Yufeng Liu | curriculum vitae

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Education

Harbin Institute of Technology(Shenzhen) **Shenzhen,China**
B.Eng. in Automation GPA:3.6/4.0 IELTS 6.5 *Sept.2020–Jun.2024*

Experience

Multi sensor SLAM algorithm in complex environments. **nROS-Lab,HITsz**
Oct.2021-Jun.2024

- 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 the algorithm 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

Programming: C++, C, Python, MATLAB

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

Hardware: STM32, SolidWorks

Publications

[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

- Outstanding Final Year Project & Dissertation Award - Top2% of HITsz 2024
- 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