Antonio Rizza

Postdoctoral Researcher

arizza@stanford.edu

Personal Website

antoniorizza95

Google Scholar

Languages

Italian, English, Spanish, French

Expertise

Spacecraft GNC

Astrodynamics and Formation Flying

Modeling and Simulation of Space Systems

Dynamical Systems Theory

Optimal Control Theory

Non-linear State Estimation

Computer Skills

MATLAB/Simulink

C++, Python (VSCode)

NASA tools (SPICE, GMAT)

CAD tools (SolidWorks, Solid Edge, Inventor)

Headline

I am a Spacecraft Guidance Navigation and Control (GNC) Engineer with experience in modeling, simulation and testing of dynamical Space Systems, spacecraft autonomy, precise formation flying and astrodynamics. I had leading GNC roles for Low Earth Orbit (LEO) and deep-space missions sponsored by national agencies. At Stanford, I am currently focused on enabling GNC solutions for the next generation of distributed space systems. I have been GNC Engineer for the Milani, LUMIO, and STARI mission.

Research Experience

01/2025 - ongoing **Postdoctoral Scholar** Stanford University - SLAB team

Enabling safe, robust and high precision GNC solutions for the next generation of distributed space systems. Lead GNC engineer for the STARI mission.

11/2024 - 12/2024 **Research Fellow (Senior)** Politecnico di Milano - DART team

Developing guidance and control solution for proximity opeartions around small bodies. Supporting the development of a robotic facility for validation and verification of GNC algorithm.

01/2023 - 12/2023 **Visiting Research Scholar** Stanford University - SLAB team

Goal-oriented trajectory optimization about asteroids using sequential convex programming. Hardware in the loop validation of Active SLAM approaches using the robotic testbed for rendezvous and optical navigation at SLAB.

11/2021 - 11/2024 **PhD (*cum laude*), Aerospace Eng.** Politecnico di Milano - DART team

Goal-oriented guidance under uncertainties for small bodies exploration. GNC engineer for the Milani and LUMIO missions.

11/2020 - 10/2021 **Research Fellow** *Politecnico di Milano - DART team*

Development of high-fidelity six-degrees-of-freedom simulator for autonomous deep-space missions.

Education

09/2017 - 06/2020 M.Sc. *cum laude* in Space Engineering *Politecnico di Milano*

10/2014 - 09/2017 Bachelor's in Aerospace Engineering *Politecnico di Milano*

Research projects and Missions

01/2026-ongoing **Flight Demonstration of Autonomous Navigation in GEO**

Collaboration with Blue Origin to demonstrate in GEO for the first time autonomous navigation capabilities based on angles only navigation and CNN-based relative pose estimation to known targets.

01/2025-ongoing **FALCON - Research Co-lead**

Fast Autonomous Lost-in-space Catalog-based Optical Navigation (FALCON) is a new alternative space-based Positioning, Navigation and Timing (PNT) system for responsive Space Situational Awareness (SSA) of on-orbit assets.

01/2025-ongoing **STARI - Orbit and GNC Engineer - Phase A to E**

The STarlight Acquisition and Reflection toward Interferometry (STARI) mission is a technology demonstration designed to advance key technologies for future space-based interferometry. The mission makes use of two 8U CubeSats flying in close formation, effectively simulating one arm of a space interferometer.

09/2022-12/2024 **LUMIO - AOCS Engineer - Phase B**

The Lunar Meteoroid Impact Observer (LUMIO) is a CubeSat mission to a quasi-halo orbit at the Earth-Moon L2 Lagrangian point designed to complement ground based observations and characterize the lunar meteoroid environment.

11/2020-06/2022 **Milani - GNC Engineer - Phase A to D**

The (Milani) CubeSat is part of ESA's Hera mission, the European contribution to the ESA-NASA collaboration AIDA (Asteroid Impact & Deflection Assessment) around the binary asteroid 65803 Didymos.