

Filippo Maria Cataldo

Curriculum Vitae

+39 331 414 3621
✉ cataldofilippo01@gmail.com
in filippomaria-cataldo

I am a Space Engineering graduate student with experience in modeling, simulation and G&C of space systems. I am always eager to read papers and address new challenges.

Experience

- 2026–now **Graduate Researcher**, *Università di Bologna*, Forlì, Italy
Research on first-order optimization methods for robust guidance analysis and trajectory estimation.
- 2024–2025 **GNC Intern**, *DLR*, Bremen, Germany
Internship aimed at the development of a Master's thesis on rocket landing optimal control. Besides the technical activity related to the thesis (described in the "Education" section), I learned how to work in an international, goal-oriented environment.
- Fields of activity:
- Flight dynamics
 - Optimal control
 - Interior point solvers
 - Performance analyses
- 2023–2024 **Sub-team Leader**, *Skyward Experimental Rocketry*, Milan, Italy
Team leader of the Structural Dynamics sub-team for the student-made rocket "Lyra" that won the 2024 edition of the European Rocketry Challenge. I managed the teamwork and I worked with strict deadlines, while interfacing with other sub-teams as well.
- 2022–2023 **Team Member**, *Skyward Experimental Rocketry*, Milan, Italy
Member of the Structural Dynamics sub-team for the student-made rocket "Gemini".
- Activities:
- MATLAB simulator of rocket dynamics during parachute's deployment
 - Finite Element Analyses
 - Ground Vibration Test

Education

- 2022–2025 **Master of Science in Space Engineering**, *Politecnico di Milano*, Milan, Italy
Final mark: 110 cum laude/110.
Thesis: Koopman-based Modeling for Rocket Landing.
Investigation about the advantages and limitations of Koopman Operator Theory to linearize the dynamics and obtain an efficient solution to the landing optimal control problem.
- Main coursework:
- Spacecraft attitude and dynamics
 - State estimation with batch and Kalman filters
 - Optimal control theory
 - Optimization algorithms
- 2019–2022 **Bachelor of Science in Aerospace Engineering**, *Politecnico di Milano*, Milan, Italy
Final mark: 109/110.

2014–2019 **Scientific High School Diploma**, *Liceo Scientifico Statale G.C. Vanini*, Casarano, Italy
Final mark: 100/100

Publications

Cataldo, F. M., Sagliano, M., Topputo, F., Furfaro, R., "Koopman-based Modeling for Rocket Landing Guidance Applications," Scitech 2026 Forum, AIAA, 2026, pp. 1–25.

Peer reviews

Since 2025 Reviewer for AIAA's "Journal of Guidance, Control, and Dynamics".

Since 2026 Reviewer for IEEE's "Transactions on Aerospace and Electronic Systems".

Competence

Languages

Italian: mother tongue.

English: professional level (B2 certification).

German: basic level.

Computer skills

Programming languages: MATLAB, Simulink, Python, C.

Software and tools: GPOPS-II, Git, Latex.

Operating systems: Windows, GNU/Linux-based.

Softskills

Team leadership.

Teamwork management.

Prepare project progress meetings.

Work in multicultural environments.

Awards

2024 EuRoC Award at the European Rocketry Challenge competition with the university team Skyward Experimental Rocketry.

2024 H3 Flight Award at the European Rocketry Challenge competition with the university team Skyward Experimental Rocketry.

2021 Migliori Matricole Fondo Giovani from Politecnico di Milano.

Extra-curricular activities

Lead guitarist in amateur rock band "The Cisti Fellas".

Student representative in Faculty Council at Politecnico di Milano.

Interests

Guitars, vinyl records, DIY electronics, computer games, books.