

# Jannes Hühnerbein

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

## Research & 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 ADMM and 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

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

## Specialized Skills

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

## Other

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<b>Languages</b>	German — Native Proficiency English — Full Professional Proficiency French — Elementary Proficiency
<b>Volunteering</b>	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