Niclas Scheuer

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Industry Experience

Junior Researcher, MIT STARLab *Sep 2025 – Present*

- Developing control and estimation architectures for an underactuated CubeSat currently in build phase.
- Implementing embedded flight-software modules for attitude control, state estimation, and fault tolerance.
- Conducting HIL validation of flight dynamics and control algorithms.

Controls Engineer, MIT Rocket Team *Sep 2025 – Present*

- Leading Simulink development for propeller (Project Sphinx) and bipropellant (Project Osiris) hoppers.
- Developing integrated GNC and propulsion models for HIL testing.

Guidance, Navigation & Control Intern, Rocket Factory Augsburg (RFA) *Sep 2024 – Feb 2025*

- Took ownership of interdisciplinary engineering projects, interfacing with GNC, OSD, launch, aerodynamics, and regulatory teams to balance technical, operational, and certification requirements.
- Built and validated 6-DOF Simulink models; scripted Monte Carlo failure-injection studies and automated risk-analysis pipelines for day-of-launch readiness.
- Led development of the high-altitude balloon weather station: designed and built the system end-to-end, coordinated with remote teams in Scotland for telemetry integration, and operationalized real-time data delivery.
- Designed and implemented the full GNC launch dashboard from scratch, integrating live launch-site telemetry, weather feeds, and automated FAA/CAA launch-condition evaluation.
- Collaborated with flight safety to certify launch-sequence and dashboard workflows with the CAA.

Robotics Intern, YASKAWA Europe GmbH *Jun – Aug 2021*

- Assembled and programmed industrial arms; YRC-, DX-series programming certification.

Software Development Intern, ABB Automation GmbH *Jul – Aug 2020*

- Built app features for industrial robot workflows.

Teaching Experience

Head Teaching Assistant, IDSC Group Frazzoli (ETH Zurich) *Feb 2025 – Aug 2025*

- Head TA for "Control Systems II" (330 students).
- Led a team of 9 TAs; coordinated weekly recitations.
- Designed and graded weekly programming challenges; controls demonstrations; held office hours.
- Contributed to exam design and evaluation.

Lab Supervisor, IDSC Group Onder (ETH Zurich) *Sep 2023 – Sep 2024*

- Supervised weekly control systems experiments, maintaining lab equipment, upgrading code, and expanding teaching modules for student use. Mentored 100+ students.

Teaching Assistant, IDSC Group Frazzoli (ETH Zurich) *Jun 2023 – Aug 2024*

- TA for "Control Systems I/II".
- Taught recitations for groups of 30+ students.
- Creation of interactive programming challenges as part of ETH's Innovendum Project.

Research & Projects

Course Project - Bottleneck Simulation *2025*
Authored a conference-style paper on traffic flow using a self-modified Helly-type model; analyzed stability criteria, rigorously proved stabilizability, and demonstrated LQR control design.

Bachelor's Thesis, Robotics Systems Lab (ETH Zurich) *2024*
Designed and manufactured a wheeled extension for a quadruped robot for hybrid walking/driving motion. Developed robust locomotion policies using reinforcement learning with a teacher–student approach. Extended the ROS2 control stack to support additional wheel actuators and the learned locomotion policies.

K3S Mini-Server *2024*
Built a Raspberry Pi cluster for storage, web hosting, and game server applications with automated deployments; also hosted local GitLab and Wikipedia instances.

Drone Position Controller (Simulink) *2023*
Modeled quadrotor dynamics; designed cascaded PID loops; validated tracking in simulation.

Arduino SVG Plotter *2022*
Co-designed and built 2-DOF plotter; implemented G-code style interpreter.

Education

MIT-ETH Exchange *Sep 2025 - Dec 2025*
Selected as the sole Mechanical Engineering student from ETH Zürich for a term at MIT.

ETH Zurich — MSc Mechanical Engineering (Robotics & Control) *Sep 2024 – Jun 2026 (exp.)*
Excellence Scholarship and Opportunity Programme (ESOP).

ETH Zurich — BSc Mechanical Engineering *Sep 2021 – Jun 2024*
GPA 5.87/6.0; Graduated with distinction; Double Outstanding Bachelor Award (Top 5).

International School Frankfurt *– Jul 2021*
Bilingual International Baccalaureate 44/45 points, Unweighted GPA: 3.95

Skills

Programming/Tools: C++, Python, MATLAB, Simulink, ROS2, Linux
Robotics/Mechatronics: Control design, system ID, MPC, embedded systems, CAD/3D printing (Siemens NX, SolidWorks), PCB design (KiCAD - basic, Altium - basic)
CI/CD: Git, GitLab Pipelines
ML (basic): RL pipelines, TensorFlow/PyTorch (intro)
Languages: English (native), German (native), French (B2)
Additional Tools (familiar): Go, Apache Kafka, WebSockets, FastAPI, Redis, PostgreSQL

Honors & Awards

- Excellence Scholarship and Opportunity Programme (ESOP), ETH Foundation 2024–2026
- Outstanding D-MAVT Bachelor Award 2024 (Top 5 overall exams), ETH Zurich 2024
- Outstanding D-MAVT Bachelor Award 2022 (Top 5 first-year exams), ETH Zurich 2022