Niclas Scheuer

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Spacecraft controls, ADCS, control allocation, underactuated systems, and autonomous aerospace systems.

Education

ETH Zurich *Feb 2025 – Dec 2026 expected*
MSc Mechanical Engineering, Robotics & Control ESOP Scholar

Massachusetts Institute of Technology *Aug 2025 – Jan 2026*
MIT–ETH Exchange, Mechanical Engineering Selected ETH D-MAVT exchange student

ETH Zurich *Aug 2021 – Jun 2024*
BSc Mechanical Engineering GPA 5.87/6.0; distinction; Double Outstanding Bachelor Award

International School Frankfurt *– Jul 2021*
Bilingual International Baccalaureate 44/45 points; unweighted GPA 3.95

Research & Engineering Experience

Research Engineer, ETH Space *Feb 2026 – Present*
ETH Zurich Zurich, Switzerland

- Creating the next generation of space systems engineers.

Junior Researcher, STAR Lab; Controls Engineer, MIT Rocket Team *Aug 2025 – Jan 2026*
Massachusetts Institute of Technology Cambridge, MA

- Developed ADCS algorithms and simulation infrastructure for BeaverCube 2, an oceanographic research CubeSat.
- Modeled and designed robust control methods for Sphinx and Osiris VTVL hopper platforms.
- Advised mission design for LEONIRD, a solar occultation CubeSat mission.

Guidance, Navigation & Control Intern *Sep 2024 – Feb 2025*
Rocket Factory Augsburg Augsburg, Germany

- Built and validated 6-DOF MATLAB/Simulink models for launch-vehicle analysis and day-of-launch readiness.
- Automated Monte Carlo and failure-injection pipelines for launch-condition risk analysis.
- Developed GNC launch dashboard integrating telemetry, weather feeds, and automated launch-condition evaluation.

Publications

A Modular Open-Source Python Framework for Small Satellite Attitude Determination and Control
Patrick McKeen, Niclas Scheuer, Kerri Cahoy. *Accepted, SmallSat Europe 2026.*

A Feasibility-Aware Attitude Trajectory Planner for Underactuated and Unconventionally Actuated Small Satellites
Patrick McKeen, Niclas Scheuer, Kerri Cahoy. *Accepted, SmallSat US 2026.*

Generalized Attitude Control Allocation for Small Spacecraft
Patrick McKeen, Niclas Scheuer, Kerri Cahoy. *Accepted, SmallSat US 2026.*

One Wheel Is Enough: Control Strategies for the 3+1 Actuator Architecture Across Small Satellite Mission Profiles
Patrick McKeen, Niclas Scheuer, Kerri Cahoy. *Accepted, 77th International Astronautical Congress.*

Teaching

Head Teaching Assistant / Teaching Assistant, Control Systems I–II *Jun 2023 – Aug 2025*
IDSC, ETH Zurich Zurich, Switzerland

- Led 9 teaching assistants for a 330-student control systems course; coordinated recitations, programming assignments, demonstrations, office hours, and exam evaluation.
- Taught weekly recitations, supervised control-systems laboratories, developed interactive programming challenges, and mentored 100+ students.

Selected Project

Minimal on Wheels — Bachelor's Thesis *2024*
Robotic Systems Lab, ETH Zurich

- Designed and manufactured a wheeled extension for a quadruped robot; developed reinforcement-learning locomotion policies and extended the ROS2 control stack for hybrid walking/driving motion.

Skills

Programming & Tools: Python, C++, MATLAB/Simulink, ROS2, Linux, Git, GitLab CI/CD, STK Level 1 Certification, STK Level 2 Certification
Controls & Simulation: spacecraft ADCS, control allocation, robust control, optimal control, MPC, system identification, Monte Carlo analysis
Robotics & Hardware: embedded systems, CAD, 3D printing, Siemens NX, SolidWorks, basic PCB design
Languages: English native, German native, French B2

Honors & Awards

- Excellence Scholarship and Opportunity Programme (ESOP), ETH Zurich 2024 – 2026
- Outstanding D-MAVT Bachelor Award, ETH Zurich 2024
- Outstanding D-MAVT Bachelor Award, ETH Zurich 2022