DYLAN K. LEONG

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EDUCATION

Carnegie Mellon University **Pittsburgh, PA**
Master of Science in Mechanical Engineering – Research **May 2026**
GPA: 4.0/4.0
Relevant Coursework: 10703 Deep Reinforcement Learning and Control, 11785 Introduction to Deep Learning, 16833 Robot Localization and Mapping, 24787 Machine Learning and Artificial Intelligence for Engineers

University of Florida **Gainesville, FL**
Bachelor of Science in Mechanical Engineering **May 2024**
GPA: 3.7/4.0, Magna Cum Laude, University of Florida Honors Program
Relevant Coursework: EML4930 Sensor Based Robot Planning, EML4313C Dynamics and Control System Design Lab

RESEARCH PROJECTS

Whole-body Reinforcement Learning on a Wheeled Quadrupedal Manipulator **Pittsburgh, PA**
Carnegie Mellon University **May 2025 – Present**
- Installed and configured a **4-DoF HEBI arm** on a **Unitree Go2-W** handling mechanical mounting, wiring, and actuator integration
- Evaluated a **model-free** baseline **reinforcement learning** policy trained with **PPO** in **Isaac Sim**, **MuJoCo**, and real **hardware**
- Worked toward **whole-body** RL policy coordinating **locomotion** and **manipulation** in **unstructured outdoor environments**

LiDAR-based Dynamic Object Detection with Hybrid Geometric-learning Approach **Pittsburgh, PA**
Carnegie Mellon University **September 2024 – Present**
- Conducted research on **dynamic object detection** deployed on Boston Dynamics **Spot** targeting publication in **IEEE RA-L**
- Employed a **geometric-based** approach to cluster and **learning-based** classifier to identify dynamic object candidates in **<100 ms**

Autonomous Navigation and Gas Detection on a Wheeled Robot **Pittsburgh, PA**
Carnegie Mellon University (Sponsored by Chevron) **May 2025 – December 2025**
- Integrated FLIR **gas sensor**, dual-antenna **RTK GNSS**, RealSense **depth camera**, and Intel NUC onto an **AgileX Scout Mini** rover
- Developed **ROS waypoint navigation** with rule-based **obstacle avoidance** for autonomous operation in structured environments
- Instrumented a **GUI for real-time visualization** of RTK GNSS position, gas sensor telemetry, and overlaid satellite imagery

Aspiration-assisted End-cut Coaxial Needle Biopsy Project **Gainesville, FL**
University of Florida **January 2023 – May 2024**
- **Defended an honors thesis** with a presentation and written report to showcase independent research contributions
- Collected **prostate cancer phantom** samples **102%** heavier in mass with a **prototype biopsy needle** than **2** commercial devices
- Established strong **force-stiffness** correlation, achieving R^2=0.96 with **encoder** data and R^2=0.94 with **strain-gauge** measurements

ACADEMIC PROJECTS

TinyPointNeXt: Reducing Model Parameters for Human Detection in Point Clouds **Pittsburgh, PA**
Carnegie Mellon University **February 2025 – April 2025**
- Redesigned **point cloud classification** neural network for **human detection** in an ablation study spanning **48 trials**
- Reduced model parameters by **81%**, decreased computation time by **17%**, and improved human detection accuracy by **2.03%**
- Achieved the **3rd highest** score among **52** project submissions for **designing** and **applying** an innovative neural network architecture

SLAM with KISS-ICP on a Rover Robot **Pittsburgh, PA**
Carnegie Mellon University **October 2024 – December 2024**
- Designed and implemented a LiDAR-based **odometry pipeline** in a **ROS** architecture for a rover robot
- Experimented with adaptive speed control to **navigate** areas with high **point cloud** density from obstacles along a predefined path
- Optimized **exploration efficiency** while maintaining **high map accuracy**, robustness, and adaptability across various environments

Individual Demo Program Competition **Pittsburgh, PA**
Carnegie Mellon University **October 2024 – November 2024**
- Demonstrated proficiency in **C++** by developing a 2D **audio-visual** demo using custom **OpenGL** libraries during a 1-month project
- Awarded **1st place** in a competition that evaluated all student-created demo programs and ranked them based on **skill and creativity**

LEADERSHIP

Pi Tau Sigma (Mechanical Engineering Honors Society) **Gainesville, FL**
President **August 2022 – May 2024**
- Formed **strong relationships** with honors society members and department faculty through social and **community service** events
- Provided undergraduate freshmen with **tours** of mechanical engineering labs to help **support** the department

SKILLS

Programming Languages: C++, Python
Software: SOLIDWORKS, MATLAB, ROS, Linux
Frameworks & Libraries: PyTorch, OpenAI API, pandas, NumPy, scikit-learn
Domains: Autonomous navigation (SLAM), Image segmentation, Reinforcement learning, HPC