Alexander Marc Spiridonov

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Education

09/2022 – present **MSc. Robotics, Systems and Control,** *ETH Zurich*

09/2019 – 09/2022 **BSc. Mechanical Engineering,** *ETH Zurich*
final grade: 5.5 (Top 3%)

09/2011 – 06/2019 **Abitur,** *Humboldt-Gymnasium Vaterstetten (HGV)*
final grade: 1.0

Publications, Preprints, and In-Preparation

2024 **SpaceHopper: A Small-Scale Legged Robot for Exploring Low-Gravity Celestial Bodies,** *Alexander Spiridonov, Marco Hutter et. al.*
IEEE International Conference on Robotics and Automation

Research Experience

11/2023 – present **Research Assistant,** *Secure, Reliable, and Intelligent Systems Lab, ETH Zurich*
Developing a comprehensive benchmarking framework for evaluating compliance of foundation models with the EU AI Act.

11/2022 – 12/2023 **Research Assistant,** *Robotic Systems Lab, ETH Zurich*
Developing the Deep RL control concept of the robot SpaceHopper as part of the European Space Agencies PETRI Program.

Selected Projects

04/2023 – 06/2023 **Course Project,** *Optimization & Decision Intelligence Group, ETH Zurich*
Worked on Safe Active Exploration in MDPs with correlated state-action pairs using Convex RL.

03/2023 – 08/2023 **Course Project,** *Data Analytics Lab, ETH Zurich*
Worked on Deep Learning methods to enhance road network extraction from satellite imagery, incorporating topological regularizers.

11/2022 – 05/2023 **Semester Project,** *Robotic Systems Lab, ETH Zurich*
Worked on Imitation Learning from graph-based expert demonstrations to pre-train Deep RL path planners for ANYmal robot in parkour terrains.

09/2021 – 06/2022 **Focus Project,** *Robotic Systems Lab, ETH Zurich*
Team Lead - Modeling & Control of SpaceHopper, created the Deep RL control pipeline, trained and deployed locomotion policies.

Teaching Experience

02/2022 – 06/2022 **Teaching Assistant,** *Institute of Electromagnetic Fields*
Taught exercise classes for the course Electronics and Circuits.

09/2021 – 02/2022 **Teaching Assistant,** *Mechanics and Materials Laboratory*
Taught exercise classes for the course Dynamics.

Talks and Presentations

12/2022 **IIT Bombay,** *Official ETH Ambassador at IIT Bombay Techfest 2022.*

05/2022 **TEDxThun,** *Talked about the potential of legged robots for the exploration of asteroids and moons*

Awards

05/2019 **High School Graduate Award in Physics,** *German Physical Society*

Skills

Programming Languages
Python, C, C++, MATLAB

Frameworks
UNIX, PyTorch

Languages

German, English, Bulgarian, Latin

Certificates

Cambridge English Certificate (C2)

Selected Courses

Mathematics:
Analysis I/II/III, Complex Analysis, Linear Algebra I/II, Probability Theory and Statistics

Computer Science:
Control Theory I/II, Models Algorithms and Data, Dynamic Programming and Optimal Control, Optimization for Data Science, Probalistic Artificial Intelligence, Foundations of Reinforcement Learning, Machine Perception, Reliable and Trustworthy Artificial Intelligence