular state machine** to manage interaction flows (Idle to Decision), achieving **>95% detection accuracy** and enabling stable, contactless assistance in dynamic public environments.

Skills

Python
Object-Oriented Programming (OOP), Data Structures, NumPy, Pandas, Scikit-learn, PyTorch, TensorFlow, Matplotlib

C++
Object-Oriented Design (OOD), Encapsulation, Inheritance, Polymorphism, Smart Pointers, Memory Management, STL.

Tools
ROS/ROS2, Navigation2, PyTorch, Linux, Git, LaTex, Cursor, Windsurf

Certifications

CET-6 (Score: 571)
Ministry of Education, China