ALFRED CUEVA

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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, Advanced Mobile Robotics, Machine Learning

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

Programming Languages and Tools: Python, C++, MATLAB, Julia, Docker, Git
Machine Learning Tools: PyTorch, Numpy, Pandas, Scikit Learn, Matplotlib, CV2
Robotics: ROS2, Linux, Gazebo, RViz, Isaac Sim/Lab, PyBullet, MuJoCo, Solidworks, Fusion 360, Ansys

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**]
- Spearheaded 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 embedded system software and 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.
- Led cross-team integration of policy simulation and training pipelines in by generating synthetic datasets, applying domain randomization, and deploying 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 CNN-based thermal anomaly detection system for semiconductor equipment, optimizing model architecture and GPU pipelines to achieve a 40% processing efficiency gain.
- Integrated perception and collision-aware planning for autonomous cluttered-bin retrieval, deploying and optimizing SAM on industrial hardware for improved inference performance.
- Engineered real-time human tracking using PixyCam for AGV collision avoidance, improving safety in high-traffic industrial environments.

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 navigation in complex environments.

Seoul National University | DYROS Lab | Prof. Jaeheung Park   **Dec. 2022 – Feb. 2024**
- Designed model-free Reinforcement Learning framework for bipedal robot co-design, achieving 19% speed improvement and 22% energy costs reductions. ***Outstanding Thesis Award (1/120).*** [**Paper**]

PROJECTS

Diffusion Policy for Long-Horizon Manipulation | [GitHub] | [Report]   **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.