

Charlie Hill

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Loyola Marymount University (LMU)

BS, Mechanical Engineering (Dean's List: Fall 2024 – Fall 2025)

Los Angeles, CA

Expected May 2026

ENGINEERING EXPERIENCE

TDA Magnetics

Manufacturing Engineering Intern

Rancho Dominguez, CA

May 2025 - August 2025

- Led work instruction development for flagship part generating 25% of company revenue over 5 years
- Designed thermal sleeving fixture in SolidWorks, eliminating \$10K/batch rework and reducing insertion failures.
- Transitioned grinding from Blanchard to double disc methodology, improving finish and reducing cycle time.
- Implemented AQL sampling protocols, reducing QC inspection time by 40% while maintaining defect detection.
- Optimized Chevalier block slicing process through workflow analysis, reducing setup by 5 min.

Mechanical Engineering Intern

July 2024 - August 2024

- Automated SolidWorks fixture design using macros and design tables, reducing creation from 15 min to 10 sec.
- Resolved month-long halt affecting 15% of orders by redesigning fixtures using TPU, restoring full production.
- Implemented 5S and FIFO methodology for fixture storage, reducing retrieval time from 3 min to 10 sec.
- Presented weekly design improvements to the engineering team, leading optimization discussions.

DOSE

Engineering Design Lead

Los Angeles, CA

September 2024 - December 2024

- Designed and prototyped nicotine vaporizer harm-reduction device with usage lockout feature.
- Delivered working prototype in 4 weeks, integrating SolidWorks and electronics.
- Won TechStars Weekend & BEST Bootcamp, showcased at LMU Business Incubator.

RESEARCH & PROJECT EXPERIENCE

Loyola Marymount University

Project & Electronics Lead | NFPA Fluid Power Vehicle Challenge

Los Angeles, CA

September 2025 - Present

- Directed mechanical, hydraulic, and electrical sub-teams to design and build a fluid-powered vehicle.
- Designed the control system (Arduino/C++) to automate 24V hydraulic valves and acquire real-time sensor data.

Rains Research Fellow with Dr. Rafiqul Noorani & Xiaodong Sun

January 2024 - Present

- Optimized copper/316L stainless steel FFF printing; increased part density through DOE parameter tuning.
- Designed scaffolding and made kiln refinements to reduce debinding and sintering defects.
- Published at ICPER 2025, "Optimizing the Surface Roughness of Additive Manufacturing Samples Using DOE."

Mountain Bike Front Suspension Simulation

July 2025 - Present

- Built MATLAB numerical solver using Euler's method to simulate 2nd-order ODE quarter-car dynamics.
- Validated model accuracy by correlating displacement and velocity outputs against SolidWorks Motion data.

G-code Modifier Tool

July 2025 - Present

- Engineered Python CLI tool using argparse to automate precise G-code edits for temperature and filament swaps.
- Scripted string parsing logic to index layers, reducing manual file prep time by 90%.

TECHNICAL SKILLS

CAD & Design: SolidWorks, OnShape, GD&T, Reverse Engineering (Scan-to-CAD), Design for Manufacturing

Manufacturing: 3D Printing/FFF, Laser Cutting, EDM, CNC, Mill, Materials Testing, Process Optimization

Analysis & Programming: FEA, MATLAB, Design of Experiments, Python, C++, Data Analysis

Hardware & Tools: Arduino, Raspberry Pi, Microsoft Office, NI Multisim