

Victoria Rojas

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EDUCATION

The University of Southern California, Viterbi School of Engineering

Los Angeles, CA

Bachelor of Science in Mechanical Engineering

Expected May 2028

- Relevant Coursework: Thermodynamics, Modeling and Analysis of Dynamic Systems, Mechanics of Materials, Mechatronics

SKILLS

Mechanical Design & Analysis: Siemens NX (Unigraphics), SolidWorks, Onshape, Creo, ANSYS, SolidWorks Simulation; FEA (structural, thermal, fatigue); GD&T, tolerance stack-up, DFM/DFA, force/kinematic analysis

Test, Instrumentation & Validation: Python DAQ, load-cell/force instrumentation, motion control (Zaber, Arduino), oscilloscope, multimeter, logic analyzer, calibration and repeatability studies, noise-floor and vibration characterization, root cause debugging, automated self-tests

Fabrication & Manufacturing: MIG/TIG welding, CNC, waterjet, lathe, drill press, laser cutter, carbon fiber layup, resin infusion, 3D printing

Semiconductor & Cleanroom: Class 1000 (ISO 7) cleanroom protocols and gowning, HF-certified wet bench, lithography, plasma etch, PECVD, sputtering, e-beam evaporator, Ni electroplating, dicing, Dektak/Filmetrics metrology, vacuum chuck design

Programming & Languages: Python, MATLAB, Arduino IDE, KiCad (PCB design/fabrication); English, Spanish (Native)

CERTIFICATIONS

IEEE Microcredentials, USC Nanofabrication: Lithography, Deposition, Etching, Metrology, Cleanroom Safety & Protocols

EXPERIENCE

Packard Research Group (DOE / DoD / USAF Supported)

Los Angeles, CA

Mechanical Engineer Intern

December 2025 – Present

- Built a precision wafer-spalling system for 2", 4", and 6" wafers to $\sigma = 2.1 \mu\text{m}$ touch-off repeatability (n=6), by force/kinematic analysis of a hinge-based lid at 67% actuator margin, machining, assembly, and Python motion/DAQ control.
- Recovered a valid measurement at 1.4 mN rms and 93.9 Hz with 0 dropped samples, after finding the load cell bolted through its body bypassing its own sensing beam and flattening every run on record by machining a clevis-pin replacement that put the cell in series with the load path.
- Identified the vacuum pump as 6.2x noise-floor increase that cut touch-off margin from 13.7σ to 2.2σ , by tracing a 29.1 Hz spectral tone to motor speed (~ 1750 rpm).
- Redirected the group's plating spec from 1.5 to 15–30 μm of Ni, unblocking every planned spall experiment, by pairing profilometry with a fracture-energy criterion showing the film supplied 0.8–1.4 of the 2–4 J/m² Si needs.

USC John O'Brien Nanofabrication Laboratory

Los Angeles, CA

Cleanroom Gateway Research Intern

May 2026 – Present

- Qualified to independently run the Class 1000 (ISO 7) toolset and calibrated SiO₂ etch/deposition to ~ 30 nm/min against Dektak/Filmetrics, by running full flows from lithography and plasma etch to PECVD, sputtering, and e-beam.
- Developed a Ti/Ni seed-layer process that held adhesion through 1.4–1.6 μm of high-stress Ni plating on silicon, reducing failure mode filmed wafers by 75% via an HF oxide strip, a sputtered Ti adhesion layer, and CHA e-beam Ni.

RoboLAND Lab, USC (NASA Planetary Robotics Project)

Los Angeles, CA

Undergraduate Research Intern

August 2025 – January 2026

- Designed, sourced, and built a 2D X–Y gantry testbed with 213×213 mm travel for NASA LASSIE quadruped mobility research, by CADing a reconfigurable extrusion frame and specifying or 3D-printing ~ 55 motion components.
- Cut manual hand-positioning out of the test loop with a single-command sequence indexing a 3×3 grid at 63.5 mm pitch to 55 mm penetration depth, characterizing stick-slip on Mars regolith simulant; still in lab use.

USC Recumbent Vehicle Design Team

Los Angeles, CA

Vice President & Drivetrain Lead (2025-26); Mechanical & Electrical Systems Engineer (2024-25)

January 2025 – Present

- Led drivetrain design to 1st Place in Design and 2nd Place Overall at ASME eHPVC nationals, by CADing aluminum idlers, running FEA on key load cases, and manufacturing via machining, MIG/TIG, and composites.
- Coordinated 20 engineers across drivetrain, mechanical, and electrical subsystems to national competition delivery, and designed the vehicle's telemetry PCB in KiCad.

AWARDS

- ASME eHPVC EFx Dallas: **1st Place** in Design (2025, 2026); **2nd Place** Overall (2026); Best Innovation Award (2025)
- Selected **1 of 37** for **Jane Street INSIGHT** — Strategy & Product, New York, NY (2026)
- Selected for USC Viterbi's Japan Engineering Program — \$4,000 scholarship (2024–2025)
- **3rd Place** — Anthropic Claude Builder Hackathon, UCLA (2026): cross-disciplinary team building AI accessibility agent for iOS