Kanlong Ye

+1-878-256-9002 | yekanlong2000@outlook.com | kanlongy.github.io

Kanlong Ye | kanlongy |

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 LSTM-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 [GitHub]
  - 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. 2024 – Aug. 2024*
  Generative Models of Images, Diffusion Model [GitHub]
  - 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 [GitHub]
  - 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 [GitHub]

◦ 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