

HUOYUAN TAN

Robotics Algorithm Engineer

Autonomous Mobile Robotics | Embodied AI



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PROFILE

Robotics algorithm engineer with **5+ years** of experience developing and deploying **real-world autonomous mobile robot systems** for ports, factories, and logistics. Hands-on experience across **perception, SLAM, path and motion planning, and multi-sensor calibration and fusion**. Recently completed an **M.Sc. in Computer Science and Engineering** with thesis work on **VLA policy evaluation and failure recovery**.

TECHNICAL SKILLS

Perception:	2D/3D objects detection and tracking, semantic segmentation.
Planning & Control:	A*/Hybrid-A*/TEB; MPC, PID, trajectory optimization.
Localization & SLAM:	LiDAR graph-based SLAM, ICP/NDT, Cartographer, ORB-SLAM3; state estimation with EKF/UKF.
Programming & Software:	C++ , Python ; Linux, CMake, Docker, Git.
Sensors & Protocols:	LiDAR, GNSS/RTK, IMU, RGB/RGB-D cameras; CAN, Modbus, MQTT.
Platforms:	PyTorch, Hugging Face, LeRobot; ROS/ROS2 .

PROFESSIONAL EXPERIENCE

Robotics Algorithm Engineer | [Xingyun Intelligence \(Shenzhen\) Technology Co., Ltd.](#) 2017.02 – 2022.10
Shenzhen, China

- Developed and deployed **autonomous mobile robot systems**, including AGVs, IGVs, and autonomous forklifts, for logistics and automation tasks in ports and factories.
- Implemented core autonomy modules, including perception, SLAM, planning, control, and system integration.
- Supported the full deployment process from prototype validation to on-site operation; identified, tracked, and helped resolve field issues in collaboration with hardware, software, and operations teams.

SELECTED PROJECTS

Industrial Autonomous Mobile Robot Systems – AGV / Autonomous Forklift / Port Truck 2017.02 – 2022.10
video: [@yunxing-port/videos](#)

- Autonomous Port Truck / IGV:** Built multi-LiDAR calibration and sensor-fusion pipelines for obstacle perception, localization, and navigation in port logistics environments.
- Autonomous Forklift:** Developed LiDAR-camera calibration, and MPC-based precise motion control for automated loading and unloading tasks.
- AGV:** Implemented LiDAR-IMU graph-based **SLAM** with loop closure for mapping, localization, and map extension in indoor and outdoor factory environments.

Remote VLA Deployment – Assessment & Failure Recovery (M.Sc. thesis) 2025.11 – 2026.06
code: [github.com/HyuanTan/lerobot_far](#)

- Evaluated an asynchronous client-server **VLA deployment pipeline** on the **LIBERO** benchmark and open-source **SO-101**; profiled latency across observation processing, network transfer, and inference.
- Designed a lightweight runtime monitor **FAR (Failure-Aware Recovery)** for empty grasps and slips; implemented recovery by clearing the action queue, backtracking to a previous safe state, and re-querying the policy, without retraining or adding new sensors.

Indoor Human Tracking and Activity Recognition 2015.06 – 2017.02

- Studied indoor human tracking, activity recognition, and abnormal-behaviour detection using pyroelectric infrared sensors and machine-learning methods, including Random Forests, HMMs, and One-Class SVMs.

EDUCATION

M.Sc. in Computer Science and Engineering | [University of Gothenburg](#) 2024.09 – 2026.06
Gothenburg, Sweden

- Thesis: *Assessment & Failure Recovery in Remote Vision-Language-Action Deployment*.
- Selected Courses: Deep Machine Learning, Advanced Topics in Machine Learning, Design of AI Systems.

B.Eng. in Medical Information Engineering | [Guangzhou University of Chinese Medicine](#) 2013.09 – 2017.06
Guangzhou, China

- Thesis: *The Application of Ensemble Learning in Quantitative Investment Prediction*.
- Outstanding Graduate Award, 2017.

PUBLICATIONS & LANGUAGES

Publications: Two peer-reviewed *Sensors* papers on PIR-based indoor tracking/activity recognition and abnormal activity detection: **2017** and **2016**. **Languages:** English; Mandarin (native); Cantonese (native).