Richard Liu

Metallurgical/Mechanical Engineer
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EDUCATION

M.Eng. Mechanical Engineering, University of California, Berkeley **Expected 05/2027**
- Concentration: Modeling and Simulation
- Relevant Coursework: Tribology, Failure Mechanics

B.S. Materials Science and Engineering, University of California, Los Angeles (UCLA) **09/2022 - 06/2026**
- GPA: 3.98 - Summa Cum Laude
- Concentration: Electronic Materials, Mechanical Engineering, Metallurgy
- Senior Thesis: Evaluating AA7005 as a replacement for AISI 4130 in a suspension linkage; performing materials Design of Experiment (DoE) validation/qualification, developing Post-Weld Heat Treatment (PWHT) instructions, correlating microstructure with retained strength

SKILLS

- Design/CAD: SOLIDWORKS, FEA, DFM/DFA, Engineering Drawings
- Testing/Materials: Instron (mechanical testing), XRD, XRF, SEM, Pyrometry, TTT, Phase Diagram, PWHT Design, Aging Techniques, Metallography
- Automotive: Vehicle Dynamics, Braking Systems, Ergonomics
- Processes/Standards: Welding (AWS D1.1/1.2 TIG/MIG), NADCAP, AMS 2750-H, ASTM, ISO 9001
- Analysis/Tools: MATLAB, Excel, statistical DoE, Root Cause Analysis/Corrective Action, Failure Analysis
- Managerial: Team organization, FMEA, Project Management, Integration, Cross-functionality, Budgeting, Supplier/Vendor Negotiation, Management of Change, Operator Supervision

EXPERIENCE

MOOG Manufacturing/Industrial Engineering Intern, Torrance, CA **06/2025 - 12/2025**
- Investigated overages in plating production times, reducing standardized cycle times to save ~4,000 hours/year
- Performed root cause analysis on NADCAP nonconformances, designed/fabricated furnace apparatuses with pyrometry team to pass AMS 2750-H temperature uniformity survey requirements
- Analyzed three years of thermocouple data for 15 furnaces, identified systematic temperature deviations and defined corrective actions (adjusting working zone, furnace reclassification)
- Repaired welding equipment and coordinated shop recertification with EH&S; restored shop to operation and designated as primary on-site welder
- Applied GD&T callouts on clamp fixtures, reducing final-assembly flatness deviation from 0.014” to 0.002”
- Partnered with operators on production-side CI tooling improvements, eliminating 2 hours of rework per part
- Designed tensile/shear validation tests for adhesive joints, preventing ~$500/part in scrap cost and validating production-ready bonding procedures
- Developed pre/post weld heat treatment procedures for dissimilar metal joints (steel-Inconel, stainless-cast iron), improving tooling joint integrity and reliable fabrication

Suspension Lead, Driver Interface Lead, UCLA Baja SAE, Los Angeles, CA **05/2024 – 06/2026**
- Redesigned shock mounting location, reducing net front linkage mass by 20% while maintaining required strength and fatigue life
- Optimized cutouts across subteam, reducing unsprung mass by 2 pounds and improving manufacturability
- Designed fixtures validating bolt diameter reduction via Instron, improving packaging and increasing maximum steer angle from 32° to 39° for improved maneuverability
- Built an ergonomics jig and refined LiDAR driver modeling, reducing excess driver clearance from 4” to 1”, cutting frame weight by 8%
- Diagnosed brake rotor failure using SEM and recommended material selection and cutout design, eliminating fatigue failures on most recent model
- Conducted XRD/XRF scans to characterize and identify steel stock, reducing material costs

PPG Aerospace Intern, Sylmar, CA **06/2024 – 09/2024**
- Facilitated tier meetings with technicians/operators
- Executed mechanical tests per customer protocols, managed documentation
- Installed and configured test rigs for thermal cyclic testing on Bell 525 windshields