

SANJAY GANAPAVARAPU

Los Angeles, CA | sanjayg5130@gmail.com | LinkedIn | Portfolio

EDUCATION

University of Southern California

Master of Science, Aerospace and Mechanical Engineering

- Focus: dynamics and control, nonlinear control, linear systems, robotic autonomy, and nonlinear vibrations.

Aug 2024 - Present

Los Angeles, CA

San Francisco State University

Bachelor of Science, Mechanical Engineering

Feb 2022 - May 2024

San Francisco, CA

EXPERIENCE

TNH DEV | Mechanical Design Engineer

Oct 2022 - Present

- Develop and iteratively refine SOLIDWORKS models and fabrication drawings across 20+ mechanical and telecom projects, incorporating engineer and manufacturer feedback to satisfy design and production requirements.
- Produced new product designs, configuration changes, and revision-controlled deliverables across 500+ telecom enclosure assignments, helping reduce design turnaround time by approximately 20 percent.
- Coordinate requirements and design feedback with a remote international engineering and manufacturing team, improving cross-team communication and reducing rework by approximately 25 percent.

Salient Global Tech | Engineering Intern

Feb 2021 - May 2024

- Supported engineers and project managers on construction and telecommunications projects using SOLIDWORKS, CalculiX, structural analysis, and hand calculations to meet client requirements and schedules.
- Coordinated documentation for project approvals, certifications, permits, and regulatory reviews with local agencies.
- Built a centralized inventory system that improved equipment visibility and reduced estimated tool and asset loss by approximately 10 percent.

SELECTED ENGINEERING PROJECTS

Satellite Formation Control

Oct 2025 - Dec 2025

- Modeled chief and three-deputy relative motion in low Earth orbit using Clohessy-Wiltshire dynamics and a MATLAB simulation framework.
- Implemented and tuned LQR, deterministic MPC, and sampling-based stochastic MPC under constrained thrust and stochastic disturbances.
- Compared formation-keeping error, control effort, and disturbance response through matched simulations and Monte Carlo analysis.

Autonomous Object Tracking

Dec 2025

- Built a two-axis vision-guided tracking system using Python, OpenCV, an ESP32, and independently powered servo actuators.
- Implemented closed-loop pan-tilt control at approximately 30 FPS and tuned PID behavior, smoothing, and deadband for stable target following.

AccessiChill Accessible Refrigerator Shelf

Feb 2024 - May 2024

- Developed a spring-assisted pull-out and pull-down refrigerator shelf through SOLIDWORKS design, MATLAB FEA, engineering drawings, fabrication, and physical testing.
- Led early outreach with 15+ target respondents; approximately 88 percent indicated a strong need for improved refrigerator accessibility.
- Owned significant mechanical design, structural and buckling analysis, and drawing work within a five-person capstone team.

TECHNICAL SKILLS

CAD and Design: SOLIDWORKS, Fusion 360, GD&T, DFM and DFA, assemblies, BOMs, tolerance analysis, engineering and fabrication drawings

Analysis and Simulation: MATLAB, Python, ANSYS, CalculiX, Abaqus, FEA, structural analysis, dynamics, controls, and modeling

Programming, Hardware, and Test: Python, MATLAB, C++, LabVIEW, ESP32, OpenCV, mechatronics, prototyping, fabrication, assembly, and verification