

# Yufeng Liu | curriculum vitae

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## Education

**Harbin Institute of Technology (Shenzhen)**  
*B.Eng. in Automation GPA:3.6/4.0 IELTS 6.5*

**Shenzhen, China**  
*Sept. 2020–present*

## Experience

**Multi sensor SLAM algorithm in complex environments.**

**nROS-Lab, HITsz**  
*Oct. 2021–present*

- Participated in the implementation and experiment of an Edge-Based Monocular Thermal-Inertial Odometry [publication].
  - Achieved a simulation system in Ignition Gazebo for SLAM in complex extreme environments.
  - Deployed our ETIO in the real world and conducted experiments in the real world and datasets.
  - Skilled in thermal image processing.
  - Familiar with the system framework of VIOs like VINS-Mono, ORB-SLAM3, etc.
- Proposing a SLAM framework that fuses thermal camera, LiDAR, and IMU.
  - Designed a new multi-sensor SLAM framework specially designed for sensor-degraded scenes independently.
  - Skilled in multi-sensor calibration.
  - Skilled in approaches to perform time synchronization between sensors, including PTP, PPS, GNSS triggered or MCU triggered.
  - Familiar with common multi-sensor SLAM frameworks like LVI-SAM, R2Live, R3Live, FAST-LIVO, etc.
- Participated in the implementation of a SLAM system integrated planning and dynamic obstacle avoidance.
  - Applied deep-learning method for target detection to optimize the LiDAR odometry.
  - Designed shared memory method for pointcloud data acceleration.

**Teleoperated robot equipped with a VR remote-controlled gimbal system.**

**nROS-Lab, HITsz**  
*Oct. 2022–Sept. 2023*

- Designed a two-axis gimbal with sensors for mobile robots:
  - Designed the 3D model and implemented real-time embedded control.
  - Developed a framework for human-computer interaction, as well as a VR application.
  - Deployed Multi-sensor SLAM algorithm on the gimbal.

**Team leader of Sentry Robot Group in RoboMaster competition**

**Critical-HIT robot team, HITsz**  
*Oct. 2020–Aug. 2022*

- Led the Sentry Robot Group in HITsz Critical-HIT RoboMaster Team.
  - Designed a fully automatic inspection and combat integrated robot.
  - Coordinated task allocation and fostered collaboration among team members as team leader.
  - Responsible for embedded.
  - Developed target aiming algorithm framework, including target detection tracking.

**Underwater grab robot control and navigation**

**Lujian Technology Ltd. Co., Shenzhen**  
*May. 2022–Dec. 2022*

- Participated in the design of an underwater robot
- Responsible for visual-inertial odometry and planning in underwater environments.
- Responsible for embedded motion control.
- Achieved a learning-based underwater target detection.

**More detailed experiences can be explored at [Website](#).**

## Skills

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Programming: C++, C, Python, MATLAB

Software&tools: ROS, OpenCV, Gazebo, PCL, GTSAM, Ceres, Git, PyTorch, LaTeX, Qt Creator, Unity

Hardware: STM32, SolidWorks

Research Interests: SLAM, Robotics

## Publications

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[1] Yu Wang, Haoyao Chen, **Yufeng Liu**, and Shiwu Zhang. Edge-based monocular thermal-inertial odometry in visually degraded environments. IEEE Robotics and Automation Letters(RA-L), 8(4):2078-2085, 2023. [\[link\]](#) [\[arxiv\]](#)

## Awards

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|---|------|
| ○ First Prize of 2022 RoboMaster University Championship                                      | 2022 |
| ○ Silver Prize of 13th Challenge Cup  | 2022 |
| ○ First Prize of 2021 RoboMaster University Championship                                      | 2021 |
| ○ Third Prize of ChinaUndergraduate Mathematical Contest in Modelling                         | 2021 |
| ○ First Place among all students of Competition of the HITsz Robot Design and Practice Course | 2020 |