

FRANCESCO BRANCA | Aerospace/ML Engineer

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Francesco Branca

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personal website

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LANGUAGES

English - C1 / Italian - native / French - B2

SOFTWARE SKILLS

Languages: Python, C++, MATLAB, Java, HTML, CSS, Bash, Shell, SQL

Tools: Linux, Docker, GitHub, AWS, ROS, CMake, Simulink

SOFT SKILLS

- Researching and applying state-of-the-art technology
- Collaborating in multidisciplinary teams.
- Teaching/explaining to other students.
- Public speaking/presenting to stakeholders.

WORK EXPERIENCE

Teaching Assistant | TU Delft

2/2023 - 7/2023

- Contributed to an average course passing rate of 72%.
- Prepared **Python** coding assignments for 300+ students.
- Led sessions for 200+ students daily to explain **machine learning** and **data analysis** concepts.
- Supported instruction in 3 courses and collaborated in total with 20 assistants and 8 professors.
- Python libraries: `numpy`, `scipy`, `pandas`, `scikit-learn`, `matplotlib`, `seaborn`, `pytorch`, `tensorflow`, `jax`

Research Intern | German Research Center for AI

9/2022 - 2/2023

- Designed an experimental setup for [active debris removal](#) research ([see Github](#)).
- Developed **Python/C++** code to control a 7 degrees-of-freedom robot arm.
- Developed and tested the performance of 2 **control algorithms**.
- Conducted 30+ experimental sessions using the setup to collect data.

Systems Engineer | Team Tumbleweed

4/2020 - 6/2021

- Collaborated on the **multidisciplinary design** of a wind-propelled Mars [exploration rover](#).
- Worked in 2 departments in the early structural **systems engineering**.

EDUCATION

MSc Control & Simulation

9/2021 - 5/2024

Delft University of Technology

- **KEY COURSES:** *ML for Robotics, Operations Optimization, Automatic Flight Control, Intelligent Control Systems*

BSc Aerospace Engineering

9/2018 - 7/2021

Delft University of Technology

- **KEY COURSES:** *Control Theory, Experimental Research & Data Analysis, Linear Algebra, Calculus*

THESIS

Master Thesis | MAVLab

5/2023 - 5/2024

- Developed **spiking neural networks** on **PyTorch** for computer vision ([see Github](#)).
- Trained, tested 100+ **deep learning** models with experimental tracking.
- Performed **hyperparameters optimization** for 7 architectures.
- Deployed the network on [hardware](#) (x1000 power reduction).
- Grade: **8.5/10** (very good, check [TU Delft standards](#)).

PROJECTS / CERTIFICATES

Generative AI with LLMs | Online Course

9/2024 - 10/2024

- Learned about **generative AI**, transformers and fine-tuning techniques.
- Worked with **AWS** to optimize and test 3 pre-trained models ([view certificate](#)).

Computer Vision Project | [MAVLab](#)

3/2022 - 5/2022

- Collaborated in a team of 10 engineers for 6 weeks.
- Collected **large dataset** and engineered an **obstacle detection** system.
- Competed against 11 other teams to develop the best **autonomous drone**.
- Ranked 4th out of 12 groups.

OTHER EXPERIENCE

Master Student Mentor | [TU Delft](#)

9/2023 - 12/2023

- Led welcoming sessions for +150 freshmen students.
- Organized 2 meetings per week with groups of 20 students
- Provided guidance to support the beginning of their studies.

Website Content Manager | [Control & Robotics Fair](#)

10/2021 - 5/2022

- Designed the [website](#), ensuring efficient promotion and user comfort.
- Organized a networking event for +400 students.
- Collaborated with +50 engineering companies.

Event Manager | [STABILO](#)

9/2021 - 9/2022

- Organized social activities and concerts for 150+ master students and 15+ professors.
- Collaborated with 8 engineering companies to plan networking events.
- Drove a 200% increase in event participation, by enhancing promotion.

BEYOND THE LAB

- **Music:** playing guitar and drums; composing and recording music; studying music theory; researching sound effects.
- **Neuroscience & Psychology:** reading books and self-studying human behaviour.
- **Concerts:** organizing and attending live music events, showcasing leadership and community-building skills.
- **Drone Videography:** shooting videos and pictures of natural environments.