Rahul D'Souza

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Mechanical design engineer specializing in production hardware, electromechanical integration, fixtures, and DFM

EXPERIENCE

Mechanical Design Engineer | Arista Networks **Feb 2025 - Present**

- Owned mechanical design across a modular network-switch program from concept through manufacturing, supporting prototype builds of 50-60 chassis, 100-200 fabric modules, and approximately 400 line cards across six suppliers on a 20-24-month development cycle.
  - Eliminated observed cable damage during assembly validation and reduced assembly time by developing an injection-molded cable-routing pod with the contract manufacturer.
  - Resolved PCB placement conflicts early by defining component-placement envelopes with electrical and thermal engineering teams, reducing late-stage respin risk.
  - Designed line-card and fabric-module structures, including keying features, die-cast components, and thermal-interface requirements.
- Improved PCB mating repeatability and operator ergonomics by designing a pneumatic press fixture and validating it through hands-on production-floor testing.
- Reduced PCB coupon-test setup time by approximately 50% through a dedicated fixture developed with a new vendor.

Mechanical Design Engineering Intern | Sensata Technologies **Jun 2023 - Sep 2023**

- Qualified a novel contactor to 10-year automotive weld-strength standards through a structured weld-characterization study spanning multiple process variables.
- Produced SolidWorks models and GD&T drawings for test coupons, laser-welding fixtures, and CNC-machining fixtures; designed experiments in Minitab and presented results in A3 format.
- Cut Monte Carlo tolerance-analysis runtime from 30 minutes to under 10 minutes with a custom MATLAB program, identifying tolerance-stack risks across six components and delivering actionable recommendations.

EDUCATION

University of California, San Diego **Sep 2020 - Jun 2024**

B.S. Mechanical Engineering

PROJECTS

Senior Capstone Design Project **Sep 2023 - Mar 2024**

In-Space Servicing, Assembly, and Manufacturing (ISAM) Design Challenge | The Aerospace Corporation

- Developed an autonomous self-constructing rail system for in-space assembly, integrating additive manufacturing, a robotic arm, and custom structural rail and coupler hardware.
- The Aerospace Corporation adopted the compliant snap-fit connector design, which reduced rail-unit mass by 40% and print time by 30%.

Robotic Arm **Jun 2024 - Present**

- Designed and built a 3-axis robotic arm with 3D-printed structural components and NEMA 23 stepper motors, implementing inverse kinematics on Arduino and a Python joystick interface for operator control.
- Designed a compact drivetrain around custom 11:1 cycloidal gearboxes to improve torque output.

SKILLS

Design/Analysis Software: Creo, SolidWorks, Fusion 360, AutoCAD, MATLAB, Minitab, Excel, Python
Technical Documentation: GD&T, 2D drawings, tolerance analysis (RSS/worst-case), DOE, DFM/DFA
Engineering/Design Implementation: Sheet metal, injection molding, die casting, PCB mechanical integration, fixtures, additive manufacturing, electromechanical systems, stepper-motor control