




# DUPONT Benjamin

Mechanical engineering student

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Switzerland 

## Work Experience

### Head of controls

Aug 2023 - Current

#### 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
- C++ and python code reviewing. Concept suggestions and validation

### Controls engineer

Sept 2022 - Aug 2023

- In charge of the design and improvement of the high level control MPC in C++ and ROS, to enable the team's self built formula student type race car to drive autonomously as fast as possible around cone delimited tracks.
- Tuning of the controller for speed and reliability using knowledge of race car vehicle dynamics as well as post-test data analysis on logs for debugging and to strive for optimal performance.
- Part time during the first semester and full-time from February onwards, usually working around 70 hours per week with the team in our resource-rich workshop in Dübendorf (Switzerland, CH)
- Additionally worked on the low level control Vehicle Control Unit in Simulink and helped with the mechanical maintenance of the car for testing such as suspension and brake bleeding, tyre changing, screw checks and electrical debugging.
- Competition against other Formula Student teams during summer around Europe
- Additionally in charge of talks with a sponsor, managing software licenses for the whole team, and the social media page on Instagram.

### Aircraft performance engineer

Feb 2023 - June 2023

#### ALR Aerospace | Zurich, Switzerland (Part time, 20%)

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

### Teaching assistant

Sept 2020 - July 2021

#### EPFL | Lausanne, Switzerland

- Job as a teaching assistant during exercise sessions for Physics 1 and Calculus 2 (4h/week).
- Supervision of a group of students to answer their questions on the lectures and on the weekly exercise sheet.

## Education

### Master of Science

#### Mechanical engineering

2022 - Present

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

- Course choices oriented towards robotics (planning, controls, computer vision, state estimation, dynamical systems, sysID and machine learning) and fluid dynamics (aerodynamics and CFD)
- Semester project: Learning Fast Reflexes for Emergency Manoeuvres and Collision Avoidance using Machine learning on autonomous GoKarts. From obstacle detection to obstacle avoidance.

### 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

#### Mechanical engineering

2019 - 2022

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

Bachelor's degree obtained with a top tier average of 5/6.

## Technical Skills

### Programming:

Python, Matlab and Simulink, C, C++, LabView, LaTeX, ROS, Linux environment.

### Software:

CATIA and Solidworks (CAD), Abaqus (FEM), Autodesk Inventor (CAM), Microsoft Office, Adobe Photoshop/Lightroom.

## Languages

English (British national)



French (French national)



German



Spanish



Norwegian

