SAMAY SHAH

Los Angeles, CA

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EDUCATION

University of Southern California *Aug. 2024 − May. 2026*
Master of Science, Mechanical Engineering

California Polytechnic State University, San Luis Obispo *Sept. 2020 − Jun. 2024*
Bachelor of Science, Aerospace Engineering, Astronautics

TECHNICAL SKILLS

CAD & Simulation	Solidworks, Siemens NX, CATIA, FEMAP
CFD & Analysis	ANSYS, SU2, Simcenter Star-CCM+, Paraview
Software/Programming	MATLAB, Python, Simulink

WORK EXPERIENCE

Stress Analyst *July. 2024 − Present*
Structural Integrity Engineering Inc. || Los Angeles, CA

· Performed structural stress analysis to support modifications under FAA STC and DER-approved modifications.
· Reviewed modification drawings, identified relevant load cases, performed FEM and hand calculation analysis on primary structures and fasteners and joints, and generated margins of safety.
· Evaluated margins of safety, panel buckling, and fatigue/damage tolerance to demonstrate compliance with FAR Part 25 requirements.
· Generated and reviewed detailed stress reports and substantiation packages for DER approval.
· Key projects: A320 Freighter Conversion, Boeing 737 Combi Fire Suppression System, A330 P2F Emergency Egress Modification.

PROJECTS

High-Speed Aerodynamics: Tangent-Ogive Forebody Analysis *Nov 2025*
Computational Fluid Dynamics || Los Angeles, CA

· Tools: Star-CCM+, Gmsh, Python, ParaView
· Built axisymmetric Euler and RANS CFD simulations of Mach-5 flow over a slender forebody to assess model-form error versus inviscid and viscous physics.
· Generated boundary-layer-resolved meshes ($y^+ \approx 1$) and performed grid-convergence and Richardson extrapolation to quantify numerical uncertainty
· Extracted and compared surface pressure distributions and drag coefficients from analytical theory, Euler CFD, and RANS CFD.

Structural Design & FEA Validation of a Hat-Stifenned Beam *Oct. 2025 - Dec. 2025*
Computer Aided Part Design

· Given a thin-walled fuselage structure, a hat shaped stiffener was chosen for design and parametric FEA studies.
· Conducted linear static FEA across multiple geometric and material parameters to guide structural design decisions.
· Manufactured the final design using via 3D printing and assembled test specimens for validation
· Performed physical load testing to failure and compared experimental response to FEA predictions.

Supersonic CFD & Analytical Study − Diamond-Shaped Airfoil *Apr 2025*
Compressible Gas Dynamics || Los Angeles, CA

· Modeled 2D supersonic flow over an airfoil at Mach 1.5 and 2.0 with angles of attack of 5° and 10° via ANSYS Fluent
· Conducted analytical predictions using shock-expansion theory and linearized potential theory to compute pressure distribution and aerodynamic coefficients.
· Validated CFD results against theoretical models through comparative analysis of lift, drag, and Cp profiles.
· Performed mesh independence study, refined around key flow features (oblique shocks, expansion fans)