

Jannes Hühnerbein

✉ hjannes@ethz.ch | 🌐 huehnerbe.in | 🌐 jhuehnerbein | 📷 janneshb

Education

Swiss Federal Institute of Technology Zurich (ETH Zurich)

Zurich, Switzerland

ROBOTICS, SYSTEMS AND CONTROL MSc

Sep 2022 — present

- Expected to graduate in September 2024
- *Master's Thesis* conducted as a visiting student at Imperial College London
- *Semester Project*: Diffusion Spline-Based Navigation Policy in Dynamic Environments (5.75 / 6.0)
- *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

Sep 2018 — Oct 2021

- *Final Grade*: 5.56 / 6.0 (top 2% of the class)
- *Thesis*: Distributed Trajectory Planning for Multiple Autonomous Aerial Vehicles (5.75 / 6.0)
- *Core Courses*: Calculus, Linear Algebra, Mechanics, Dynamics, Physics, Thermodynamics, Fluid Mechanics, Electrical Engineering, Informatics, Chemistry
- *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 Jun 2017

- *Average Grade*: 1.1 (second best in class)
- *A-courses*: Mathematics, Physics, Chemistry

Work Experience

Control and Power Research Group, Imperial College London

London, United Kingdom

MASTER'S THESIS

Apr 2024 — present

- Master's thesis as a visiting student under supervision of Prof. Dr Eric Kerrigan

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
- Part of the Robotics, Systems and Control MSc program at ETH Zurich
- *Final Grade*: 5.75 / 6.0

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 prototyping) and C++ (embedded)
- 🔗 [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 ALADIN
- Contributed to the 🔗 [CRS](#) framework
- *Final Grade*: 5.75 / 6.0

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 MECHANICS 1 & 2, DIMENSIONING 1 AND SIGNALS & SYSTEMS

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

| | | |
|------------|--|--|
| since 2020 | Scholarship Recipient 🔗 More Information in English | <i>German National Academic Foundation</i> |
| 2019 | 1st Place Innovation Project (“Innovationsprojekt”), 🔗 More Information in German | <i>ETH Zurich</i> |
| 2017 | High-School Graduate Prize 🔗 More Information in German | <i>German Physical Society</i> |

Skills

| | |
|---------------------|--|
| Programming | Julia, Python, C++, C |
| Robotics | MATLAB/Simulink, ROS, Gazebo, Eigen, PyTorch |
| Optimization | CasADi, FORCESPRO, Acados, CVXPY |
| Hardware | RaspberryPi, Arduino, STM32, ESP32 |
| Other | Siemens NX, SQL, PHP, Javascript |

Other

| | |
|---------------------|--|
| Languages | German: Native English: Professional French: Basic |
| 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 |