LI, Yixuan

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Education

Zhejiang University, Hangzhou, China — Sep 2020–Present

Morningside Cultural China Scholar

Major: Electronic Engineering, **GPA**: 3.94/4.0

Supervisor: Professor Haoliang Qian

Coursework: Electromagnetic Fields & Waves (93/100), Fundamentals of Optoelectronics (96), Quantum Mechanics (95), RF Circuits and Systems (96), Numerical Analysis (95)

Research Experience

Tunable Nonlinear Edge Detection | Photonics — Jun 2022–Nov 2022

- Proposed a multilayer structured thin film based on metallic quantum wells that perform edge detection. The effect varies accordingly by tuning the pump light intensity.

LiDAR-based Localization | Robotics Open-source at zjuluolun/BEVPlace, ☆99 — Jul 2022–Dec 2022

- Proposed a rotation-invariant network BEVPlace for LiDAR-based localization problems in autonomous driving. Developed a position estimation method by mapping the feature distance to the geometric space.
- Outperforms the state-of-the-art methods, is robust to view variation, and generalizes well to previously unseen environments. It benefits various applications, including loop closure detection, global localization, and SLAM.

Image-to-point cloud Cross-modal Localization | Robotics — Dec 2022–Feb 2023

- The motivation is to combine the strengths of LiDAR and cameras, the two types of sensors widely used in localization. Proposed a method to get the location of an image within a large-scale point cloud map. Employ bird's-eye view representation to boost the performance in cross-modal localization.
- Oral presentation and poster session presentation at IROS 2023 conference in Detroit, U.S.

Portable EMG System for Remote Exercise Guidance and Gesture Recognition | EE — Oct 2022–May 2023

- Designed the EMG signal front-end hardware circuit, employed neural networks for signal analysis, and integrated the system with an Android app for real-time information display. Utilized for home-based exercise guidance and posture correction during the pandemic; gesture recognition with associated applications.

Publications

- **Y. Li**, S. Zheng, Z. Yu, B. Yu, S.-Y. Cao, L. Luo, and H.-L. Shen, "I2p-rec: Recognizing images on large-scale point cloud maps through bird's eye view projections," Accepted to **IROS'23** [PDF]
- L. Luo, S. Zheng, Y. Li, Y. Fa, B. Yu, S. Cao, and H. Shen, "Bevplace: Learning lidar-based place recognition using bird's eye view images," Accepted to **ICCV'23** [PDF]

Honors and Awards

National Scholarship (Top 0.2% nationwide) (2 Times) — Dec 2021 & Dec 2022

Zhejiang University Scholarship – First Prize (Top 3%) (2 Times) — Dec 2021 & Dec 2022

Second place, ICRA 2022 General Place Recognition Competition (Co-hosted by Carnegie Mellon University) — Oct 2022

Personal Experiences

Co-organizer, Academic Visit to the U.S. of Morningside Scholars — Aug–Sep 2023

Volunteer at Electrical Volunteer Association in Zhejiang University, offering free computer repair services for all school faculty and students — Oct 2020–Present

Second Place, Zhejiang University badminton competition women's single — May 2022

Skills

Tools: LaTeX, Linux shell, PyTorch, OpenCV, COMSOL Multiphysics

Programming Languages: Python, MATLAB, C, Java, Verilog