FRANCESCO BRANCA | ML Engineer

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Francesco Branca | Francesco Branca | frabranca

LANGUAGES

English - C1 / **Italian** - native / **French** - B2

KNOWLEDGE

Machine Learning - Data Analysis - Generative AI - Operations Optimization

SKILLS

Python - C++ - MATLAB - Java - HTML - CSS - ROS - Linux - CMake - Bash - Docker - GitHub - AWS - MS Office

EDUCATION

MSc Control & Simulation — **9/2021 - 2/2024**
Delft University of Technology

Minor Large-Scale Energy Conversion & Storage — **9/2020 - 2/2021**
Delft University of Technology

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

TECHNICAL EXPERIENCE

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

- Prepared **Python** coding assignments for +300 students.
- Conducted one-on-one sessions with +100 students per day to help them **debug code**
- Explained concepts of **machine learning** and **data analysis** to students.
- Python libraries used: `numpy, scipy, pandas, sklearn, matplotlib, seaborn, pytorch, tensorflow`

Research Intern | DFKI Space Robotics Department | Research Institute — **9/2022 – 2/2023**

- Engineered an experimental setup to analyze contact dynamics for research in **Active Debris Removal**.
- Built a **Python** and **C++** driver (github link) to interact with a robot arm (Franka).
- Worked with **Linux** and **ROS** for real-time hardware control and **data collection**.

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** lifecycle, from data gathering to deployment.
- Studied the **transformer** architecture and fine-tuning techniques for **LLMs**.
- Worked with the **cloud computing** platform **AWS**.

Computer Vision Project | MAVLab — **3/2022 - 5/2022**

- Collaborated with a team of 10 engineers in a competition to develop a drone **autonomous system**.
- Collected **large image dataset** for training and testing.
- Engineered a **computer vision** algorithm for **real-time obstacle detection**.

THESIS

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

- Developed **neural networks** on **PyTorch** for optical flow determination (view thesis, grade: **8.5/10**).
- Trained several **deep learning** models and **optimized hyperparameters**.
- Implemented the network on cutting-edge **hardware** (Synsense), and developed a **software interface**.
- Part of the work is publicly available on github, the rest is in the private TU Delft repository.

Bachelor Thesis | Aeroacoustics Department TU Delft — **5/2021 - 7/2021**

- Preliminary design for a **swarm system** of 100 **drones** for environmental monitoring.
- Designed a system capable of surveying and mapping air turbulence and pollution in urban areas.
- Researched sound propagation and noise isolation methods.

OTHER EXPERIENCE

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 +300 students to get in touch with +50 engineering companies.
- Maintained the website, ensuring functionality and user comfort.

Coordinator of Social Events | STABILO | Study Association **9/2021 – 9/2022**

- Coordinated and led social activities and networking events for 150+ students at TU Delft.
- Leveraged strong communication skills to collaborate with professors, students, and companies.