



Emiliano Paradiso
Robotics and AI Engineer

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SUMMARY

Highly motivated Robotics and AI Engineer with a strong interest in research on autonomous mobile systems. My background includes legged robotics, autonomous navigation, robot perception, and control of complex robotic platforms. Throughout my academic and research experience, I have developed expertise in advanced AI methods such as deep learning and reinforcement learning, which I aim to integrate into robotics applications to develop intelligent and autonomous systems capable of operating in complex real-world environments.

EDUCATION

- **Master's degree in Artificial Intelligence and Robotics** September 2023 – April 2026
University of Rome - "La Sapienza" 110/110 cum laude
During my academic path I have worked on several projects in motion planning, control, perception, localization and mapping for mobile and autonomous robots, both in simulation and on real platforms, individually and in teams. Through the Artificial Intelligence specialization track I have developed a strong interdisciplinary skill set, integrating AI methods into my robotics expertise.
- **Bachelor's degree in Electronic Engineering** September 2020 – October 2023
University of Rome - "La Sapienza" 110/110 cum laude
During my Bachelor's degree I acquired a solid theoretical foundation in electronics, including analog and digital electronics, electromagnetic fields, signal theory, antennas, electroinc sensors, actuators and information technology. This knowledge was reinforced through several hands-on laboratory activities and practical projects.

PROJECTS AND RESEARCH EXPERIENCE

- **Acrobatic obstacle avoidance for the TITA two-wheel legged robot** *October 2025 – April 2026*
Master thesis project
 - Developed a control framework for locomotion and obstacle avoidance through jump maneuvers for an unstable two-wheel legged robot
 - Implemented motion planning, nonlinear predictive control, and state estimation algorithms in C++ achieving real-time applicability
 - Validated the framework in simulation using the MuJoCo physical engine
 - Conducted experiments on the real robotic platform interfaced through ROS2
- **Calibration of the kinematic parameters of a front-rear tricycle-like real robot** *August – September 2025*
Probabilistic Robotics course project
 - Estimated and calibrated the kinematic parameters of a front–rear tricycle-like mobile robot
 - Implemented the estimation algorithm in C++ based on Manifold Least Square
- **ROS simple planner** *July 2025*
Robot Programming course project
 - Implemented a global path planning framework in ROS based on the A* algorithm with distance-map obstacle cost integration
 - Developed in C++ within ROS ecosystem for robot navigation tasks
- **MPC for Dynamic Locomotion of Lite3 Quadruped Robot** *May – July 2025*
Underactuated Robots course project
 - Implemented a model-based control framework in Python to achieve quadruped robot locomotion
 - Tested multiple gaits enabled by the implemented framework
 - Validated the approach in DART physics simulation

• Noisy graph classification with Graph Isomorphism Network

May – June 2025

Deep Learning course project

- Investigated graph classification tasks over a noisy-labeled Dataset
- Implemented training and evaluation pipelines in Python using PyTorch Lightning framework
- Conducted an extensive experimental analysis highlighting the impact of robustness techniques on prediction performance

• MOD-RRT for Real-Time Planning in Dynamic Environments

March – May 2025

Autonomous and Mobile Robotics course project

- Developed a real-time motion planning algorithm to avoid obstacles in dynamic environments for a unicycle robot
- Framework implemented in Python
- Validated in the Gazebo simulation environment adopting ROS

• RL Hindsight goal ranking for pick and place tasks

December 2024 – January 2025

Reinforcement Learning course project

- Implemented and evaluated a reinforcement learning algorithm for a robotic pick-and-place task in sparse reward environments using the OpenAI Gym Fetch environment
- Developed the project in Python

• Shared human-robot control for teleoperated ultrasound imaging

September – October 2024

Medical robotics

- Developed a shared-control framework for the teleoperation of an echographic probe using the Franka Emika Panda robot
- Implemented the system using MATLAB and Robotics System Toolbox
- Tested the framework in CoppeliaSim environment

• Pedestrian Intention Estimation on JAAD Dataset

September 2024

Computer Vision course project

- Developed and evaluated deep learning models for pedestrian intention estimation in urban driving scenarios
- Implemented the Computer vision algorithm in Python

TECHNICAL SKILLS

- **Operating Systems / tools:** Linux (Ubuntu), macOS, Windows, Docker, ROS / ROS2, Git
- **Programming languages:** C, C++, Python, MATLAB/Simulink
- **Machine learning frameworks / APIs:** PyTorch, TensorFlow, CUDA, OpenAI Gymnasium
- **Simulation engines:** MuJoCo, DART, Gazebo, PyBullet, NVIDIA Isaac Lab, CoppeliaSim
- **Areas of interest:** autonomous navigation, mobile robots, predictive control, optimization-based control, reinforcement learning

ADDITIONAL SKILLS

Development of Arduino-based embedded systems for automation and prototyping in personal projects

LANGUAGES

Italian (Native), English (C1), French (A2)

CERTIFICATIONS AND ACTIVITIES

- student volunteer at I-RIM 5th Italian Conference on Robotics and Intelligent Machines, Rome, 20–22 October 2023
- Fusion / Fusion 360 3D modelling course
- Regione Lazio - FaberLab course on design and development of antweight combat robots for Maker Faire 2022/2023