

# ALFRED CUEVA

☎ (470)338-2676

🌐 [alfred-cueva.github.io](https://alfred-cueva.github.io)

✉ [alfred.cueva@gatech.edu](mailto:alfred.cueva@gatech.edu)

🌐 [LinkedIn](#)

🐙 [GitHub](#)

## EDUCATION

### Georgia Institute of Technology

Aug. 2025 – May 2027

MS in Robotics | GPA: 4.0/4.0

Georgia, United States

- Coursework: Deep Reinforcement Learning, Computer Vision, Vision-Language Models, Advanced Mobile Robotics

### Seoul National University

Mar. 2020 – Feb. 2024

BS in Mechanical Engineering (Robotics Concentration) | GPA: 9.12/10.0

Seoul, South Korea

- Coursework: Reinforcement Learning, Advanced Programming, Autonomous Navigation, Deep Learning, Linear Control

## SKILLS

**Languages and Tools:** Python, C++, MATLAB, Julia, Docker, Git, Drake

**ML & Perception:** PyTorch, YOLO, Vision-Language Models, Diffusion Models, Model Optimization

**Robotics:** ROS2, Gazebo, Isaac Gym/Sim/Lab, PyBullet, MuJoCo, RViz, Multi-Sensor Fusion

**Core Expertise:** Reinforcement Learning, Autonomous Navigation, Real-Time Perception, System Integration

## WORK EXPERIENCE

### Samsung

Mar. 2024 – Aug. 2025

Robotics & ML Software Engineer

Seoul, South Korea

- Deployed a production YOLOv5 perception system for mobile robots by leading dataset creation (10K+ images), model training, and on-device optimization, raising detection accuracy to 92%. [\[Coverage\]](#)
- Led development of precision control and SLAM-based localization for a 7-DOF manipulator; reduced positioning error by 15% and earned a \$10,000 award in the [\[Smart Construction Challenge\]](#) from the Korean Government.
- Developed an autonomous navigation stack for KUKA platforms using RRT\* and Hybrid A\*; integrated real-time obstacle avoidance to enable reliable operation in dynamic, cluttered construction sites.
- Built IL/RL policy training pipelines in by generating synthetic datasets, applying domain randomization, and running sim-to-real evaluations, increasing manipulation policy reliability.
- Accelerated large-scale Isaac Sim workflows by profiling GPU bottlenecks and building high-fidelity USD digital twins, doubling simulation throughput and enabling faster policy iteration.

### Samsung

Jul. 2023 – Aug. 2023

Engineering Intern

Seoul, South Korea

- Developed a thermal anomaly detection system using CNNs for semiconductor equipment; optimized model architecture and GPU pipelines to achieve a 40% processing efficiency gain.
- Implemented real-time human tracking with PixyCam for AGV collision-avoidance, enhancing safety in high-traffic industrial environments.
- Benchmarked Isaac Sim and Mujoco for robotics simulation, profiling GPU workloads and tuning physics settings to support real-time control loops.

## RESEARCH EXPERIENCE

### Georgia Institute of Technology | LIDAR Lab | Prof. Ye Zhao

Aug. 2025 – Present

- Lead development of long horizon policies for humanoid loco-manipulation using diffusion and Reinforcement Learning on large-scale robot interaction datasets with real-time inference constraints. *Under review for RA-L/IROS.*
- Developing vision-based motion planning combining generative diffusion with constrained optimization for safe manipulation in complex environments. Oversaw VR integration for teleoperation using Quest headsets.

### Seoul National University | DYROS Lab | Prof. Jaeheung Park

Dec. 2022 – Feb. 2024

- Designed model-free RL + Bayesian Optimization framework for bipedal robot co-design, achieving 19% speed improvement and 22% energy cost reduction in sim-to-real transfer. *Outstanding Thesis Award (1/120).* [\[Paper\]](#)

## PROJECTS

### Diffusion Policy for Long-Horizon Manipulation | [\[GitHub\]](#)

Aug. 2025 – Dec. 2025

- Implemented transformer-based diffusion policies for multi-step pick-and-place and block assembly tasks; integrated ArUco-based 6-DoF state estimation and closed-loop action diffusion on a UR10e platform for robust long-horizon execution.

### Multi-Modal Perception for Autonomous Maze Navigation | [\[GitHub\]](#)

Aug. 2025 – Dec. 2025

- Built end-to-end autonomous navigation system fusing camera-based sign classification with LiDAR wall detection for real-time path planning. Implemented full ROS2 perception-planning-control pipeline achieving reliable long-horizon navigation.

### Autonomous Racing with Vision-Based Control | [\[GitHub\]](#)

Aug. 2023 – Nov. 2023

- Developed imitation learning pipeline from expert demonstrations, training vision-based policies for high-speed racing. Deployed on physical RC car with camera/LiDAR fusion for real-time perception and control at 30Hz.