

LING YAO

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EDUCATION

Shanghai Jiao Tong University (SJTU)

B.Eng. in IntelliSense Engineering | GPA: 88.0/100

Shanghai, China

Sep. 2023 – Jun. 2027 (Expected)

KTH Royal Institute of Technology

Exchange Student, Computer Science

Stockholm, Sweden

Aug. 2025 – Jan. 2026

Graduate-Level Courses:

Introduction to Robotics (A); Applied Estimation (A); Digital Signal Processing (A); Artificial Intelligence (A).

RESEARCH INTERESTS

I study how robots and networked systems can plan from imperfect observations, coordinate with limited communication, and protect sensitive control objectives.

• Robotics • Control Theory • Distributed Optimization • Radar Perception • State Estimation • Inverse Optimal Control

PUBLICATIONS

- [1] [CDC 2026] Ling Yao, Xiangyun Rao, Tao Xu, Pangkit Fong, and Jianping He. “High-Efficiency Distributed Nonconvex Optimization Design with Certified Stopping Rule.” IEEE Conference on Decision and Control. Accepted.  [Paper](#)
- [2] [ICRA 2027] Ling Yao, Yichun Xiao, Jin Jin, Yihan Zhang, and Fangqiang Ding. “Radar2Plan: Benchmarking 4D Radar for End-to-End Open-Loop Ego-Trajectory Planning.” IEEE International Conference on Robotics and Automation. Under review.  [Paper](#)  [Website](#)
- [3] [ACC 2027] Ling Yao, Xiangyun Rao, Chongrong Fang, Guangsheng Feng, and Jianping He. “Secure Cyber-Physical Systems against Intent-Inference Attacks.” American Control Conference. Under review.  [Paper](#)
- [4] [CCC 2026] Yihan Zhang, Zhaokai Liu, Ling Yao, Jurong Chen, Lin Wang, and Guanglin Zhang. “Enhanced Follower Framework for Lifelong Multi-Agent Path Finding: A Hierarchical Turn Penalty Approach.” Proceedings of the 45th Chinese Control Conference.  [Website](#)
- [5] [OLE] Shaohan Zhang, Junfeng Liu, Hao Li, Ling Yao, Junyi Zhu, Wei Tao, and Zhuojian Nan. “A Global Quality-Weighted Pose Graph-Based Loop-Closure Correction Method for Multi-View Structured Light Point Clouds Applied to Complex Profile Objects.” Optics and Lasers in Engineering. Under review.  [Website](#)

RESEARCH EXPERIENCE

Radar2Plan: Benchmarking 4D Radar for Ego-Trajectory Planning

Apr. 2026 – Sep. 2026

Guangzhou, China

PAIRS Lab, The Hong Kong University of Science and Technology (Guangzhou) |

Advisor: Prof. Fangqiang Ding

- Introduced Radar2Plan, the **first** benchmark for evaluating **real-world 4D radar** in planning and characterized radar’s standalone and complementary planning value.
- Designed and implemented a **plug-and-play architecture** that decouples dataset adapters, sensor encoders, planner-specific scene representations, and planning heads through common interfaces, enabling comparisons across sensing modalities and planning methods.
- Camera–radar fusion reduced six-second Top-1 ADE by **59–68%** across all four planners on MAN TruckScenes relative to camera-only input, and outperformed camera-only input in **19 of 20** adverse weather condition comparisons on DSERT-RoLL.

Certified Distributed Nonconvex Optimization (CASO)

Feb. 2025 – Feb. 2026

Shanghai, China

IWIN-FINS Lab, Shanghai Jiao Tong University | Advisor: Prof. Jianping He

- Proposed CASO, a communication-efficient algorithm for distributed optimization of univariate nonconvex Lipschitz objectives, with a provable ε -global optimality guarantee.
- Developed Chebyshev-accelerated coefficient consensus and a **distributedly verifiable stopping rule** to accelerate surrogate synchronization and reduce redundant communication.
- Reduced Stage 2 iterations to reach $\varepsilon = 10^{-3}$ by **75.8%** versus CPCA on a 30-node cycle across 50 random seeds; adaptive stopping saved approximately **44.6% of communication rounds** versus conservative fixed-round execution on random graphs.

Secure Cyber-Physical Systems against Control-Intent Inference

Feb. 2026 – Sep. 2026

Shanghai, China

IWIN-FINS Lab, Shanghai Jiao Tong University | Advisor: Prof. Jianping He

- Developed a **control intent protection framework** against inverse optimal control (IOC) attacks, defined error-based and probability-based unidentifiability and established corresponding protection guarantees for **finite and asymptotic** observations under control performance constraints.
- Validated on six-state systems: SVD-based perturbations made gain identification nonunique under finite observations with **0.008%** added control cost; gain camouflage separated the true objective from **all** inverse optimal explanations under asymptotic observations with **1.30%** added control cost.

PROJECTS

Multi-Pose Object Reconstruction with 3D Gaussian Splatting

Jun. 2026 – Aug. 2026

National Tsing Hua University | Advisor: Prof. Hung-Kuo Chu

Taiwan

- Built a multi-pose 3DGS alignment pipeline using ArUco-based 6-DoF pose estimation and $SE(3)$ registration across object rotations; reduced mean reprojection error by 26.8% over the unaligned baseline.

State Estimation for UAV Navigation

Nov. 2025 – Jan. 2026

KTH Royal Institute of Technology | Advisor: Prof. John Folkesson

Stockholm, Sweden

- Benchmarked EKF, augmented MCL, and EKF-PF hybrid in a 50 Hz Unity simulation with GPS/LiDAR noise and kidnapped robot scenarios; showed augmented MCL recovered to <5 m error within 2 s.

Autonomous Rover Navigation on Sand Terrain

Jul. 2024 – Aug. 2024

Tohoku University | Space Robotics Laboratory | Advisor: Prof. Kazuya Yoshida

Sendai, Japan

- Developed a ROS-based sand rover using camera-based mapping, ArUco localization, A* planning, and PD control; demonstrated sand-terrain mobility and completed subsystem-level testing of the navigation stack.

PROFESSIONAL EXPERIENCE

iSOFT Infrastructure Software Co., Ltd.

Shanghai, China

Algorithm Intern

Jul. 2026 – Aug. 2026

UAV Formation Control under Sensing and Communication Disturbances

- Modeled a 3D leader-follower UAV system with separate input, measurement, and communication disturbance channels; derived tracking error dynamics and analyzed closed-loop stability.
- Built a modular Python framework with **15 core experiments** to validate analytical predictions; first-order state prediction and integral compensation reduced position RMS error by **99.6%** under 0.15 s communication delay and **72.7%** under constant input disturbance versus uncompensated PD control.

HONORS AND AWARDS

Champion, PIONEER Class, MATE ROV Competition China Regional

2026

Chun-Tsung Scholar, SJTU Undergraduate Research Fellowship (Top 1%)

2025

Academic Excellence Scholarship, Shanghai Jiao Tong University

2025

Outstanding Teaching Assistant, Shanghai Jiao Tong University

2025

Honorable Mention, Mathematical Contest in Modeling, COMAP

2024

JASSO Scholarship, Japan Student Services Organization

2024

First Prize, RoboMaster Robotics Competition

2023