

Hanli Zhang

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Summary

Robotics and machine learning researcher with industry experience in AGV localization, robot perception, and aerial trajectory generation. Interested in autonomous systems, drones, and intelligent assistant robots.

Skills: Python (Jax, TensorFlow, PyTorch, cvxpy, Keras. etc.), C/C++, ROS1/2, Linux, Git, Docker

Work Experience

LYF Innovation Ltd., Inc.

Robotic Engineer Intern

Philadelphia, PA

Jun 2023 -- Aug 2023

- **VINS-Fusion, RANSAC.** Improved outdoor navigation for a robotic mower on grass terrain by combining panoramic vision and IMU with geometric filtering, increasing tracking accuracy by 15%.
- Improved perception accuracy by 10% through annotation refinement, label cleanup, and targeted debugging of failure cases.

Suzhou Beacon Robot Technology Co., Ltd.

Algorithm Engineer

Suzhou, China

Aug 2021 -- Aug 2022

- **SLAM.** Improved AGV localization with SVD, particle filtering, and Kalman-filter-based fusion, achieving ± 5 mm pose accuracy and reducing pose-loss events by 30% in cluttered environments.
- **C++, ROS.** Refactored 12 driver-layer modules (including LiDAR interfaces), added robust communication and error-feedback mechanisms, and resolved 30+ field issues under deployment constraints.

Selected Projects

Drag-Aware Quadrotor Planning

GRASP Lab

2023--2025

- Developed a drag-aware trajectory planner that learns a simulation-derived tracking-cost regularizer, achieving up to 83% lower tracking error in this [paper](#); subsequent Crazyflie validation showed 49% fewer crashes in the [ICRA workshop paper](#); [repo video](#)

F1TENTH Depth-Based Navigation

xLAB

2023

- Extended a F1TENTH stack with MiDaS-based monocular depth estimation, rangefinder calibration, absolute-depth recovery, and depth-guided Follow-the-Gap navigation, achieving 40 FPS inference on Jetson Xavier NX; [repo report](#)

Four-Limb Coordination Modeling

LASA

2024--Present

- Built a stable **Dynamical Systems** pipeline for four-limb reaching with coordination hypothesis testing, perturbation analysis, and vector-field diagnostics; [report](#)

Education

École Polytechnique Fédérale de Lausanne (EPFL)

Ph.D. Student in Robotics

Lausanne, Switzerland

Nov 2024 -- Present

- Coursework: Learning and Adaptive Control for Robots; Teaching Assistant: Machine Learning
- Co-supervised a [semester project](#) on **LLM-based task planning** for construction-oriented tasks.

University of Pennsylvania

M.S. in Electrical Engineering

Philadelphia, PA

Sep 2022 -- May 2024

- Coursework: Machine Learning, Reinforcement Learning, Artificial Intelligence, Optimization Theory.

Qufu Normal University

B.S. in Mathematics

Shandong, China

Sep 2017 -- May 2021

- Coursework: Mathematical Analysis, Advanced Algebra, Probability Theory, Time Series Analysis.