

Vittor Braide Costa

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Education

Technical University of Munich (TUM)

10/2023 – Present

Master of Science in Mechanical Engineering

- Double Degree Program with AUCANI merit scholarship
- Semester Thesis: Evaluation of Quadratic Programming Solvers for Control Allocation. Grade: 1,3

Polytechnic School of the University of São Paulo (POLI - USP)

02/2020 - Present

Engineer's degree in Mechanical Engineering

- Rating and Grade on 25/10/2023: 6° of 86 and 8,6/10.
- Projects:
 - PET Mecânica: *President, Head of Marketing and Scholarship Member*
 - Group financed by the Brazilian Government that focuses on the development of social and engineering projects.
 - Responsible for managing the group, supervising 5 active projects, 18 members, and funding.
 - Scholarship member since joining. Advisor: Prof. Dr. Edilson Hiroshi Tamai.

PoliSat: Cofounder and ADCS Leader

The first nanosatellite engineering team in USP. It currently has more than 20 members.

- Leader of the Attitude Determination and Control (ADCS) Subsystem.

Federal Center for Technological Education of Minas Gerais (CEFET-MG)

01/2017 - 12/2019

Technical high school degree with an integrated course in mechanics.

Experience

Future Projects Intern, Airbus Defence and Space

Aug 2025 – Present

- Preparing to write a master's thesis with the company on Flight Guidance and Reinforcement Learning.

Teacher Assistant, Technical University of Munich

Mar 2025 – Jul 2025

- Module: Physics-Informed Machine Learning
- Provided assistance in Regression (Frequentist, Bayesian, Lasso), Classification, Deep Learning, and Generative Models (Autoencoders, Diffusion). Supported students with coding exercises.
- Lab: Hands-on Deep Learning
- Helped students with exercises on CNNs, RNNs, Dimensionality Reduction techniques, and GANs.

Flight Control and Avionics Working Student, ERC System

Feb 2025 – Jul 2025

- Matlab toolbox to visualize controller signals from simulation flight data
- Developed a Controllability Toolbox to support aircraft design with control allocation insights.
- Developed workflow to compare candidates and inject failures to evaluate the impact in the Attainable Moment Set.
- Implemented candidate control effectiveness matrix
- Set up an optimization tool to refine actuator positions and orientations.
- Flight Control Systems Verification to enable full-mass prototype first flight.
- Automatic Criteria check and Events detection
- Features to enhance visualization of test data

Flight Control Laws Working Student, Lilium

Nov 2024 – Jan 2025

- Enhanced Linear Design Tools to improve robustness and modularity
- Minimized user errors and enabled evaluation across multiple aircraft configurations.
- Nonlinear vs. Linear Comparison for ensuring Safety of Flight
- Encountered and fixed mismatches.
- Jenkins CI to track changes in the Simulink Flight Control Systems (FCS) model.

Flight Control Laws Intern, Lilium

Feb 2024 – Jul 2024

- Change in the linear design pipeline when tuning gains.
- Implemented the use of tunable Matlab features to build closed-loop linear models 5x times faster.
- Implemented new features to the pipeline to allow user flexibility when choosing closed-loop components.
- Matlab tool to run Simulink models simulations.
- Improved the testing routine, reducing the release campaign runtime from several days to a few hours.

- Implementation of new features (e.g. baseline comparison).
- Robustness improvement to address different Simulink models.
- Support in the development of flight envelopes using trim data.
- Nonlinear simulations automatic criteria evaluation.
- Lateral-directional and longitudinal-vertical control responses, loads and rates thresholds violations, and flap command and flap deflection conformity.
- Simulink models compliance with software standards verification.

Teacher Assistant, *University of São Paulo*

Apr 2021 – Jul 2023

- Module: Mechanics I
- Provided academic support in body kinematics and dynamics. Advisor: Prof. Dr. Flavius Portella Ribas Martins.
- Module: Thermodynamics I
- Provided academic support in thermodynamics laws and cycles. Advisor: Prof. Dr. Guenther Carlos Krieger Filho.
- Module: Graphic Representation for Project
- Provided support in the use of CAD software. Advisor: Prof. Dr. João Roberto Diego Petreche.

Skills

Programming Matlab Simulink, Python, C, HTML, ~~W~~TeX, Wolfram Mathematica, R.

Softwares ANSYS, SolidWorks, AutoCAD, NX10, Fusion 360.

Languages Portuguese (Native), English (Fluent), German (B2).