# Kanlong Ye

**Email | Homepage | LinkedIn | GitHub**

## EDUCATION

- **Carnegie Mellon University (CMU),** Pittsburgh, USA **Aug. 2024 - May. 2026**
  *M.S. in Mechanical Engineering-Research (Robotics Track)*
- **Dalian University of Technology (DUT),** Dalian, China **Sept. 2019 - Jul. 2024**
  *B.E. in Mechanical Design & Manufacturing and Their Automation (Japanese Intensive)*
- **Tohoku University (TU),** Sendai, Japan **Oct. 2022 - Aug. 2023**
  *Exchange Student in Mechanical and Aerospace Engineering Department*

## PUBLICATIONS

- **LV-DOT: LiDAR-visual dynamic obstacle detection and tracking for autonomous robot navigation**
  Zhefan Xu*****, Haoyu Shen*, Xinming Han, Hanyu Jin, Kanlong Ye, Kenji Shimada
  submitted to *IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**)* 2025.

## ACADEMIC EXPERIENCE

**Reinforcement Learning-based UAV Wind Disturbance Resistance** **Jan. 2025 - Present**

- *Research Assistant | Supervisor: Kenji Shimada, CERLAB, CMU*

- Implemented reinforcement learning (PPO) for wind-resilient UAV control in Gazebo and Isaac Sim, and modeled various types of wind fields to analyze UAV behavior under realistic disturbances.
- Trained wind-aware policies using Isaac Sim distributed training to improve UAV navigation in confined and disturbed environments and evaluated policies in real experiment.

**LiDAR-based UAV Inspection for Tunnel Environments** **Aug. 2024 - Jan. 2025**

- *Research Assistant | Supervisor: Kenji Shimada, CERLAB, CMU*

- Built a custom LiDAR-based UAV hardware platform from scratch, including CAD design, carbon fiber plate cutting, sensor integration, and ESC soldering. Tuned flight control parameters for indoor autonomous hovering and circling.
- Developed and validated a full UAV autonomy stack in ROS, Gazebo and PX4, including MPC/RL based trajectory planning, SLAM, dynamic obstacle detection and removal, and 3D reconstruction.
- Conducted real-world UAV tunnel inspection tests for Toprise Inc., achieving high-resolution 3D reconstruction (accuracy < 5cm) of complex tunnel environments with concrete and metallic surfaces.

**Solar Meridian Extraction Method Based on Underwater Polarization** **Dec. 2023 - Jun. 2024**

- *Graduation Thesis | Supervisor: Prof.Ran Zhang, School of Mechanical Engineering, DUT*

- Focused on the study of bio-inspired polarized light navigation using polarization angle images in an underwater Snell window for solar meridian acquisition.
- Designed a solar meridian extraction method based on the principle of Hough Transform and implemented an algorithm in C++ to automatically extract the solar meridian from the image.
- Applied my algorithm to find the solar azimuth angle, and the accuracy is verified to be within 1.5 degrees through outdoor experiments.

- **Si Piezosensor for Angle Control of Piezoelectric MEMS Micromirror** **Apr. 2023 - Aug. 2023**
  *Research Assistant | Supervisor: Prof. Shuji Tanaka, S. Tanaka Laboratory, TU*

- Acquired a comprehensive understanding of the principles associated with MEMS processing and have gained hands-on experience in the complete process, encompassing deposition, photolithography, etching, dicing and packaging.
- Designed an effective angle sensor structure for the slow axis of a 2D piezoelectric micromirror utilizing Si piezoresistors, resulting in enhanced feedback control sensitivity.
- Manufactured prototype testing devices on a Silicon-on-Insulator wafer equipped with integrated Si piezoresistors by employing doped wiring techniques.

- **Assembly Mechanism with Multi-Degree-of-Freedom Self-Optimization Capabilities** **Apr. 2021 - Apr. 2022**
  *Core Member | Supervisor: Prof. Wei Liu, School of Mechanical Engineering, DUT*

- Conducted an extensive review of literature related to intelligent assembly and high-precision monitoring, building expertise in the field.
- Designed and implemented an online monitoring system for tool positioning using multiple parameter sensors. This system enables precise and efficient measurement of material strain states during assembly.
- The outcomes received national-level recognition under the 2021-2022 Undergraduate Innovation and Entrepreneurship Training Program.

## EXTRACURRICULAR EXPERIENCE

- **Part-time Job at Lawson,** Sendai, Japan **Feb. 2023 - Jun. 2023**

- Skilled in operations within Japanese convenience stores, adept at bilingual communication (Japanese and English) with a diverse international customer base.

- **Volunteer Teacher for Remote Junior High School Students,** Longling, China **Jun. 2021 - Jul. 2021**

- Tutored junior high school students in mathematics online, with expertise in lesson planning and teaching, and effectively supported their academic and emotional growth.

- **Class Monitor & Member of the School's Press Corps,** Dalian, China **Oct. 2019 - Sept. 2020**

- Coordinated group activities and led photography & new media promotion for major university events, including theatrical performances, lectures, and more.

## HONORS

- Undergraduate Innovation and Entrepreneurship Training Program at the National Level, DUT **2022**
- Ethic Award Scholarship, DUT **2021**

## SKILLS

***Language**: Chinese (Native), English (Fluent), Japanese(Fluent)*
***Programming:** C/C++,Python, MATLAB*
***Frameworks**: OpenCV, NumPy, Pytorch, ROS*
***Robotics:** Path Planning, Object Detection, SLAM, Machine Learning, Reinforcement Learning, Vision Language Model*
***Software**: AutoCAD, SolidWorks, Ansys, Office, Gazebo, PX4*