

MATTEO BARBIERI

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PROFESSIONAL SUMMARY MSc Aeronautical Engineering student at Politecnico di Milano with nearly 2 years of hands-on experience in Formula Student (Dynamis PRC). Specialized in CFD workflow automation, high-fidelity aerodynamic simulations, and mesh optimization. Expert in OpenFOAM, ANSA, and Python scripting for R&D applications.

EXPERIENCE

Dynamis PRC (Formula Student Team) | Milano, Italy

Computational Fluid Dynamics Engineer | Sep 2025 – Present

- **CFD Workflow Automation:** Developed custom **Bash** and **Python** scripts to automate the simulation pipeline and post-processing (e.g., automatic generation of slices/surfaces in **ParaView**), significantly reducing manual data extraction time.
- **Mesh Strategy R&D:** Conducted systematic parametric studies on **snappyHexMesh** settings to optimize layer coverage and reduce non-orthogonality on complex **60M+ cell** full-car models.
- **Solver Optimization:** Tuned numerical schemes and **SIMPLE** algorithm parameters to maximize stability and efficiency on limited computational resources.
- **Codebase Maintenance:** Sole maintainer of the team's internal CFD repository, managing versioning (Git) and case standardization.
- **Cross-Functional Coordination:** Co-defined development strategies with Aerodynamics & Cooling leads, while translating targets into standardized CFD workflows for a **7-person team**.

Aerodynamicist | Apr 2024 – Aug 2025

- **Component Design:** Co-developed the **Rear Wing** and **T-Tray** assemblies, handling the full workflow from airfoil selection to high-fidelity CFD validation using **OpenFOAM**.
- **Performance Impact:** Achieved a net downforce increase of **20 points (CLA)**, contributing over **12%** of the team's total seasonal aerodynamic performance gain.
- **Vehicle Integration:** Collaborated closely with the **Vehicle Dynamics** department to optimize the **aerodynamic balance (CoP)** migration, ensuring predictable handling and maximizing the grip.
- **Advanced Meshing:** Utilized **ANSA** for complex surface handling and mesh generation, ensuring high-quality grids for accurate boundary layer resolution.

EDUCATION

Politecnico di Milano | Milano, Italy **M.Sc. in Aeronautical Engineering** | Expected Sep 2027

Politecnico di Milano | Milano, Italy **B.Sc. in Aerospace Engineering** | Sep 2022 – Sep 2025

TECHNICAL SKILLS

- **CFD & Meshing:** OpenFOAM, ANSA, snappyHexMesh, Star-CCM+ (Basic Knowledge)
- **CAD:** Siemens NX, SolidWorks, Inventor, Solid Edge
- **Post-Processing:** ParaView (Client-Server & Batch mode)
- **Programming & Scripting:** Python (NumPy, Pandas, Matplotlib), C++, MATLAB, Bash/Shell.
- **OS & Tools:** Linux, SSH, VM / WSL, Git, LaTeX, Office.
- **Languages:** Italian (Native), English (Professional Working Proficiency).