# 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, Optimal Control

**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

## PROFESSIONAL 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.

## 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.

**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 BS 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.