Lawrence Chang

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Project Portfolio: lchangbuilds.com

Education

Northwestern University 2024 (anticipated)
B.S. in Mechanical Engineering with minor in Computer Science **GPA: 3.98/4.00**
Coursework: Mechatronics, Robotic Manipulation, System Dynamics, Manufacturing Processes, Mechanics of Materials, User Center Design, Thermodynamics, Fluid Mechanics, Circuits, Data Structures & Algorithms

Experience

Formlabs Somerville, MA
Mechanical Engineering Intern June 2021 - Sept 2021
- Successfully conceptualized, developed, and proved feasibility of unique continuous SLS print process to company c-suit leadership
- Designed high precision powder re-coating and plunging prototype with closed-loop force feedback; capable of uniformly displacing 200um layers
- Completed new product introduction engineering validation build for magnetic quick-release build plate
- Increased design validation testing throughput 5-fold using CMM topology mapping to root-cause and correct 16-point FQC jig to within 25um accuracy

Apple Cupertino, CA
Silicon Validation Engineering Intern March 2022 - June 2022
- Prototyped and successfully deployed gantry CPU socketing system at Foxconn for MacBook silicon testing
- Collaborated with contract manufactures to design self-contained, quick-switchable fake-DUT module with constant force compression for power supply bring up testing
- Designed and performed experiments to characterize DUT flattening in CPU socket by plotting mesh-grid of elastomer contact resistance and force data
- Designed and manufactured 600 unit, low-volume run production stiffeners for Apple Watch development boards

Avid CNC North Bend, WA
Product Development Intern June 2021 - Sept 2021
- Developed a crash-resistant, detachable magnetic laser mount; configurable to 16 orientations and compatible with all Avid CNC spindle and z-carriage variations
- Performed new product introduction validation user testing and documentation for laser cutting module and Mach4 laser control software

Northwestern Formula Racing Evanston, Il
Suspension Team Sept 2021 - Jan 2022
- Optimized 15% weight savings for adjustable titanium anti-roll bar using torsional and beam stiffness calculations; validated results using FEA

Projects

See full list of projects at lchangbuilds.com

Semi-Autonomous Longboard 2021 - Present
- Designed and built robotic steerable longboard with custom robotic drive module to withstand impact loads
- Mechanically validated large assemblies using FEA and topology optimization
- Modeled dynamic impact loads using using Lagrangian mechanics; simulated and verified results in ADAMS
- Implementing semi-auto person-following mode with ultra-wideband ranging modules

Skills

Design Engineering: Rapid Prototyping, User Centered Design, DFM, DFA, NPI, GD&T

Engineering Software: SolidWorks, NX CAD/CAM, Onshape, FEA, TopOp, Fusion360 CAD/CAM, MSC ADAMS

Software: Python, C, C++, Matlab, Arduino, LaTeX, HTML, Excel, Closed-Loop Feedback Control, Forward Robotics Kinematics, Lagrangian Mechanics Modeling

Fabrication: CNC, Mill, Lathe, Plasma Cutter, Laser, 3D Printer, Welding, Prototype Electronics, Sheet Metal Fabrication