Federico Baldan

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EDUCATION

University of Washington (UW) *Seattle, WA | Sept. 2024 - Present*
Master's in Astronautics and Aeronautics Engineering - Minor Computer Science
- **GPA:** 3.94 / 4.0 (top 3% of the class).
- **Relevant Coursework:** Deep Learning, Robust Control, Interactive Learning, Convex Optimization, Linear and Nonlinear Multivariable Control, AI for Robotics, Statistical Graph Theory, Advanced ML, RLHF.

Polytechnic University of Turin *Turin, IT | Sep. 2021 – Jul. 2024*
Bachelor's in Aerospace Engineering - Minor in Mechanical Engineering
- **GPA:** 107 / 110 (top 2% of the class).
- **Thesis:** Preliminary design and sizing of liquid propulsion engines for interplanetary space missions.

WORK EXPERIENCE

Technion University - Research Internship *(Prof. Daniella Raveh)* *Haifa, IL| Jun. 2025 – Sep.2025*
- *Simulations*: Response of 6-DOF highly flexible wings under nonlinear deformations using panels methods
- *Reduced Order Models*: Balanced truncation for aeroelastic state-space system reduction, validated with UVLM and VLM in the discrete-time domain.

Boeing & UW Graduate Research Assistant - *JCATI* *Seattle, WA | Nov. 2024 – Jun. 2025*
- *Aeroacoustic Design:* Prototyped 3D-printed variable-length Helmholtz resonators under Boeing's frequency specification, integrated into a custom wind tunnel plate with electronic force balance control.
- *CFD and PIV*: COMSOL simulations of resonators-flow interaction to assess frequency coupling; wind tunnel 2D PIV flow visualization with flush-mounted microphones for acoustic spectrum analysis.

TAMID GROUP UW - *Director of Tech Consulting* *Seattle, WA | Feb. 2025 – Present*
- Leading Tech Consulting Team (10 students).
- **BeamBell (AI Engineer):** Optimizing conversational AI with voice processing and low-latency noise isolation for receptionist assistants, with emotional voice adaptation.

RESEARCH PROJECTS

Plan-Point-Act: o3-Molmo Powered Web Agent | Allen Institute for Ai *Mar. 2025 – Jun. 2025*
- *Deep Learning:* Leveraged AI2's Molmo model for spatial visual grounding and element localization, enabling natural-language driven autonomous web interaction.
- *Deployment:* Agent's Chrome extension integration and evaluation with the AI2 team.

Adaptive LQR Control through Bandit Gain Exploration | UW *Mar. 2025 – Jun. 2025*
Interactive Learning: Adaptive LQR control under uncertainty using multiple multi-armed bandit approaches with diverse exploration–exploitation strategies for online gain tuning in linear dynamic systems.

Origami Array Unfolding Optimal Control for Solar Wings | UW *Mar. 2025 – Jun. 2025*
- *Optimal Unfolding:* Miura-ori inspired solar array unfolding for CubeSats.
- *Attitude control:* LMI and SCVX-based control for nonlinear dynamics, leveraging solar panels as control surfaces in VLEO to enforce keep-out zone constraints with differential drag.

Controls Implementation for Flutter Analysis | UW *Sep. 2024 – Dec. 2024*
Aeroelasticity: Flutter identification coupled with the design of an LQR control system for robust stabilization.

HONORS

- **JCATI and BOEING Research Grant:** *$90,000 group grant* supporting research on Helmholtz resonators for aircraft noise reduction, with 3D PIV wind tunnel testing for advanced flow visualization.
- **Excellence Scholarship**: Full Bachelor's tuition coverage in recognition of top performance.
- **INTRAPRENDENTI Honors Program:** Bachelor's honors track for students ranking in the *top 5%*.

SKILLS, ACTIVITIES & INTERESTS

Languages: English(fluent), Italian(native), Spanish(advanced), Hebrew(basic).
Technical Skills: Matlab, Simulink, Python, C++, Java, Ansys, Solidworks, AutoCAD, Excel, Office.
Interests: Marathoner, Biblical Studies, AI, History & Geopolitics.