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 November 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 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

since 2020	**Scholarship Recipient** 🔗 More Information in English	*German National Academic Foundation*
May 2019	**1st Place** Innovation Project ("Innovationsprojekt"), 🔗 More 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, Javascript (...)

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*