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 Limbed Robot in Microgravity,** *Philip Arm*, Valerio Schelbert*, Alexander Spiridonov*, Fabio Buehler, Moriz Berclaz, Jorit Geurts, Hendrik Kolvenbach, Fabian Tischhauser, Hendrik Kolvenbach, Marco Hutter* In-Preparation for Science Robotics / website ☒ / CNN Tech for Good ☒ / BBC ☒
2024	**COMPL-AI Framework: A Technical Interpretation and LLM Benchmarking Suite for the EU Artificial Intelligence Act,** *Philipp Guldimann*, 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* I am working on distilling the implicit physical and spatial information of human and robot videos into pre-trained VLMs to improve the robustness and generalizability of robot action models.
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,** *Official ETH Ambassador 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, Probalistic Artificial Intelligence, Foundations of Reinforcement Learning, Machine Perception, Reliable and Trustworthy Artificial Intelligence