



# DUPONT Benjamin

Mechanical engineering student

+41 (0)76 233 69 31

bdupont@student.ethz.ch

56 Route du Viéran, 74370  
Epagny Metz-Tessy, France

## Work Experience

### Computer vision research intern

Jan 2025 - Current

### NASA Jet Propulsion Laboratory | Pasadena (CA), USA

- Development and testing of structure-from-motion-based 3D mapping algorithms to identify landing hazards on complex terrains. Design and implementation of visual-inertial state estimation algorithms for navigation in GPS-denied and low-texture environments.
- Deployment and validation of perception algorithms on a UAV Mars rotorcraft surrogate.

### Teaching assistant

June 2024 - Dec 2024

### ETH | Zurich, Switzerland (Part time)

- Teaching assistant for the robotics class "Duckietown" at ETH
- Hardware preparation and maintenance, base software stack development and adaptation using ROS and docker, creation of programming exercises, student support and project grading.

### Student Formula 1 operation room support

Feb 2024 - July 2024

### Kick-Sauber Formula 1 team | Hinwil, Switzerland

- In the operations room during Formula 1 Grand Prix weekends (3 days) from the factory
- Tire and break data analysis from the car logs and preparation of reports for the team meetings
- Development and maintenance of automated data analysis scripts in MATLAB and Python

### Head of controls

Aug 2023 - March 2024

### AMZ Racing | Zurich, Switzerland

- Recruitment of the new team (lecture presentations, interviewing process and selection)
- Management and guidance of the controls group. Team and module strategy overview
- Code reviewing (C++ and Python), concept suggestions and validation

### Controls engineer

Sept 2022 - Aug 2023

- Led the design and enhancement of high-level Model Predictive Control (MPC) using C++ and ROS, enabling our custom-built Formula Student race car to navigate cone-delimited tracks autonomously at optimal speeds.
- Tuning of the controller and competition around Europe in the summer

### Aircraft performance engineer

Feb 2023 - June 2023

### ALR Aerospace | Zurich, Switzerland (Part time)

- Aircraft aerodynamic and performance data analysis using Python and processing aircraft trajectory data extracted from flight simulation
- Applying flight mechanics knowledge to post-process the data and development of numerical methods for data reduction and filtering

## Education

### Master of Science (MSc) Mechanical engineering

2022 - Present

### Eidgenössische Technische Hochschule (ETH) | Zurich, Switzerland

- Major in robotics (planning, controls, computer vision, state estimation, dynamical systems, sysID, deep learning - ML/RL) and minor in fluid dynamics (aerodynamics, CFD, compressible flows)
- Anticipated graduation in summer 2025, with a confirmed average grade of 5,45/6

### Exchange student

2021 - 2022

### NTNU | Trondheim, Norway

Exchange student for two full semesters as a part of my bachelor's degree studies.

### Bachelor of Science (BSc) Mechanical engineering

2019 - 2022

### École Polytechnique Fédérale (EPFL) | Lausanne, Switzerland

Graduated with a Bachelor's degree, achieving a top tier average grade of 5/6.

## Technical Skills

**Programming:** Python, Matlab/Simulink, C, C++, LaTeX, ROS/ROS2, Linux environment, Docker, bash scripting.

**Software:** CATIA and Solidworks (CAD), Abaqus (FEM), Microsoft Office, Adobe Photoshop/Lightroom.

## Languages

English (British national)

French (French national)

German (B2)

Spanish (A1/A2)