

Shubh Raval

(714)-618-4319 | rshubh07@gmail.com | www.linkedin.com/in/shubh-raval | shubhrraval.weebly.com/my-work.html | US Citizen

Technical Skills

Software: Solidworks CSWA, Fusion 360, Solidworks Static FEA & Frequency, Ansys, Smartsheets, Microsoft Projects, Microsoft Visio, LTspice, Patternsmith, Fusion Static FEA, Onshape, ROS2 Humble

Languages: MoveIt2 C++ API, Python, C++, XML, URDF, MATLAB, Simulink, Simscape

Engineering: GD&T as per ASME Y14.5, DFX, DFM, DFA, Design Verification Testing, Validation Testing, Manufacturing Instructions, Template Development, Lean Six Sigma, Standard Work, Systems Engineering

Fabrication: FDM, SLS, SLA, 3-Axis Mill, 5 axis CNC, Horizontal & Vertical Bandsaw, Belt Sander, Hand Tools, Soldering

Technical Experience

Kazvu Labs

June 2024 - Onwards

Electro-Mechanical Engineer I

- Co-led the mechanical and structural design of a novel 7-DOF cobot for commercial, human-centric environments, optimized for fast, extended-reach, and complex manipulation tasks.
- Led multimodal structural optimization, analyzing 500 robot permutations (~200 GB of data) through Forward Kinematics-based workspace exploration and Jacobian analysis, using Python for data collection, analysis, and visualization.
- Developed a voxel-based workspace validation method, utilizing Inverse Kinematics pose probability heatmaps in Python to assess performance before CAD-based URDF validation.
- Led design and structural FEA analysis of two modular coupling mechanisms in 7075 Aluminum for modular cobot
- Designing lightweight cobot linkages using braided carbon fiber, optimized for bending moment resistance via FEA.
- Managed ROS2 and MoveIt integration for proprietary planning GUI, overseeing development, testing, and deployment.
- Authored and maintain an automated Xacro robot description with tool permutations and package generation, using Python (scripts), XML (macros), and YAML (configurations) to support motion planning GUI development within a CDCI pipeline.
- Contributed to robotic joint design, focusing on rotor optimization, cable management, motor and transmission selection, and C++ hardware interface development for ROS2 Control integration.

Amazon Robotics

January 2023 – June 2023

Hardware Engineer Co-Op

- Led the Design Verification process development and testing of package sortation cart with 800,000+ active units in North America and upcoming package sortation cart both interfacing with autonomous robotic systems in Amazon Fulfillment Centers.
- Identified and resolved 5+ non-conformities through comprehensive verification testing
- Authored 2 detailed Design Verification procedures serving as verification deliverables for 60+ specifications
- Performed testing using a variety of measurement devices, coordinated with additional stakeholders to drive robotic and random vibration testing, Designed and Fabricated jigs and sheet metal brackets for load based testing
- Designed Sheetmetal pinch guard for rapid prototyping of ergonomic requirement of pinch guards for design of new carts

Medtronic Neurovascular

June 2022-August 2022

Global Operations & Supply Chain Engineering Project Management Intern

- Led the creation of new Lessons Learned template, streamlining of PMO Playbook, consolidation of best practices from prior transfer programs, and update to Phase Gate Review template.

Kairos Power

January 2022-June 2022

Mechanical Engineering Co-Op- Test/R&D Engineering

- Designed squealers to be placed in high temperature fluoride salt pump to detect vertical and horizontal deflections less than 1/8in, used FEA to iterate design considering impact loading, created drawings for use in EDM manufacturing using GD&T
- Designed 6-part aluminum mold for abs pellets aiding development of test unit's reactor core to simulate fluid flow
- Developed improved impeller design by creating foils that are individually machined and welded instead of unibody machined, aiming to reduce lead time from 6 months to 4 weeks

Applied Composites

June 2021-September 2021

Mechanical Engineering Intern- Continuous Improvement

- Led CI project for SpaceX Falcon 9 thermal protective system manufacturing (TPS) resulting in a 33% increase manufacturing efficiency over 32 parts and about \$7000 material cost savings
- Developed Manufacturing Instructions and Training Program using Standard Work and Lean for TPS manufacturing
- Designed 75+ Ultem jigs and 100+ cut kits using Solidworks and Patternsmith to be used in new automated Pyron processing

The Boring Company

March 2021-May 2021

Manufacturing Engineering Intern

- Worked as a liaison between engineering, production, and purchasing teams and reported daily production status using ANDON format to senior level management and oversaw efficient production of +25 parts using Smartsheets

Education

Georgia Institute of Technology

August 2024 - May 2026

Master of Science in Mechanical Engineering GPA: 3.5

University of California, Los Angeles (UCLA)

September 2021 - June 2024

Bachelor of Science in Mechanical Engineering GPA: 3.60