Jannes Hühnerbein

Scientific Assistant at Technical University of Munich | Robotics, Systems and Control MSc ETH

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Education

Swiss Federal Institute of Technology Zurich (ETH Zurich)

Zurich, Switzerland

Robotics, Systems and Control MSc ETH — *Sep 2022 — Nov 2024*

- *Master's Thesis:* Uncertainty Model Unfalsification via Semi-Infinite Programming and Local Reduction
- *Semester Project:* Diffusion Spline-Based Navigation Policy in Dynamic Environments
- *Core Courses:* Linear System Theory, Dynamic Programming and Optimal Control, Recursive Estimation, Model Predictive Control, Vision Algorithms for Mobile Robotics, Nonlinear Dynamics and Chaos, Introduction to Machine Learning
- *Additional Courses:* Advanced Model Predictive Control, Convex Optimization, Probabilistic Artificial Intelligence, Orbital Dynamics

Mechanical Engineering BSc ETH — *Sep 2018 — Oct 2021*

- *Thesis:* Distributed Trajectory Planning for Multiple Autonomous Aerial Vehicles
- *Core Courses:* Calculus, Linear Algebra, Mechanics, Dynamics, Physics, Thermodynamics, Fluid Mechanics, Electrical Engineering, Informatics
- *Electives:* Control Systems, Signals & Systems, System Modeling, Advanced Topics in Control, Quantum Mechanics, Models, Algorithms and Data

Gymnasium Raabeschule

Braunschweig, Germany

Abitur (German University-Entrance Qualification) — *graduated in June 2017*

- Salutatorian
- *Advanced Courses* (German *"Leistungskurse"*): Mathematics, Physics, Chemistry

Research & Work Experience

Chair of Astrodynamics, Technical University of Munich

Munich, Germany

Scientific Assistant — *since July 2025*

- Contributing to teaching activities, including preparing course materials, supervising student exercises and conducting examinations
- Supervising Bachelor's, Master's and semester theses for students of the Aerospace Engineering degree programs
- Supporting research activities
- Working towards obtaining PhD candidacy status
- Chair website

Control and Power Research Group, Imperial College London

London, United Kingdom

Master's Thesis — *Apr 2024 — Nov 2024*

- *Title:* Uncertainty Model Unfalsification via Semi-Infinite Programming and Local Reduction
- Conducted as a visiting student under supervision of Prof. Dr Eric Kerrigan
- Explored the use of optimization problems (semi-infinite programs in particular) and data to inform uncertainty models
- Developed a Julia package for dynamical systems simulation called `SimpleSim.jl` available on the Julia registry

Robotic Systems Lab, ETH Zurich

Zurich, Switzerland

Semester Project — *Oct 2023 — Feb 2024*

- *Title*: Diffusion Spline-based Navigation Policy in Dynamic Environments
- Investigated the use of denoising diffusion probabilistic models (DDPMs) for spline-based robot navigation

Zipline International Inc.

South San Francisco, California, USA

Guidance, Navigation and Control Intern — *Sep 2021 — Aug 2022*

- Supported development work on guidance, navigation and controls algorithms for a novel autonomous aircraft
- Worked extensively with Julia (for simulation) and C++ (for prototyping and embedded systems)
- What I worked on (YouTube)

Institute for Dynamic Systems and Control, ETH Zurich

Zurich, Switzerland

Bachelor's Thesis — *Summer 2021*

- *Title:* Distributed Trajectory Planning for Multiple Autonomous Aerial Vehicles
- Developed a distributed trajectory planner using ADMM and ALADIN and contributed to the CRS framework

Academic Space Initiative Switzerland (ARIS)

Zurich & Dübendorf, Switzerland

Control Systems Engineer — *Sep 2020 — Aug 2021*

- Two-semester project with the goal of developing an autonomous guided recovery system for a student rocket
- Worked with a team of eight students from different fields and universities
- Developed a fully functional embedded control system from the ground up
- Link to ARIS Website

ETH Zurich Zurich, Switzerland

Teaching Assistant for Signals & Systems, Mechanics 1 & 2 and Dimensioning 1 *Feb 2020 — Feb 2024*

- Independently taught weekly classes of approx. 25 students
- Prepared practice material and exercise sessions
- Supported lectures by preparing slides, grading assignments and monitoring online forums

Honors & Awards

2020 — 2024	**Scholarship Recipient** More Information in English	*German National Academic Foundation*
May 2019	**1st Place** Innovation Project ("Innovationsprojekt"), Information in German	*ETH Zurich*
Jul 2017	**High-School Graduate Prize** More Information in German	*German Physical Society*

Specialized Skills

Programming	Julia, Python, C++, C
Robotics	MATLAB/Simulink, ROS, Gazebo, Eigen, PyTorch
Optimization	JuMP, CasADi, FORCESPRO, Acados, CVXPY
Hardware	RaspberryPi, Arduino, STM32, ESP32
Other	Git, Linux, LaTeX, Siemens NX, SQL, PHP, NodeJS (...)

Other

Languages	German — Native Proficiency English — Full Professional Proficiency French — Elementary Proficiency
Volunteering	Mentoring-Program for First-Semester Students at ETH Zurich *2020 / 2021* Advisor for Digital Infrastructure & IT at Youth Against AIDS (Jugend gegen AIDS e. V.) *2014 — 2017*