

ALEXANDROS DELLIOS

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Summary

Master's student in Robotics at EPFL focused on robot learning and manipulation. My research goal is to help robots make sense of unstructured, real-world information so they can better assist people in everyday tasks.

Education

Master of Science (M.Sc.) in Robotics - Engineering

Expected-2028

École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland

Bachelor of Science (B.Sc.) in Micro - Engineering

2022-2025

École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland

Experience

Graduate Research Assistant | BioRob Lab

July 2026 - Present

- Researching egocentric data-driven robot manipulation, focusing on bridging the embodiment gap between human demonstrations and robotic execution.
- Leveraging task-centric latent action models to learn a hierarchical representation of embodiment, separating what a task requires from how a specific robot executes it.

Machine Learning Engineer | EPFL Student AI Team

Feb 2026 - Present

- Contributed to the ground-up design and creation of a custom quadrupedal platform to act as a guide dog for the visually impaired, bridging the gap between hardware integration and intelligent control.
- Implemented a real-time ROS 2 pipeline and custom C++ CAN bus interface on NVIDIA Jetson hardware, achieving reliable motor control and state synchronization.
- Addressing the challenge of varied-terrain navigation by building a simulation pipeline in NVIDIA Isaac Lab to train Reinforcement Learning policies.

Projects

Deep-RL Quadruped Locomotion Controller | Python/Pybullet/RL

- Trained a deep learning model in a PyBullet simulation to teach a Unitree A1 quadruped to achieve stable locomotion on steep inclines (29% slopes) and high speeds.
- Tested multiple action spaces to find the most efficient setup, ultimately improving the robot's physical footstep accuracy by nearly 9%.

RL-Driven Glider Co-Design | RL

- Developed a Reinforcement Learning model to teach a glider how to execute highly precise landings, outperforming optimal control methods.
- Hardened the flight system against real-world conditions by training the model to seamlessly adapt to unpredictable wind disturbances and varying starting speeds.
- Engineered a simultaneous optimization process that allowed the agent to automatically redesign the physical wing shape while learning to fly, accelerating success convergence by 29.7%.

Image Processing for Uno Cards | PyTorch / Torchvision

- Engineered a lightweight (12M parameter) deep learning model using a customized ResNet-18 architecture and CBAM attention mechanisms to accurately detect and count overlapping Uno cards.
- Overcame real-world data scarcity by developing a synthetic data generation pipeline, applying aggres-

sive visual augmentations (occlusion, perspective distortion) to prevent texture memorization and bridge the Sim2Real gap.

- Implemented a multi-stage fine-tuning strategy to successfully transition the model from synthetic data to real-world camera photos, ultimately achieving 75% accuracy on a Kaggle dataset.

MPC Rocket Landing Controller / *Python/CasADi*

- Designed a dual-layer flight control system (PID and MPC) for a simulated 6-DOF rocket to ensure highly accurate speed and trajectory tracking.
- Implemented a custom Nonlinear MPC algorithm to automatically correct complex aerodynamic drag and prevent orientation errors during landing.
- Engineered a safety-first landing protocol that guaranteed stability under unpredictable wind disturbances.

Technical Skills

Code : Python, C++, C, CUDA, Assembly

Frameworks & Libraries: ROS2 Jazzy, PyTorch, JAX, OpenCV, CasADi, Isaac Lab

Robotics & Control: Reinforcement Learning (PPO, SAC), Domain Randomization, Hardware-Software Co-Design, Model Predictive Control (MPC), Extended Kalman Filter, Deep Learning (Data Augmentation, Debiasing)

Simulators : Isaac Sim, Pybullet, MuJoCo

Hardware & embedded: NVIDIA Jetson (Orin Nano), STM32, ESP32, CAN bus, RTOS

CAD & Fabrication: Fusion 360, CATIA, KiCad, 3D Printing, Machining (Lathe/Milling)

Tools & DevOps: Linux, Git, TensorFlow, Docker, HPC / GPU Clusters, DeepSpeed