FRANCESCO BRANCA | Aerospace/ML Engineer

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Francesco Branca | personal website | frabranca

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 - Docker - GitHub - AWS - MS Office

TECHNICAL EXPERIENCE

Teaching Assistant | TU Delft | University Job — 2/2023 – 7/2023

- Worked for 3 different 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 — 9/2021 - 2/2024
Delft University of Technology

BSc Aerospace Engineering — 9/2018 - 7/2021
Delft University of Technology

THESIS

Master Thesis | MAVLab — 5/2023 - 5/2024

- Developed **neural networks** on **PyTorch** for computer vision.
- Trained optimized several **deep learning** models.
- Implemented the network on cutting-edge device to achieve x1000 power reduction.
- Collaborated with external stakeholders at Synsense company.
- View code (grade: **8.5/10**).

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.

KEY COURSES

Generative AI with LLMs | Online Course — 9/2024 - 10/2024

- Course by **DeepLearning.AI & AWS** (view certificate)
- Gained deep understanding of **generative AI**, from data gathering to deployment.
- Studied the **transformer** architecture and fine-tuning techniques for **LLMs**.
- 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^{th} place out of 12 participants.

OTHER EXPERIENCE

Master Student Mentor | TU Delft | University Job **9/2023 – 12/2023**

- Led orientation sessions for 20 graduate students, providing 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

- **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.