

# LUIGI BERDUCCI

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## Senior AI Engineer - Reinforcement Learning at Amazon RIVR

I am a highly motivated engineer with a passion for robot learning and safe autonomy.

Eager to drive innovation and achieve excellence with a collaborative spirit to work with brilliant minds.

## EMPLOYMENT

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AI Team, Amazon RIVR • Senior AI Engineer (02/2025) - Present

- Drive initiatives for physical intelligence, focusing on mobility and **autonomy** of RIVR robots.
- Developed policies for **van climbing**, **package dropping** and **navigation** in unseen environments.
- Took part in recruiting, training and **mentoring** of junior engineers.
- Skills: *IsaacSim, pytorch, IsaacLab, ROS2, sim-to-real transfer*

AI Team, Swiss-Mile Robotics • Robotics Intern (07/2024) - (10/2024)

- Student-teacher RL for **locomotion** in industrial use cases with wheeled-legged robots (RIVR One).
- Improved reinforcement learning pipeline to leverage **symmetries** in robot and environment.
- Refined **domain randomization** models for better sim-to-real transfer in the real world.
- Skills: *IsaacSim, pytorch, IsaacLab, ROS2, sim-to-real transfer*

xLab (GRASP), University of Pennsylvania • Visiting Associate (02/2023) - (05/2023)

- Reinforcement Learning to **adapt safety** levels for long-term performance in multi-agent systems.
- Designed a safety filter (CBF) for **collision avoidance** of autonomous vehicles in competitive **racin**g.
- Supported lab activities in the development and maintenance of the F1Tenth racecar **simulator**.
- Skills: *python, pytorch, clean-rl, openai-gym, casadi, cvxpy, vehicle-dynamics simulation*

F1Tenth Autonomous Racing Team, TU Wien • Team Member (09/2021) - (06/2024)

- Worked with ROS, Python, and C++ for **planning/control** algorithms for **LiDAR-based navigation**.
- Experience in software development on **embedded** devices (NVIDIA Jetson) for **F1Tenth** vehicles.
- Implemented RL, RRT, and Frenet **planners** and **domain randomization** for real-world racing.
- Skills: *C++, ROS2, python, sb3, pytorch, torch-script, linux, git, docker, sim-to-real transfer*

CPS Group, TU Wien • University Assistant (10/2020) - (12/2024)

- Research project on **safe reinforcement learning** for autonomous robotics systems.
- Developed a **learner-verifier** framework for provably safe model-based RL with **adaptive CBF**.
- Developed a multi-agent environment for **racin**g with **Bullet physics simulation (racecar\_gym)**.
- **Supervised** theses and projects on reinforcement learning, deep learning, and computer vision.
- Skills: *python, pytorch, tensorflow, sb3, mbri-lib, casadi, pybullet, carla simulation*

## EDUCATION

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TU Wien, Vienna • PhD Student (10/2020) - (12/2024)

A Framework for Safety in Reinforcement Learning

University of Rome La Sapienza, Rome • BSc and MSc in Computer Science (01/2014) - (05/2020)

Full marks with honours (MSc Avg Grade: 30.3/31.0, BSc Avg Grade: 27.7/31.0)

## SKILLS

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Programming Languages - Python, C++, ROS

Machine Learning - pytorch, tensorflow, scikit-learn

RL Tools - sb3, openai-gym, clean-rl, mbri-lib, isaac-lab

Optimization - casadi, cvxpy, gurobi

Simulators - pybullet, isaac-sim

Misc - docker, version control, git