

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%)

Publications, Preprints, and In-Preparation

- 2024 **SpaceHopper: A Small-Scale Legged Robot for Exploring Low-Gravity Celestial Bodies**, Alexander Spiridonov, Fabio Buehler, Moriz Berclaz, Valerio Schelbert, Jorit Geurts, Elena Krasnova, Emma Steinke, Jonas Toma, Joschua Wuethrich, Recep Polat, Wim Zimmermann, Philip Arm, Nikita Rudin, Hendrik Kolvenbach, Marco Hutter
IEEE International Conference on Robotics and Automation (ICRA) 2024 / paper [↗](#) / website [↗](#)
- 2024 **Jumping and Attitude Control of a Legged Robot in Microgravity**, Philip Arm*, Valerio Schelbert*, Alexander Spiridonov*, Fabio Buehler, Moriz Berclaz, Jorit Geurts, Hendrik Kolvenbach, Fabian Tischhauser, Hendrik Kolvenbach, Marco Hutter
Science Robotics - Under Review / website [↗](#) / CNN Tech for Good [↗](#) / BBC [↗](#)
- 2024 **COMPL-AI Framework: A Technical Interpretation and LLM Benchmarking Suite for the EU Artificial Intelligence Act**, Philipp Guldemann*, Alexander Spiridonov*, Robin Staab, Nikola Jovanović, Mark Vero, Velko Vechev, Anna-Maria Gueorguieva, Mislav Balunović, Nikola Konstantinov, Pavol Bielik, Petar Tsankov, Martin Vechev
Preprint / paper [↗](#) / website [↗](#) / HF Leaderboard [↗](#) / Reuters [↗](#) / TechCrunch [↗](#)
- 2024 **Impulse-Free Release Mechanism and Test Setup for Robotic Free-Floating Experiments on Parabolic Flights**, Philip Arm, Andrea Del Buono, Moriz Berclaz, Valerio Schelbert, Jorit Geurts, Fabio Buehler, Alexander Spiridonov, Fabian Tischhauser, Hendrik Kolvenbach, and Marco Hutter
International Astronautical Congress (IAC) 2025 / paper [↗](#)

Research Experience

- 06/2024 – present **Graduate Research Fellowship, INSAIT**
Leveraging the spatio-temporal relationships of videos to distill general physical priors into a robotics foundation model to improve the robustness and generalizability of robot policies.
- 11/2023 – 05/2024 **Research Assistant, Secure, Reliable, and Intelligent Systems Lab, ETH Zurich**
Developed 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**
Developed the Deep RL control concept of the robot SpaceHopper in collaboration with the European Space Agency.

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. / paper [↗](#) / poster [↗](#)
- 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**, *Ambassador for ETH Zurich at IIT Bombay Techfest 2022.*
- 05/2022 **TEDxThun**, *Talked about legged robots for the exploration of asteroids and moons*
youtube [↗](#)

Awards

- 2024 **ICRA 2024 Travel Grant**, *IEEE/RAS*
- 2019 **High School Graduate Award in Physics**, *German Physical Society*

Skills

Programming Languages

Python, C, C++, MATLAB

Frameworks

UNIX, PyTorch, XLA, CUDA

Languages

German, English, Bulgarian, Latin

Certificates

TOEFL — 113 / 120

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, Probabilistic Artificial Intelligence, Foundations of Reinforcement Learning, Machine Perception, Reliable and Trustworthy Artificial Intelligence