Alexander Marc Spiridonov

aspiridonov@ethz.ch aspiridon0v.github.io

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 4%)

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

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