

# FRANCESCO BRANCA | Aerospace/ML Engineer

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Francesco Branca

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## LANGUAGES

English - C1 / Italian - native / French - B2

## KNOWLEDGE

Machine Learning - Data Analysis - Generative AI - Operations Optimization - Aerospace

## SKILLS

Python - C++ - MATLAB - Java - HTML - CSS - Linux - CMake - Bash - SQL - Docker - Github - AWS - MS Office

## TECHNICAL EXPERIENCE

### Teaching Assistant | TU Delft | University Job

2/2023 - 7/2023

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

### Research Intern | DFKI | Research Institute

9/2022 - 2/2023

- Built a testbed setup for [debris removal research](#).
- Developed a **Python** and **C++** driver ([see Github](#)) to control a 7 degrees-of-freedom robot arm ([Franka](#)).
- Optimized the product for user comfort and **data collection**.
- Developed and compared the performance of 2 **control algorithms**.

## EDUCATION

### MSc Control & Simulation

Delft University of Technology

9/2021 - 2/2024

### BSc Aerospace Engineering

Delft University of Technology

9/2018 - 7/2021

## THESIS

### Master Thesis | MAVLab

5/2023 - 5/2024

- Developed **neural networks** on **PyTorch** for computer vision ([see Github](#)).
- Trained optimized 50+ **deep learning** models.
- Implemented the network on cutting-edge [device](#) to achieve x1000 power reduction.
- Collaborated with external stakeholders at [Synsense](#) company.
- Grade: **8.5/10**, very good according to [TU Delft standards](#).

### Bachelor Thesis | Aeroacoustics Department TU Delft

5/2021 - 7/2021

- System design for a **swarm system** of 100 **drones** for environmental monitoring.
- Collaborated in a **team** of 10 engineering students for a multidisciplinary design.
- Designed a system for **data analysis** of air turbulence and pollution in urban areas.
- Grade: **8.0/10**

## COURSES / CERTIFICATES

### Generative AI with LLMs | Online Course

9/2024 - 10/2024

- Course by **DeepLearning.AI & AWS** ([view certificate](#))
- Gained deep understanding of **generative AI**, transformers and fine-tuning techniques
- Worked with **AWS** to optimize and test 3 pre-trained models.

### Computer Vision Project | MAVLab

3/2022 - 5/2022

- Worked in a team of 10 engineers for a competition to develop an **autonomous drone** in 6 weeks.
- Collected **large image dataset** for training and testing.
- Engineered a **computer vision** algorithm for **obstacle detection**.
- Achieved 4<sup>th</sup> place out of 12 participants.

## OTHER EXPERIENCE

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### Master Student Mentor | [TU Delft](#) | University Job

9/2023 – 12/2023

- Led orientation sessions for 20 graduate students.
- Provided guidance to support them during their master's studies.

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

10/2021 – 5/2022

- Organized the annual networking event for +400 students to get in touch with +50 engineering companies.
- Maintained the [website](#), ensuring functionality and user comfort.

### Event Organizer | [STABILO](#) | Study Association

9/2021 – 9/2022

- Organized social activities and concerts for 150+ master students and 15+ professors.
- Collaborated with 8 engineering companies to organize networking events.
- Leveraged strong **communication** and **public speaking** skills.

## HOBBIES & INTERESTS

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- **Music:** play guitar, bass, and drums; compose and record music; study music theory
- **Concerts:** organize and attend live music events, participate in open-jam sessions.
- **Neuroscience & Psychology:** reading books, self-studying and listening to podcasts.
- **Drone Flying:** passionate about shooting videos and pictures of natural spots.