

Alex Lu

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<https://www.chickenman.studio/portfolio/private-portfolio>

EDUCATION

University of California, Berkeley

B.S. Mechanical Engineering

Jun 2028

Berkeley, CA

EXPERIENCE

SC ROBOTICS

Sep 2025 - Present

Mechanical Lead

- Led a 10-member mechanical team developing a Mars rover prototype for the University Rover Challenge, building on the team's 18th-place global finish at URC 2025.
- Oversaw drivetrain, manipulation, and overall sub-systems architecture, and coordinated integration with electrical and software teams; validated structural requirements through SolidWorks FEA using wheel-hub and subsystem loading cases.
- Redesigned the arm/wrist system to reduce mass by ~5 kg off a 17 kg assembly, lower joint torque requirements, and maintain payload capability above the 5 kg competition recommendation.
- Implemented a modular electronics belly pan with dust-sealed enclosures, integrated the metal base as a heatsink, and added active cooling to improve serviceability and address thermal risk during field testing.
- Developed onboarding courses covering SolidWorks, AutoCAD, and subtractive manufacturing; integrated training with GANTT-chart schedules to accelerate team development.

PARAMOUNT KEEB

Aug 2022 - Aug 2025

Product Engineer

- Launched the Ciel/Ciel65 keyboard series from concept to production, delivering 2,000+ units and \$300K+ revenue, plus private CAD commissions.
- Released manufacturing-ready 3D CAD packages in SolidWorks (assemblies, engineering drawings, GD&T per ASME Y14.100) to hold ± 0.05 mm on critical fits and ensure repeatable builds across suppliers.
- Executed multi-supplier production across 5 major runs: owned RFQs, supplier qualification, DFM, and QC; coordinated ~20 manufacturers via Microsoft Project with assurance on anodizing and coating standards.
- Managed qualification testing and control of surface finishes, including anodizing and coatings on aluminum, brass, and polycarbonate, using statistical process control to reduce finish defects by 15% and ensure compliance with supplier specifications.

FIRST ROBOTICS TEAM 6560

Sep 2022 - May 2024

Mechanical Member

- Designed and manufactured the robot drivebase architecture and bellypan in SolidWorks, improving systems integration and enabling autonomous navigation through integrated Limelight camera mounts.
- Developed an extending arm and 4-bar linkage mechanism to intake balls and place cylindrical disks; validated impact resistance with FEA.

PROJECTS

Mars Rover Arm / Manipulator Subsystem

- Developed a compact differential wrist combining roll and pitch in nearly the same space using curved bevel gears with embedded pulleys, enabling dense packaging around the forearm and end-effector interface.
- Introduced a wrist differential and linear-rail mechanism within ~5 days to address judge feedback, improving usable range by ~5° under competition submission deadlines.
- Designed belt-driven forearm and bicep assemblies using COTS tubing, mirrored motor packaging, hardstops, and compact transmission paths to balance stiffness, clearance, and manufacturability.
- Built a linear gantry base around COTS rails, 4 carriages, and a ball-screw drive to provide high-efficiency positioning and resistance to back-driving for rover manipulation tasks.

Ciel/Ciel65 Keyboard Product Engineering

- Engineered the Ciel series as a lower-cost custom keyboard platform by replacing the typical two-piece aluminum sandwich case with a single machined main body and fewer secondary parts, reducing part count and simplifying machining.
- Chose an o-ring mount architecture to enable one-piece case construction, simplify assembly, eliminate screw-based mounting, and improve typing feel.
- Reduced streaking- and scratch-related anodizing defects by ~20% through finish testing and process iteration across ~4 production runs.
- Created manufacturing-ready SolidWorks CAD and drawings for 1.5K+ units, supporting repeatable production across ~4 suppliers and ~10 vendors while maintaining universal hardware, stabilizer support, and optional daughterboard/PCB compatibility.

SKILLS

- **Design & Simulation:** SolidWorks, Creo, Fusion 360, AutoCAD, ANSYS, SolidWorks FEA, GD&T
- **Programming & Software:** Python, C++, MATLAB, Git
- **Manufacturing:** CNC Machining, 3D Printing, Composite Layups, Quality Control
- **Additional Interests:** F1, Filmmaking, Cinema Len & Optics Design, Analog Photography
- **Eagle Scout, Troop 675:** Dec 2022

CERTIFICATIONS

- SOLIDWORKS Design Associate (CSWA), Dec 2025