LI, Yixuan

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EDUCATION

Zhejiang University, Hangzhou, China — Sept 2020–Present
Morningside Cultural China Scholar
Major: Electronic Engineering, **GPA**: 3.93/4.0, **Rank**: 1/93 — **Advisor:** Professor Haoliang Qian
Coursework: Electromagnetic Fields & Waves (93), Fundamentals of Optoelectronics (96), Quantum Mechanics (95), RF Circuits and Systems (96), Numerical Analysis (95)

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," 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems **(IROS)**, Detroit, USA, 2023. **Oral Presentation**. [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," 2023 IEEE/CVF International Conference on Computer Vision **(ICCV)**, Paris, France, 2023. [PDF]

RESEARCH EXPERIENCE

Primary Interests: Quantum Optics, Nanophotonics

Multilayer Structure for Dispersion-Engineered Nonlinear Waveguide | Nonlinear Optics — Oct 2023–Present
- Working on a project in nonlinear optics with Professor Martin Fejer to implement a multilayer structured waveguide based on $LiNbO_3$ to control the group velocity dispersion in nonlinear interactions.

Tunable Nonlinear Edge Detection | Nanophotonics — Jun 2022–Oct 2022
- Proposed a multilayer structured thin film based on metallic quantum wells to perform edge detection, whose effect varies accordingly by tuning the pump light intensity.
- Simulated reflected image of the film based on Fresnel diffraction under both coherent and incoherent incident light.

Anti-Scattering Optical Image Transmission Based on *K*-Space Manipulation | Optics — May 2022–Jul 2022
- Combined phase space compression with deep learning based on DMD for optical imaging through scattering media
- Conducted numerical simulations on scattering effects on Gaussian beams

Image-to-Point Cloud Cross-Modal Localization | Robotics — Dec 2022–Feb 2023
- Suggested a novel framework for cross-modal localization between LiDAR (point cloud) and camera (image).
- Implemented the overall pipeline, including monocular and stereo depth estimation, point cloud generation, bird's-eye view projection, feature extraction and aggregation.
- Delivered oral presentation and presented poster at the IROS 2023 conference in Detroit, USA.

LiDAR-Based Localization | Robotics Open-source at GitHub BEVPlace, ☆104 — 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. Benefits various applications, including loop closure detection, global localization, and SLAM.

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 EXPERIENCE

Co-organizer, the Morningside Scholars' Academic Visit to the U.S. — Aug–Sept 2023
Visited 50+ guests from academic and political sectors, including Presidents of MIT, Harvard, Yale, AAAS, etc.
Second Place, Zhejiang University badminton competition women's single — May 2022
Involved actively in many sports activities, including orienteering, soccer, badminton, etc.
Volunteer, Volunteer Teaching Program in Zhejiang University — Jun 2021
Taught math and literature courses to elementary school students in Gansu Province
Volunteer, Electrical Volunteer Association in Zhejiang University — Oct 2020–Present
Offered free computer repair services for all school faculty and students

SKILLS

Tools: LaTeX, Linux shell, PyTorch, OpenCV, COMSOL Multiphysics
Programming Languages: Python, MATLAB, C, Java, Verilog | Language: TOEFL 108