Jianheng Liu

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I am currently a postgraduate in Harbin Institute of Technology (Shenzhen), China, supervised by **Prof. Haoyao Chen**. I obtained my bachelor degree at Harbin Institute of Technology (Shenzhen), China in 2021. My research interests lie in **Robotics and Autonomous Systems, Localization, Mapping and NeRF**.

Education

- **Harbin Institute of Technology (Shenzhnen)** — **Recommended exemption Graduate**
  Control Science and Engineering (Master degree), — *2021/09–Present*
  GPA: 3.27/4, Ranking: 19/31
- **Harbin Institute of Technology (Shenzhnen)**
  Automation (Bachelor degree), — *2017/09–2021/06*
  GPA: 85.73/100, Ranking: 24/70

Publications

- **Active Implicit Object Reconstruction using Uncertainty-guided Next-Best-View Optimziation**
  Jianheng Liu*, Dongyu Yan*, Quanfeng Yu, Haoyao Chen, Mengmeng Fu. **Submitted to RAL, 2023**
- **RGB-D Inertial Odometry for a Resource-restricted Robot in Dynamic Environments**
  Jianheng Liu, XuanFu Li, Yueqian Liu, Haoyao Chen. **RA-L and IROS, 2022**
- **Sampling-Based View Planning for MAVs in Active Visual-inertial State Estimation**
  Zhengyu Hua, Jiabi Sun, Fengyu Quan, Haoyao Chen, **Jianheng Liu**, Yunhui Liu. **IROS, 2022**
- **Vision-Inertial-based Adaptive State Estimation of Hexacopter with a Cable-Suspended Load**
  Siqiang Wang, **Jianheng Liu**, Xin Jiang, Haoyao Chen. **RCAR, 2022**
- **Vision-encoder-based Payload State Estimation for Autonomous MAV With a Suspended Payload**
  Jianheng Liu*, Yunfan Ren*, Haoyao Chen, Yunhui Liu. **IROS, 2021**
  * equal contribution

Patents

- **Vision-encoder-based Suspended Payload State Estimator and Estimation Method**
  CN112991443A, 2021.

Honor & Awards

- **Outstanding Graduates of 2023**

- **National Scholarships for Masters Students 2022**
- **Postgraduate Academic Scholarships** of First-class (2021-2022), First-class (2022-2023)
- **2021-2022 Excellent Student Award**
- **Undergraduate Academic Scholarships** of First-class (2019-2020), Third-class (2018-2019), Second-class (2017-2018)
- the First Price for **2020 National ROBOCON Competition**; the Second Price for **2020 National Quadruped Simulation Competition**
- the Best Design Award for **2020 Smart C-end Technology Innovation Training Camp**
- the Second Price for **2019 National ROBOCON Competition**
- the Third Prize for **2019 National Challenge Cup**
- the Bronze Prize for **2019 Internet plus of Heilongjiang Province**
- the Golden Price for **2019 ZuGuang Cup of Harbin Institute of Technology (Shenzhen)**
- **2018-2019 Excellent Student Leader Award** (Undergraduate Monoitor)
- the Second Prize for **2018 National English Competition for College Students**
- **2017-2018 Excellent Student Award**
- the Grand Prize for **the second International Youth Drone Competition**

Intern Experiences

- **Shenzhen InnoX Academy**, Intelligent Driving Center: 2021/09–2022/04
  I was mainly responsible for research of collaborative semantic visual-lidar structure mapping. Further, I developed deep-learning-based visual SLAM for robust feature tracking and depth estimation.
- **Narwal**, Department of Perception: 2022/05–2022/07
  I was mainly responsible for research of high-resolution visual-lidar mapping in a clustering room. Further, I developed a overlapping calculation algorithm between two given images with the aforehand high-resolution map for the training of re-location.
- **Tencent**, Robotics X: 2022/09–2022/12
  I was mainly responsible for research of real-time high-resolution elevation mapping for legged robots' planning. It was a robot-centric elevation map that enable fast foothold planning.

Selected Researches

- **Scalable Robocentric Implicit Mapping:** An efficient unbounded mapping using implicit representation.
- **LVI-SAM-LIVOX:** Easy-to-run LVI-SAM and its application in simulator together with motion planner.
- **SemanticLineRecon:** Semantic line reconstruction with colmap and line3d++.
- **MatRix:** An intelligent carpet developed in 2020 XBOT PARK Smart Product Innovation Boot Camp.
- **quad-controller-SE3 & FlightController:** quadrotor controller based on PX4/mavros and SE3 geometric control. And a simulation based on CoppeliaSim.
- **BezierTrajGenerator & MinimumSnapTrajGenerator & MapManager:** Trajectory Generator based on Bezier Curve and Minimum Snap. And a 2D Map Manager for the verification and visualization.