

Kanlong Ye

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Pittsburgh, Pennsylvania, United States - 15213

EDUCATION

- **Carnegie Mellon University** Aug. 2024 – May. 2026
M.S. in Mechanical Engineering - Research (Robotics Track) GPA: 4.0/4.0
Pittsburgh, USA
- **Dalian University of Technology** Sept. 2019 – Jul. 2024
B.E. in Mechanical Design & Manufacturing and Their Automation (Japanese Intensive) GPA: 3.7/4.0
Dalian, China
- **Tohoku University** Oct. 2022 – Aug. 2023
Exchange Student in Mechanical and Aerospace Engineering Department
Sendai, Japan

PUBLICATIONS





C=CONFERENCE, J=JOURNAL, W=WORKSHOP, A=ARXIV

- [A.1] **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 *arXiv:2502.20607*
- [W.1] **Adaptive Planning Framework for UAV-Based Surface Inspection in Partially Unknown Indoor Environments.** Hanyu Jin, Zhefan Xu, Haoyu Shen, Xinming Han, **Kanlong Ye**, Kenji Shimada *ICRA 2025 Construction Robotics Workshop*

EXPERIENCE

- **CERLAB, Carnegie Mellon University** Aug. 2024 – Present
Research Assistant (Supervisor: Kenji Shimada)
Pittsburgh, USA
 - Implemented Transformer-PPO architecture for wind-resilient UAV RL-control, modeling various wind fields in Gazebo/Isaac Sim and training distributed wind-aware policies that improved UAV navigation robustness.
 - Contributed to the development of the popular open project [CERLAB UAV Autonomy](#) stack in ROS, Gazebo, and Isaac Sim. Integrated point cloud reconstruction after dynamic obstacle removal.
 - Built a custom LiDAR-based UAV platform and conducted real tunnel inspection tests for Toprise Inc Japan., achieving high-resolution 3D reconstruction (accuracy < 5cm)
- **Perflection AI** May. 2025 – Aug. 2025
Software Engineer Intern
Pittsburgh, USA
 - Benchmarked state-of-the-art vision-language models (Qwen2.5-VL, Tarsier, GPT-4o, Gemini 2.5 Pro) for golf advice accuracy and curated domain-specific datasets for fine-tuning.
 - Designed and iteratively refined prompt engineering strategies, transforming generic outputs into personalized and actionable coaching feedback.
 - Incorporated key frame analysis and biomechanical metrics into the feedback pipeline, improving swing issue detection and user trust in model-generated advice.

PROJECTS

- **Pittsburgh-RAG: Retrieval-Augmented Generation for QA on Pittsburgh** Sep. 2025 - Oct. 2025
LLM, NLP, Information Retrieval 
 - Built an end-to-end RAG system from scratch, including data collection/annotation, document chunking, hybrid retrieval (BM25, FAISS dense retrieval, and fusion), and answer generation with Gemma-3, to support factual QA on Pittsburgh and CMU.
- **DDPM-AFHQ: [Denoising Diffusion Probabilistic Model on AFHQ Dataset]** Jun. 2025 – Aug. 2025
Generative Models of Images, Diffusion Model 
 - Implemented a Denoising Diffusion Probabilistic Model from scratch and applied it to the AFHQ dataset for high-quality image generation. Conducted experiments with noise scheduling, U-Net architecture, achieved competitive FID scores.
- **Build-LLAMA2: [Mini Llama2 Transformer Implementation]** Aug. 2025 - Sep. 2025
Deep Learning, Natural Language Processing 
 - Implemented core components of the Llama2 transformer architecture from scratch, including GQA, feed-forward networks, Pre-LayerNorm, RoPE, AdamW and integrated parameter-efficient fine-tuning via LoRA, WiSE-FT and applied the model to tasks such as text continuation, zero-shot classification, and downstream fine-tuning.
- **Windy-NavRL: [Wind-resilient RL Framework for UAV Navigation]** Feb. 2025 - Present
Reinforcement Learning, Deep Learning 

- Developed new architecture for wind-resilient UAV RL-control based on [NavRL framework](#), modeling various wind fields in Gazebo/Isaac Sim and training distributed wind-aware policies that improved UAV navigation robustness.

- **ORB-SLAM3 on Various Physical Robots using ROS2**

Sept. 2024 - Dec.2024

SLAM, ROS2, Robotics



- Modernized the ORB-SLAM3 framework for compatibility with Ubuntu 20.04 and ROS2, and deployed the implementation on diverse robotic platforms (wheeled, aerial, and quadruped) to perform real-world localization and mapping tasks.

- **Optimal Control and A* Path Planning for Autonomous Vehicles**

Aug. 2024 - Dec. 2024

Optimal Control, LQR, A* Search



- Designed a Linear-Quadratic Regulator (LQR) for high-speed trajectory tracking and integrated an A* search algorithm for dynamic path re-planning to perform safe overtaking maneuvers, maintaining an average path tracking error of 0.76m.

SKILLS

- **Languages:** Chinese (Native), English (Fluent), Japanese (Fluent)
- **Programming:** C/C++, Python, MATLAB, Git, JavaScript
- **Frameworks & Libraries:** PyTorch, NumPy, OpenCV, ROS
- **Robotics & AI:** Path Planning, SLAM, Object Detection, RL, LLM, VLM
- **Software & Tools:** Isaac-sim, Gazebo, MuJuCo, AutoCAD, SolidWorks, Ansys, Wandb