ALFRED CUEVA

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EDUCATION

Georgia Institute of Technology   Aug. 2025 – May 2027
MS in Robotics   *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, Humanoid Robotics, Autonomous Navigation, Deep Learning, Linear Control

SKILLS

Languages: Python, C++, MATLAB, Julia
Frameworks: Pytorch, ROS, Git, Gazebo, Isaac Gym/Sim/Lab, PyBullet, Movelt, MuJoCo, CoppeliaSim
Key Competencies: Reinforcement Learning, Motion Planning, Root Cause Analysis

WORK EXPERIENCE

Samsung   Mar. 2024 – Aug. 2025
Robotics Engineer   *Seoul, South Korea*
- Developed obstacle detection system using YOLOv5 for collaborative robots with 92% accuracy.

- Engineered control software using Disturbance Observer, reducing steady-state error by 15% and enhancing precision of a *novel* 7-DOF manipulator. This work was awarded $10,000 in the [Smart Construction Challenge].

- Implemented RRT* for KUKA/DOOSAN mobile manipulators, enabling their operation in cluttered environments.

- Engineered Hybrid A* for collaborative robots, creating ROS pipelines and testing environments towards integration.

- Designed human-machine interface for robotic operation, integrating software with visualization tools (Rviz, Gazebo).

Samsung   Jul. 2023 – Aug. 2023
Engineering Intern   *Seoul, South Korea*
- Engineered heat anomaly detection models for semiconductor sites, improving heat map estimation efficiency by 40%.

- Developed Python scripts with PixyCam for real-time human orientation tracking relative to AGVs, enabling safety-aware navigation and object avoidance in lithography rooms.

- Collaborated with cross-functional teams to benchmark GPU workloads and optimize Isaac Sim pipelines for real-time robotics control.

RESEARCH EXPERIENCE

Georgia Institue of Technology | LIDAR Lab | Prof. Ye Zhao   Aug. 2025 – Present
- Developing policies for humanoid robots to perform complex loco-manipulation tasks, such as opening doors and transporting boxes, using diffusion policy fine-tuning with reinforcement learning in the loop. *Under review for RA-L, IROS.*

- Investigating generative diffusion planning methods integrated with non-differentiable optimization modules to enable safe and efficient robot motion under constraints, such as manipulation in the Avoiding Environment from D3IL.

Seoul National University | DYROS Lab | Prof. Jaeheung Park   Dec. 2022 – Feb. 2024
- Developed a Deep Reinforcement Learning framework to find optimal actuator designs for legged robots with weak actuation using model-free RL and Bayesian Optimization.

- The proposed method boosted maximum forward velocity by 19% while improving velocity tracking accuracy, and cut transportation costs by 22% by maintaining a robust symmetric gait under added-mass conditions.

- Awarded *Outstanding Thesis Presentation* (1 out of 120 graduates) [Paper]

Seoul National University | Soft Robotics Lab | Prof. Yong-Lae Park   Dec. 2021 – Mar. 2022
- Designed capacitive touch sensing grid as force-control interface for industrial sewing robots, increased speed by 20%.

RELATED PROJECTS

Deep Reinforcement Learning on 2D Bin Packing Problem | SNU [GitHub]   Aug. 2024 – Sept. 2024
- Developed custom Reinforcement Learning environment for a 2D BPP utilizing a multi-component reward function.

- Achieved an average load factor of over 0.8 under randomized input box order and squeezing constraints.

RC Car Autonomous Driving | SNU [GitHub]   Aug. 2023 – Nov. 2023
- Built and tested autonomous driving pipelines by implementing pure pursuit and behavior cloning for navigation.

- Deployed and fine-tuned learning control policies, achieving reliable performance on a real RC car in a racing challenge.