Jingwen YU

Tel: +852 5977 4946 | Email: jyubt@connect.ust.hk | Personal Page | GitHub | Google Scholar

Education

The Hong Kong University of Science and Technology — Hong Kong, China
Ph.D. in Electronic and Computer Engineering — *Sep. 2021 – Present*

- Joint supervision: **Prof. Ping TAN** and **Chair Prof. Hong ZHANG (SUSTech)**
- Research interests: Loop closure detection, visual place recognition, visual localization, visual navigation

Southern University of Science and Technology (Magna Cum Laude) — Shenzhen, China
B.Eng. in Electronic and Electrical Engineering **GPA: 3.89/4.0** — *Sep. 2017 – Jun. 2021*

- Supervision: **Chair Prof. Hong ZHANG**
- Exchange student at School of Computing, National University of Singapore

High School Attached To Shandong Normal University — Jinan, China
Sep. 2014 - Jun. 2017

Research Experience

Geometric Verification of Loop Closure Detection — *Sep. 2023 – Present*

- GV-Bench: Benchmarking Local Feature Matching for Geometric Verification
- Accepted by conference *IROS 2024*

Multi-Sensor Fusion SLAM — *Sep. 2021 – Present*

- Explore the multi-sensor localization system on the quadruped robot.
- Benchmarking multi-sensor fusion SLAM by collecting a multi-platform SLAM dataset.
- Accepted by conference *IROS 2022*

Semantic Scene Understanding for manipulation — *Jun. 2021 – Mar. 2022*

- Explore relationship-oriented scene understanding for robotic manipulation.
- Accept by conference *IROS 2022*

Conditional-invariant Visual Place Recognition — *Feb. 2021 – Aug. 2021*

- Employ convolutional autoencoder to generate conditional-invariant image global descriptor.
- Accept by journal *Robotica 2023*

Publications

[1] **J. Yu**, H. Ye, J. Jiao, P. Tan, H. Zhang, "GV-Bench: Benchmarking Local Feature Matching for Geometric Verification of Long-term Loop Closure Detection", *IEEE/RSJ International Conference on Intelligent Robots and Systems **(IROS)***, 2024.

[2] H. Wei, J. Jiao, X. Hu, **J. Yu**, X. Xie, J. Wu, Y. Zhu, Y. Liu, L. Wang, M. Liu, "FusionPortableV2: A Unified Multi-Sensor Dataset for Generalized SLAM Across Diverse Platforms and Scalable Environments", *Arxiv Preprint*, 2024.

[3] W. Chen, D. Huang, Y. Pan, G. Chen, J. Ruan, **J. Yu**, J. Zheng, H. Zhang, "Cloud Learning-based Meets Edge Model-based: Robots Don't Need to Build All the Submaps Itself", ***IEEE Transactions on Vehicular Technology***, 2023.

[4] H. Ye, W. Chen, **J. Yu**, L. He, Y. Guan, H. Zhang, "Condition-invariant and compact visual place description by convolutional autoencoder", ***Robotica***, 2023.

[5] C. Tang, **J. Yu**, W. Chen, B. Xia, H. Zhang, "Relationship Oriented Semantic Scene Understanding for Daily Manipulation Tasks", *IEEE/RSJ International Conference on Intelligent Robots and Systems **(IROS)***, 2022.

[6] J. Jiao, H. Wei, T. Hu, X. Hu, Y. Zhu, Z. He, J. Wu, **J. Yu**, X. Xie, H. Huang, R. Geng, L. Wang, M. Liu, "Fusionportable: A multi-sensor campus-scene dataset for evaluation of localization and mapping accuracy on diverse platforms", *IEEE/RSJ International Conference on Intelligent Robots and Systems **(IROS)***, 2022.

Projects & Working experience

Autonomous Shuttle Vehicle on Campus *Dec. 2023 – Dec. 2024* (**SUSTech**)

(**Project Leader**) This project aims to expand the limits of vision-based navigation by implementing a teach-and-repeat (T&R) navigation system on a real-world autonomous shuttle vehicle on campus. This project is partially supported by the undergraduate "Climbing" research program of Guangdong Province.

Cloud-Edge Collaborated Visual SLAM System *Apr. 2022 – Nov. 2023* (**SUSTech**)

This project aims at developing a visual simultaneous localization and mapping (VSLAM) system to efficiently leverage cloud and onboard computing resources (please check IEEE TVT paper). I proposed and implemented an adaptive frame downsampling method to optimize communication transmission bandwidth.

Trials of the Autonomous Logistic Vehicle (Hercules) *Sep. 2021 – Aug. 2023* (**HKUST**)

This project aims at deploying an autonomous logistic vehicle (please check IEEE RAM paper) in HKUST to deliver food and goods between restaurants and offices. My role in this project is to conduct a series of tests on the campus to demonstrate that the autonomous vehicle (Hercules) is safe, reliable, and intelligent.

UGV-Quadrupedal Robot Autonomous Delivery *Sep. 2021 – Aug. 2022* (**HKUST**)

(**Core Participator**) This project aims at deploying a quadrupedal robot for indoor "last mile" delivery in collaboration with an autonomous logistic vehicle on the HKUST campus. I implemented an indoor LIDAR-inertial localization system on a quadrupedal robot (Unitree A1). Real-world experiments have been conducted in the Cheng Yu Tung Building (CYT) and Robotics Institute (RI) of HKUST.

Teaching Assistant

ELEC3120 Computer Communication Network **(HKUST)** *Feb. 2022 – Dec. 2022*

EE346 Mobile Robot Navigation **(SUSTech)** *Jan. 2021 – Jun. 2021*

Awards & Achievements

China National Scholarship (0.2% Nationwide) *Oct. 2020* (Ministry of Education, China)

First Class of the Merit Student Scholarship *Oct. 2018* & *Oct. 2019* (SUSTech)

Admission Scholarship *Oct. 2017* (SUSTech)

Shenzhen Outstanding Student Leader *Jan. 2020* (Guangdong Students' Federation)

Last update on July 16^{th}, 2024