Riccardo Rettore

Robotics & Physical AI engineer passionate about humanoids, embodied intelligence, and robot autonomy

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+39-3407068944 ○ Trebaseleghe, Padova, IT

Experience

- **Resit @ Founding Engineer** *Dec 2025 - Present*

  Smart Seating for healthier employees - resitchair.com Padova - San Francisco

  ◦ Leading the development of learning-based posture classification models, transforming multi-modal sensor data into real-time user state estimation and ergonomic insights.

  ◦ Driving system architecture and integration across embedded sensing, ML inference, and user-facing applications, enabling closed-loop intelligence from physical interaction to real-time feedback.

- **CDEI Group @ University of Catalunya** *Feb 2025 – Aug 2025*

  Prof. A. Gracia (UPC), Prof. G. Susto (UniPd) Barcelona, Spain

  ◦ Developed reinforcement learning–based navigation and control frameworks for autonomous robots using custom **Gymnasium** environments, implementing **PPO** and **SAC** in discrete and continuous action spaces with **Python** and **PyTorch**.

  ◦ Integrated subsurface perception from Ground Penetrating Radar with surface sensing into decision-making pipelines, validating navigation policies in **ROS2**-based simulations with **Gazebo** and visualizing results in **RViz**.

- **Freelancer for Startups** *Jan 2020 - Jan 2024*

  Full-Stack Developer Padova, Italy

  ◦ Collaborated with startups to build cross-platform applications using **Flutter** and **Google technologies**.

  ◦ Built both front-end interfaces and back-end systems to deliver seamless, user-friendly solutions.

Education

- **MSc in Control Systems Engineering** *Oct 2023 - Oct 2025*

  Università degli Studi di Padova, Final Grade: 110/110 Padova, Italy

  ◦ Final Thesis: Leveraging Ground Penetrating Radar with Deep Reinforcement Learning for Subsurface-Informed Navigation in Autonomous Agricultural Robotics.

  ◦ Relevant Coursework: Reinforcement Learning, Advanced Control Theory, Controls for Robotics Systems, Deep Learning, Machine Learning, Computer Vision, Autonomous Robotics.

  ◦ Erasmus Exchange Program @ Universitat Politècnica de Catalunya, Barcelona, Spain: focused on Reinforcement Learning and Robotics, Physical AI and Autonomous Systems.

- **BSc in Mechatronics Engineering** *Oct 2020 - July 2023*

  Università degli Studi di Padova, Final Grade: 109/110 Padova, Italy

  ◦ Final Thesis: Integration between ROS2 and Unity: performance analysis.

  ◦ Relevant Coursework: Applied Mechanics, Analog Electronics, Electrical Machines and Drives, Instrumentation and Measurement, PLCs and Industrial Networks.

Academic Experience

- **Aurora: Object Classification with Oriented Boosting** *July 2024 - Nov 2024*

  Neural Networks and Deep Learning project Padova, Italy

  ◦ Built a 3D object classification pipeline with multi-task CNNs and oriented boosting, including voxelization, augmentation, labeling, and HDF5 preprocessing using **PyTorch**, **NumPy**, and **OpenCV**.

  ◦ Optimized GPU training and evaluated on ModelNet10/40, executing 3D data processing, CNN optimization, and computer vision pipelines.

- **Advanced Control Systems for Double-Wheel Robot** *April 2024 - June 2024*

  Control Engineering Laboratory Project Padova, Italy

  ◦ Designed nominal and robust LQR controllers for a self-balancing two-wheeled robot, modeling dynamics via Lagrange formalism, linearizing around equilibrium, and implementing sensor fusion with complementary filtering in **MATLAB/Simulink**.

  ◦ Performed simulation and on-hardware testing of designed controllers, analyzing system stability, state-feedback, observer performance, and system robustness.