# CASH EDEN

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## Objective

Mechanical Engineering undergraduate (**3.9 GPA**) with over 2 years of applied aerospace manufacturing and propulsion analysis experience. Seeking the **Summer 2026 Engineering Internship** to contribute to Starship or Falcon production targets. Eager to leverage background in **AS9100 build operations**, **transient thermal analysis**, and **integration testing** to solve complex hardware challenges in a dynamic, fast-paced environment.

## Education

**University of California, Berkeley** Expected Dec 2027
Bachelor of Science in Mechanical Engineering **GPA: 3.9/4.0**
*Relevant Coursework:* Solid Mechanics of Materials, Electronics for IoT, Thermodynamics, MATLAB, Materials Science, CAD.

## Relevant Experience

**Manufacturing Technician (Equipment & Reliability)** | Joby Aviation Dec 2022 – Aug 2025
- *Context:* Ensured reliability of production equipment for a high-rate aerospace manufacturing line.
- Performed preventative maintenance and servicing on multi-axis CNC machines during off-shift hours to ensure **operational readiness** for the production of precision eVTOL molds.
- Troubleshot tooling errors and addressed calibration drifts in real-time to prevent workflow interruptions, protecting **aerospace-grade tolerances** and surface finish quality.
- Supported autoclave composite operations and enforced **AS9100 quality standards**, facilitating continuous production of flight-critical aircraft components.

**Student Engineer** | Space Technologies and Rocketry (STAR) Club Aug 2025 – Present
- Co-engineered a Methane/LOX regenerative-cooled rocket engine within a six-person team, focusing on optimizing combustion efficiency and validating regenerative heat transfer performance.
- Executed transient **thermal simulations in SolidWorks** to characterize heat flux; currently migrating analysis workflow to **ANSYS Fluent** to validate high-fidelity boundary layers.
- Supporting **integration and test** operations, facilitating hardware compatibility between propulsion and structures sub-systems in preparation for upcoming hot-fire campaigns.

**Undergraduate Researcher** | Thermofluidics Lab, UC Berkeley Oct 2025 – Present
- Conducted laboratory experiments on CO2 bubble dynamics to investigate interfacial behavior relevant to scalable fluid systems.
- Programmed Beckhoff **TwinCAT PLC** systems for real-time pressure control and data logging within high-pressure chambers.
- Analyzed thermofluidic phenomena to guide the development of remediation methods, translating experimental data into actionable design insights.

**Research Intern (Programmer/Calibrator)** | Monterey Institute for Research in Astronomy (MIRA) June 2021 – Aug 2021
- Developed a Python algorithm to calculate **CCD gain, read noise, and standard deviation**, processing data from zero-second and flat-field exposures to characterize sensor performance.
- Authored technical documentation visualizing sensitivity curves, improving telescope imaging accuracy by **15%** and ensuring reliable data collection at the Chews Ridge observatory.

## Projects

**Autonomous Delivery Rover (Final Project - Due Dec 15)** | Electronics for IoT Oct 2025 – Present
- Leading the mechanical design of a **Teach-and-Repeat** autonomous rover; fabricated 3D-printed chassis and integrated L293D drivers for closed-loop powertrain control.
- Implementing a **dead-reckoning navigation system** that logs operator control profiles via ESP-NOW and replays them autonomously; integrated ultrasonic sensors for active collision avoidance.

**POV LED Display** | Monterey Peninsula College Spring 2024
- Led a team of four to design and assemble a persistence-of-vision display using Arduino, synchronizing LED timing at 2,000 RPM to render stable graphics.

## Skills

- **Software & Analysis:** SolidWorks (CAD & Simulation), Autodesk Inventor, ANSYS (CFD/FEA), MATLAB, Python, C++, TwinCAT, Fusion 360, NASA CEA.
- **Fabrication & Hardware:** Manufacturing Equipment Reliability, Composite Support, 3D Printing, Electronics Soldering, Instrumentation.
- **Core Competencies:** Propulsion Systems, Thermal Analysis, Mechatronics, Build Engineering, Integration & Test.