Lorenzo Dalla Rosa
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EDUCATION

Sant'Anna School of Advanced Studies **Sep 2022 – Exp. Nov 2027**
Master's degree – Aerospace engineering - Analytical and Computational Methods for Engineering *Pisa, Italy*

- Honor's student, five-year full scholarship, **5%** admission rate
- **Relevant Coursework:** CFD & FEM Numerical Methods, Statistical Data Analysis, Rarefied Gas & Cold Plasma Dynamics, Autonomous Flight (ROS2, PX4), Microcontroller Programming in C, Signal Processing
- **Academic Projects:**
  - **Plasma source characterization** *(in progress)*
  - **Air-breathing electric thruster CubeSat concept** for Very Low Earth Orbit missions *(in progress)*
  - **Critical Engine Speed in an Engine Connecting Rod:** analytical and FEA modelling in Ansys Mechanical
  - **Godunov-type Riemann solver implementation** in Python to solve hyperbolic PDEs for compressible CFD
  - **3D transient FEA modelling in ANSYS APDL** to simulate moving Hertzian contact loads, coupled with a Python-based spectral diagnostic index to detect structural failures in **rail joints**

University of Pisa
Master's degree – Aerospace engineering **Sep 2022 – Exp. Nov 2027**

- **GPA 29.8/30**
- **Relevant Coursework:** Experimental Aerodynamics, Flight Mechanics, Gas Dynamics, Control Systems, Aerospace Structures

Bachelor's degree – Aerospace engineering **Sep 2022 – Jul 2025**

- **Grade: 110/110 Summa cum Laude** (Top 1% of class, GPA **29.53/30**)
- **Relevant Coursework:** Fluid Dynamics, Continuum Mechanics, Aerospace Systems, C/C++ Programming
- **Academic Projects:** Conducted Star-CCM+ CFD/CHT simulations of an axial compressor stage and modelled multi-body landing gear dynamics in MATLAB.

Lead The Future Mentee

- Among the few Italian students selected to be mentees for **LeadTheFuture**, a leading mentorship non-profit organization for students in STEM, with acceptance rate below 20%.

EXPERIENCE

Caelus Sant'Anna
Autonomous quadcopter team | *CAD and Additive Manufacturing Engineer* **Jan 2023 – Sep 2023**

- Developed and implemented the design and additive manufacturing of the structural framework for the main sensor array.
- Secured **1st place worldwide** at the IEEE UAV Challenge 2023 (USA)

Fixed-Wing UAV Team | Co-Founder, Aerodynamics Division Manager & Lead Operations **Sep 2023 – Sep 2025**

- **Co-founded** the team to design and build an autonomous fixed-wing UAV from scratch for the **IMechE UAS Challenge** (UK)
- Overviewed Aerodynamic design, systems integration, and autonomous navigation and coordinated design and manufacturing phases to ensure on-time project delivery within tight deadlines
- Designed the wing, fuselage, and A-tail pusher configuration for a new UAV platform.
- Implemented a **parametric simulation framework**, allowing for **fast design iterations** by **automating** geometry changes, mesh generation, and solver configuration. This reduced turnaround time and enabled consistent testing across different design variants.

SkyEye Systems | Remote
BS Thesis Researcher **Apr 2025 – Jun 2025**

- Designed and evaluated rotor aerodynamic performance for a large-scale VTOL UAV as part of a bachelor's thesis collaboration with the Laboratory of Experimental Aerodynamics (UniPi).
- Fully automated the simulation pipeline to generate aerodynamic maps and identify the most efficient configuration.

E-Team Squadra Corse | Formula Student Team
CFD Engineer **Oct 2024 – Sep 2025**

- Contributed to the setup of **cornering simulations** by implementing a rotating circular domain in Star-CCM+, enabling more realistic modelling of airflow
- Independently handled the validation of CFD results against wind tunnel data by **designing** the test model, **conducting** the trials, and performing **statistical signal analysis on time-series sensor data** in Python.
- **Delivered the engineering design** presentation at **Formula Student Germany 2025**

Head of Aerodynamics **Sep 2025 – Sep 2026**

- **Led** a 13-member division to deliver a 13.5% downforce increase, 16% efficiency gain, and 7.3% higher track score.
- Pioneered the team's first **CFD/CHT** battery cooling simulations, lowering steady-state peak temperatures by 15°C. (60°F)
- Optimized simulation mesh to cut standard deviation 10-fold while lowering cell count
- Automated volume meshing and aerodynamic map generation pipelines.
- **Developed a Reduced Order Model** for vehicles dynamics to qualify aerodynamic designs based on predicted track scores
- Developed **experimental validation** via on-track pushrod extensometry and wind tunnel testing
- Led end-to-end composite manufacturing (mould tooling, carbon-fibre layup, curing) to cut package weight by 8%

VOLUNTEERING & ASSOCIATIONS

Alumnus – Accademia Giovani per la Scienza **Aug 2022 – Present**

- Deliver talks and presentations aimed at inspiring high school students to explore careers in STEM, fostering curiosity and encouraging early engagement in these fields.

CERTIFICATIONS, SKILLS & INTERESTS

- **Languages**: Italian (Native), English (C2 Cambridge Certificate in Advanced English), French (Conversational), German (Basic)
- **CAE Software:** Star-CCM+, OpenFoam, ANSYS (Fluent, MAPDL, Mechanical, ACP, Workbench), BetaCAE (ANSA, META)
- **CAD & Composites:** Siemens NX, Fibersim, SolidWorks, Autodesk Fusion 360, 3DExperience CATIA
- **Programming & Scripting:** Python, MATLAB, C, C++, APDL, Star-CCM+ Java Macro Scripting, Git, Bash
- **Technical Skills:** Statistical Data Analysis, Team and Project Management, Computational Fluid Dynamics, FEM, composite materials, structures and layups, advanced additive manufacturing (FDM, SLM)
- **Interests:** Photography, Piano, Guitar, University Choir, Hiking