NATHAN CHUN

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EDUCATION

University of Southern California, Viterbi School of Engineering — Los Angeles, CA
Mechanical Engineering, Bachelor of Science — August 2022- December 2025
Minor: AI Applications
Relevant Coursework: Dynamic Systems, Thermodynamics, Strength of Materials, Statics, Dynamics, Materials Behavior & Processing

EXPERIENCE

Dynamic Robotics and Control Laboratory (DRCL) / Laser Robotics — Los Angeles, CA
Lab Researcher & CURVE Fellow — January 2023-Present
Key contributor in designing electromechanical system for DRCL's newest humanoid (HECTOR v2) dedicating 8+ hr/week. Spearheaded wheelchair stabilizer project and ran experiments with successful results.

HECTOR v2

- Optimized implementation of 3 CAN communication ports in low-level control board design for compactness + easy interfacing
- Independently designed 7 models for the humanoid body with consideration of manufacturability through mass-production

Wheelchair Stabilizer

- Designed 4 prototypes of an automated wheel for wheelchairs, accounting for ease of use, cost of production, and compactness
- Slashed material cost by almost 50% using ANSYS stress and topology optimization studies
- Specified, tested, and assembled embedded system to control the motorized wheel using low-cost, efficient components
- Proved concept using Simulink and MATLAB to model control system and simulating various situations that trigger the stabilizer

USC Baum Family Makerspace — Los Angeles, CA
CNC Machinist/ Student Worker — May 2024- Present

- Operating manual & CNC mills & lathes for design teams and independent projects
- Recommended design for manufacturing practices and designed practical tools to facilitate machining

DESIGN TEAMS

USC Makers — Los Angeles, CA
Hardware Engineer — January 2023-Present
Dedicated 4+ hr/week with team of 5 to build solar-tracking, self-cleaning solar panel with goal of saving water and maximizing efficiency. Collaborated with team of 6 to engineer LED shoes sustainably powered by footsteps inspired by Greek mythology.

Sol'y Clean Solar

- Identified best choice of motion controlling device and built an aluminum extrusion frame to prevent bending
- Expedited planning for solar tracking design by consulting professors and reading papers on similar projects

Talaria

- Chief engineer of 3D printed electronics enclosures that were mounted onto the shoes to resemble wings
- Investigated energy harvesting power supplies and boost converters to step up low voltage produced by crystals
- Experimented with various insole materials and placement of piezoelectric crystals to generate highest current and voltage

SC Solar Car — Los Angeles, CA
Mechanical Engineering Lead, Team Secretary — January 2023-Present

- Strategically arranged and made mechanical drawings for battery box in SolidWorks and calculated resistance and fuse values
- Engineered a custom PCB voltage tap bridge for battery management system to take voltage readings for battery modules
- Lead engineer in designing the chassis, driver bubble, top shell, and impact simulations based on competition regulations

SKILLS AND INTERESTS

- Languages: English (Native), Mandarin (fluent)
- CAD: SolidWorks, NX, AutoCAD, KiCad, Simulink, Simscape, ANSYS, Blender, Finite Element Analysis, mechanical drawings
- Programming: Python, MATLAB, C++, GitHub, Arduino, Excel, Teensy 4.1, Wolfram Mathematica, Keras, TensorFlow
- Mechanical: drill press, bandsaw, belt sander, soldering, heat set inserts, hole tapping
- Honors: Dean's List, Phi Kappa Phi Honor Society, Gold Presidential Volunteer Service Award, CURVE Fellowship