OMAR LEMKECHER

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SUMMARY

- Bachelor of Science in Aerospace Engineering at the University of California, Los Angeles (UCLA)
- Expected Graduation: 2028
- GPA : 4.0

Aerospace Engineering student at UCLA with experience leading propulsion and spacecraft systems projects. Through developing a hybrid rocket feed system and contributing to CubeSat ADCS design, I've gained hands-on experience in pressure vessel design, structural analysis, control modeling, and test campaigns. I enjoy turning analysis into hardware, from FEA validation to improving designs through hydrostatic testing, cold-flow, and static fire campaigns.

SKILLS

- **Propulsion & Fluids :** Hybrid rocket feed systems, N_2O thermodynamics, discharge coefficient (Cd) modeling, ullage optimization, pressure vessel design, CFD Basics
- **Structures & Mechanical Analysis :** FEA (ANSYS, SolidWorks), Stresses Analysis (Brackets, Endcaps, Bolt Analysis)
- **Software & Tools :** Python, Competitive C++, SolidWorks, Fusion360, Onshape, ANSYS
- **Machining & Prototyping :** CNC machining, CAM, 3D printing, hydrostatic testing, instrumentation integration
- **Languages**: English, French, Arabic

EXPERIENCES

Hybrid Propulsion Feed Systems Lead - Rocket Project at UCLA **2025-Present**

- Lead engineer for a 586 lbf N_2O/HTPB hybrid rocket feed system targeting a club record 20,000 ft apogee
- Designed full oxidizer feed system (750 psi MEOP), including plumbing, fittings interfaces, valve selection, and pressure relief strategy
- Performing discharge coefficient calculations and flow modeling to characterize pressure losses and transient behavior
- Designed and FEA validated lightweight oxidizer tank endcaps and brackets under internal pressure and bolt preload, currently machined
- Conducted analysis on bolt bearing stresses and bracket bending to meet required margin of safeties
- Overseeing hydrostatic proof testing and structural qualifications of the pressure vessel
- Led coldflow and static fire integration campaigns
- Optimizing tank ullage volume through test-data-driven iteration to maximize delivered impulse and combustion stability

ADCS Lead - BruinSpace **2025- Present**

- Leading the design and development of the Attitude Determination and Control System (ADCS) for the team's satellite project
- Developing and assembling the ADCS test setup to validate sensors, actuators, and control algorithms
- Coordinating subsystem integration between ADCS, electronics , and structures teams

Lead Programmer and President - Horizon Astronomy Club **March 2023 - June 2025**

- Won international competitions (see achievements)
- Promoted Astronomy through courses and workshops
- Received experts for colloquiums

ACHIEVEMENTS

66th Parabolic Flight Campaign of the French National Space Studies Center (CNES) **2023**

Context : Based on the experiments prepared for a year, we were selected to experiment them on a Zero G flight. The experiments spanned a wide range of aspects such as thermodynamics, centrifugal forces or testing Newton's Laws. Our win allowed us to fly to their HQs in Bordeaux (France) and send two of our students in a plane to experiment with weightlessness

Young Searchers Prize, Project X **2023 & 2024 & 2025**

Context : Engineering Competition following a specific theme

- 2023 : Won with Space Probe
- 2024 : Won with Zero G experiences
- 2025 : Selected to present the awards in the closing ceremony

National Informatics Olympiads **2023**

- Participated to the selections for 2023 IOI
- Ranked 18th in Tunisia