

ALFRED CUEVA

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EDUCATION

Georgia Institute of Technology

MS in Robotics | GPA: 4.0/4.0

Aug. 2025 – May 2027

Georgia, United States

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

Seoul National University

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

Mar. 2020 – Feb. 2024

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 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.