

# **RICCARDO RETTORE**

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## **ABOUT ME**

Recent M.Sc. graduate in Control Systems Engineering, specializing in robotics and AI. Experienced in developing advanced algorithms for Deep Learning, Reinforcement Learning, Computer Vision and Control Systems designs. Passionate about applying AI and robotics to real-world challenges.

## **EDUCATION**

**Master degree in Control Systems Engineering, University of Padova, Italy** 2023 - 2025

**Final score:** 110/110

Relevant Coursework: Machine & Deep Learning, Reinforcement Learning, System Theory, Computer Vision, Control Engineering Laboratory, Convex Optimization, Robotics and Control I and II.

**Erasmus Programme** – Universitat Politècnica de Catalunya, Barcelona, Spain      Feb 2024 – Jul 2024

Conducted Master's Thesis as part of the Erasmus programme.

Feb 2024 – Jul 2024

Title: Leveraging Ground Penetrating Radar with Deep Reinforcement Learning for Subsurface-Informed Navigation in Autonomous Agricultural Robotics

The research focused on integrating ground-penetrating radar data with deep reinforcement learning frameworks to enable autonomous robots to navigate agricultural environments while leveraging both subsurface soil conditions and surface information.

Currently preparing a research paper based on this work for submission to IEEE.

**Bachelor degree in Mechatronics Engineering**, University of Padova, Italy 2020 - 2023

**Final score: 109/110**

Relevant Coursework: Machine Design, Electrical Machines and drives, Digital and Analog Electronics, Metallurgy, Applied Thermodynamics, Oriented Programming, Calculus, Linear Algebra, Computer Architecture, PLC and industrial communication networks.

**High-School diploma in Applied Sciences**, IIS Newton Pertini, Camposampiero (PD) 2015 - 2020

## **AWARDS**

**3 times winner of scholarship "1000 e 1 lode"** for the years 2021, 2022, 2023, awarded only to the top 3% best performing students of each degree.

## **Eramus Scolarship** for the years 2024, 2025.

**Awarded by hometown** for two consecutive years for **ranking among the top 10 students** in the town.

EXPERIENCE

**Full-stack Developer** 2020 - present  
Freelancer Padova

Experienced in collaborating with startups, primarily based in Padova, to design and develop full-stack applications using Flutter as the core programming language, complemented by various Google technologies. Skilled in building both front-end interfaces and back-end systems to deliver seamless, user-friendly solutions. Key projects are:

- **SDGs Managing App:** A cross-platform application enabling industries to input, track, and monitor

- compliance with sustainability rules and goals.
- **Restaurant and Hotel Management Apps:** Customized solutions for businesses to showcase menus, manage orders, and handle reservations efficiently.
  - **Note-Taking App:** A mobile application designed for intuitive note-taking and organization, enhancing productivity for users.

**Waiter**  
Da Mason Restaurant

2018–2020  
*Trebaseleghe, PD*

Worked evening shifts while studying in high school, developing strong time management, teamwork, and customer service skills in a dynamic environment.

## SKILLS

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<b>Technologies</b>	Matlab, Simulink, SolidWorks, Fusion 360, Blender, ROS, Tensorflow, PyTorch, Numpy, Pandas, Python, C, C++, Flutter, LaTeX, Git, Github Actions.
<b>Soft Skills</b>	Enjoy working in teams, with experience in managing high-pressure situations, adapting to shifting priorities, and utilizing problem-solving skills to find effective solutions.

## PROJECTS

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**Reinforcement Learning for Swing-Up Double Pendulum Stabilization.** Currently implementing a reinforcement learning agent to stabilize and perform the swing-up of a double pendulum system.

**Aurora: Object Classification with Oriented Boosting.** Developed a deep learning pipeline for object classification with an emphasis on boosting techniques for improved accuracy. ([Github repository](#))

**Unicycle Controller Design.** Designed a series of controllers to stabilize a unicycle, using modern control theory and algorithms. ([Github repository](#))

**Computer Vision for Parking Spot Detection.** Built a computer vision-based system to detect available parking spaces from images. ([Github repository](#))

**Control Systems for Double-Wheel Robot.** Developed controllers for a double-wheel robot to stabilize and perform basic movements. ([Download Report](#))

## EXTRA-CURRICULAR ACTIVITIES

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- **Founder & Active Member of a Cycling Team**  
Founded and actively participate in a local cycling team, organizing events and promoting cycling within the community.
- **Sports Enthusiast**  
Engaged in various outdoor sports, including cycling, hiking, running, trekking, and snowboarding, fostering a strong connection with nature and maintaining an active lifestyle.
- **Passion for Continuous Learning**  
Constantly engaged in personal projects to expand my knowledge, apply new tools, and explore emerging technologies.

## LANGUAGE CERTIFICATIONS

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## **CONTACTS AND PROFILES**

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- Portfolio: [riccardo-rettore-portfolio](https://riccardo-rettore-portfolio)