Francesco Mazzone

Intelligent Systems for Autonomous Decision-Making

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https://github.com/airframa

Education

Degree	Institute	Field of Study	GPA	Year
Bachelor	Politecnico di Milano	Mechanical Engineering	107/100	2016-2019
Master	ETH Zürich	Mechanical Engineering *Concentrations: Controls Systems, Computer Vision*	5.3/6.0	2020-2023
Researcher (non-degree)	The Chinese University of Hong Kong (CUHK)	Computer Science	N/A	2024-2025

Experience

- **The Chinese University of Hong Kong, MMLab - Computer Science** Hong Kong, HKSAR
  Graduate Researcher - Pr. Dr. Hongsheng Li *09.2024 - Current*
  - **Intelligent Systems**: graduate researcher at CUHK Multimedia Lab (MMLab)/Centre for Perceptual and Interactive Intelligence, conducting research in the domain of perception, scene reconstruction and rendering with *Gaussian Splatting* under the direction of Pr. Hongsheng Li.

- **Audi F1 Project (fmr Sauber) - FIA Formula 1 Team** Hinwil, Zürich, Switzerland
  Computer Vision Graduate Engineer *03.2023 - 08.2024*
  - **3D aerodynamic data processing (Master's Thesis)**: performed point cloud registration (FPFH/RANSAC and ICP), segmentation and rasterization on 3D wind tunnel model scans, developed CV algorithms for flow features classification, developed application software with an intuitive frontend integrated with the cloud-based data warehouse
    Master's Thesis report can be found at this link.
  - **Aeroelastic deflections tracking**: implemented monocular 3D vehicle pose estimation and object detection for front/rear-wing deflection tracking using markers on the Formula 1 car.

- **Beyond Gravity AG - Aerospace** Zürich, Switzerland
  Software Engineering Intern *08.2022 - 02.2023*
  - **Aerospace Systems Modeling**: developed a micro-vibration model in python for solar array wings control (SADM Solar Array Drive Mechanism for ESA/NASA projects).

- **Pick8ship Technology AG - Robotics, start-up** Zürich, Switzerland
  Robotics Intern *05.2022 - 08.2022*
  - **Simulation Development**: implemented a simulator in python for a smart warehouse robotic system, achieved 30% system performance improvement.

- **EMPA - Materials Science** Zürich, Switzerland
  Research Assistant - Pr. Dr. Giovanni Terrasi *04.2021 - 04.2022*
  - **Experimental Research**: contributed to the implementation of a Digital Image Correlation algorithm to monitor crack propagation on plane fuselages (Airbus A320 project)

Academic Projects

- **ARIS (Academic Space Initiative Switzerland at ETH Zürich)** Zürich, Switzerland
  Controls Engineer *10.2020 - 10.2021*
  - **Kalman Filter for state estimation**: designed pneumatic stage separation system and controls in C (Kalman filter for state estimation in supersonic flight conditions) for the ARIS rocket.
    Awards: 1st place European Rocketry Challenge, 3rd place Spaceport America Cup

Skills

- **Programming**: C/C++, Python, SQL
- **Frameworks and Tools**: PyTorch, Git, Vim, Docker, Jira, Matlab, 3D CAD software, Blender
- **Languages**: Italian (C2), English (C1), German (C1), Spanish (C1), French (C1), Portuguese (B2), Mandarin Chinese (A2)

Extra-Curricular Activities

- **Interests**: sailing, analog film photography, languages, reading
- **Volunteer Experience**: developed and maintained a simple software tool (2011-2016) for *Fondazione Banco Alimentare Onlus*, a non-profit organisation in Italy, to manage food storage and weekly distribution to those in need for the town of Como, Italy