

# Jacob Pirnejad

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U.S. Citizen | Clearance Eligible

[LinkedIn](#) | [Portfolio](#)

Mechanical engineering student (BSME, Dec 2026) with hands-on experience at robotics and aviation startups. Focused on complex, open-ended problems in autonomous systems, controls, and electromechanical design. Motivated by fast learning, building real hardware, and taking on technically demanding challenges.

## EDUCATION

### San Diego State University

B.S. Mechanical Engineering

San Diego, CA

Aug 2024 – Dec 2026

**Relevant Coursework:** Mechatronics, CAD, Statics, Materials, Thermodynamics, Dynamics, Mechanics, Intro to Manufacturing, Additive Manufacturing, Automatic Control Systems, Autonomous Vehicle Design

### Foothill College

STEM Core: Calculus I–III, Physics I–III, Engineering Graphics, Linear Algebra

Los Altos Hills, CA

Sep 2021 – Jun 2024

## TECHNICAL SKILLS

**CAD / Modeling:** SolidWorks (CSWA), CATIA, NX, Fusion 360 (Generative Design)

**Analysis / Simulation:** ANSYS (FEA & CFD), SolidWorks Simulation, MATLAB/Simulink, GD&T, Tolerance Analysis, DFM/DFA

**Prototyping / Manufacturing:** 3D Printing (FDM, SLA, SLS), CNC Machining, Composites, PCB Design/Integration, Soldering

**Programming / Automation:** Python, MATLAB, Arduino, LLM Workflows (n8n), API-Based Automation, Apps Script

## EXPERIENCE

### BurnBot (Robotics & Fire Prevention)

Mechanical Engineering Intern

South San Francisco, CA

Jun 2025 – Nov 2025

- Led hardware improvements for field ops teams, identified ergonomic and functional pain points, then took redesigns from SolidWorks CAD through 3D-printed prototyping and test-fit iteration
- Developed and modified battery packs for robot controllers; supported PCB integration with 3D-printed housings for rapid electromechanical prototyping

### Alef.aero (Aviation & Aerospace)

Mechanical Engineering Intern

Milpitas, CA

Jan 2025 – Jul 2025

- Modeled aerodynamic, structural, and mechanical components in SolidWorks for an eVTOL development program; produced 3D-printed molds and composite parts used for prototyping and large-scale flight-vehicle parts

### Undergraduate Research Assistant (Materials)

Dr. Elisa Torresani's Lab, Mechanical Engineering

SDSU

Fall 2025

- Served as a research assistant supporting PhD students with lab operations, experimental setup, and data workflows across active sintering and materials processing projects

### Undergraduate Research Assistant (Robotics)

Dr. Zahra Nili's Lab, Mechanical Engineering

SDSU

Spring 2026

- Taking over a graduate student's ongoing work to substantiate prior findings and develop materials toward writing a research proposal

## ENGINEERING PROJECTS

### Deep-Sea Energy Harvesting Lander

Senior Design Project

SDSU / NIWC Pacific

Aug 2025 – Present

- Redesigning a Benthic Microbial Fuel Cell (BMFC) lander that harvests electrical energy from naturally occurring microbial activity in ocean-floor sediment, powering remote Navy sensor packages at ~2,000 m depth
- Working with NIWC Pacific engineers on deployment and recovery requirements; presenting bi-weekly progress to faculty and Navy stakeholders

Adaptive Constraint Tightening for Quadrotor NMPC [🔗](#)

SDSU

*Controls Research Project*

*Feb 2026 – Present*

- Developing a velocity-triggered constraint tightening framework for learning-augmented Nonlinear MPC on quadrotors, using Gaussian Process residual models to maintain safety under aerodynamic uncertainty
- Implementing the controller in Gazebo simulation; analyzing constraint satisfaction across hover, cruise, and aggressive flight regimes

3D Printed Compliant Aircraft [🔗](#)

Foothill College

*Personal Project*

*Jul 2025 – Dec 2025*

- Led a team in designing a lightweight long-range aircraft concept that cut part count using 3D printing and compliant mechanisms in place of traditional hinged assemblies
- Built a custom test rig and ran MATLAB analysis, FEA, and physical load testing to evaluate lift/drag performance and validate structural integrity
- Validated compliant hinge functionality through FEA simulation and a series of applied-force and cyclic fatigue tests to confirm durability under repeated loading

## LEADERSHIP & CERTIFICATIONS

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**Robotics Club, Member**, MVHS

2017 – 2021

- Competed in robotics design and build challenges for four years; developed early hands-on experience with mechanical systems and teamwork under competition constraints

**Engineering Club, President**, Foothill College

2021 – 2024

- Ran a 40+ member club for 2 years: managed ~\$15K budget, launched prototyping workshops, grew membership ~200%

**Aztec Aerospace, Member**, SDSU

Aug 2024 – Present

- Designed and modeled structural and mechanical components in SolidWorks for aerospace flight vehicles; contributed to part design and CAD iteration within a multidisciplinary student team

**Mechatronics Club (RoboSub), Member**, SDSU

Aug 2024 – Present

- Designed and integrated electrical systems for the Pico AUV (autonomous underwater vehicle) competing in the international RoboSub competition; worked on power distribution and electromechanical subsystem integration

**Certifications:** DEARKAero-Composites [🔗](#) | CSWA | MATLAB Fundamentals | Multi-Agent AI Workshop [🔗](#) | Python Basics [🔗](#) | Google IT Cert [🔗](#)