Giovanna Girotto

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Education

Technical University of Munich (TUM) **Oct 2023 – Present**
Master of Science in Mechanical Engineering *Munich, Germany*

- Specialization in Aerospace Engineering and Multidisciplinary Design Optimization
- **Semester Thesis**: Feature Point Extraction, Matching and Tracking for Optical Navigation in Space. (Grade: 1,3)

University of São Paulo (USP) **Feb 2020 – Dec 2026**
Engineer's degree in Mechanical Engineering *São Paulo, Brazil*

- Rating and Grade: 1° of 86 and 9.0/10

Experience

Satellite Development Working Student, *Ororatech GmbH* **Feb 2024 – Present**

- Designing mechanical parts using SolidWorks for a 16U CubeSat.
- Designing and conducting mechanical tests for validation, with a focus on solar array systems.
- Spring optimization for solar panel deployment simulation in Python.

Cofounder and Mission Lead, *Polisat* **Jan 2021 – Dec 2022**

- Founded the first university nanosatellite group and led mission and constellation design.
- Secured 1st place at the Latin America Space Challenge (LASC).

Tutor, *University of São Paulo* **Aug 2021 – Jul 2023**

- Lectures: Mechanics I and Mechanics II
  - Conducted exercise lectures in body kinematics and dynamics.
- Lectures: Solid Mechanics I and Solid Mechanics II
  - Conducted exercise lectures in stress-strain analysis, internal forces, and deformation in solid bodies.

President and Member, *PET Mecânica* **Oct 2020 – Jun 2023**

- Group financed by the Brazilian Government that focuses on the development of social and engineering projects.
- Led interdisciplinary engineering projects, including CubeSat development and biodigester construction.
- Managed 18 members and oversaw 8 projects as president in 2022.

Projeto Jupiter **Feb 2020 – Dez 2020**
Aerodynamics and Structures Member

- Designed parts for the university rocketry group.

Projects

Co-design of Flexible Robotic Systems as a Bi-level Optimisation Problem **Research Internship**

- Applied interdisciplinary optimization to flexible robotic systems for optimal control and morphology.

Feature Point Extraction-, Matching and Tracking for Optical Navigation in Space **Semester Thesis**

- Developed an open-source simulation framework that integrates Blender and Python to render realistic videos of formation-flying CubeSats. The framework enables customizable scenarios with varying lighting and orbital conditions. Generated datasets were used to benchmark and compare the performance of computer vision algorithms under diverse noise models, including Gaussian and Salt-and-Pepper.

Relevant Coursework

- Orbit and Flight Mechanics
- Advanced Control
- On Orbit Robotics and Dynamics
- Aerospace Structures
- Satellite Navigation
- Model Based System Engineering
- Multidisciplinary Design Optimization
- Aerospace Structure Optimization
- Physics-Informed Machine Lerning
- Fundamentals of Artificial Intelligence
- Lab: Numerical Optimization for Robot Design

Technical Skills

Languages: Python, MATLAB, Simulink
Tools: SolidWorks, CATIA V5, Ansys, HyperMesh, NASTRAN
Languages: Portuguese (Native), English (Fluent), German (B2)

Honors and Awards

- Recipient of the AUCANI merit scholarship.
- Bronze Medalist at the International Olympiad in Astronomy and Astrophysics (IOAA), 2019
- Recipient of 18 medals in national scientific olympiads (physics, math, astronomy)