# Sean Pak

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## Education

May 2020

**Bachelor of Science, Mechanical Engineering**
**Minor, Electrical Engineering and Computer Sciences**
**University of California, Berkeley**

- **GPA:** 3.23
- **Relevant Coursework:** Manufacturing and Tolerancing, Solid Mechanics, Engineering Dynamics, Fluid Dynamics, Thermodynamics, Heat Transfer, Aerodynamics, Dynamic Systems and Feedback, Feedback Control Systems, Mechatronics Design, Control of UAVs, Embedded Systems, Feedback Control of Legged Robots, Mecahnical Behavior of Engineering Materials, Mechanical Vibrations

## Experience

May 2018 - August 2018

**Space Sciences Laboratory** — Mechanical Engineering Intern

- Designed and tested solar panel deployment mechanism for CURIE CubeSat
- Drafted engineering drawings and analyzed tolerances for parts to ensure that designs met Tyvak 6U NLAS deployer package
- Iterated CubeSat designs in Onshape and organized revisions to ensure streamlined version control

**CalSTAR (Space Technologies and Rocketry)**

August 2017 - May 2018

***Propulsion Lead***

- Managed project structure and delegated research tasks to members
- Spearheaded partnership with SSL, laying foundations for larger aerospace presence on campus and connecting members with industry mentors

August 2018 - Present

***Propulsion Member***

- Designed and tested solid APCP rocket motor using BurnSim and ProPEP
- Focus on thrust chamber design, leading investigation on combustion instability, thermal analysis of regenerative cooling, and optimized flow expansion using CFD software
- Assemble and test propulsion hardware, working with Swagelok fittings and cryogenics

August 2016 - Present

***Airframe Member***

- Fabricate fiberglass body tubes, gaining experience working with composites
- Simulate airframe models in OpenRocket to obtain flight parameter estimates and design for passively stable flight

## Projects

August 2018 - Present

**Personal Project** — Grid Fin Rocket

- Apply closed-loop PID controls on grid fin rocket to stabilize orientation during flight
- Interface various sensors and microcontrollers and write software to allow for live telemetry during flight
- Develop basic flight simulator that simulates rocket orientation during flight with tunable parameters and disturbances

January 2019 - May 2019

**Mechatronics Design Laboratory** — Autonomous Line Car

- Design autonomous vehicle capable of following a line track
- Interface custom transistor motor driver, line scan camera, and velocity encoder with BeagleBone Blue to apply closed-loop PID controls
- Optimize line detection by iterating through argmax, Gaussian filtering, and moving average software algorithms to increase reliability and minimize false detections

## Skills

- Solidworks, Onshape, LabVIEW
- ANSYS Fluent, CONVERGE CFD
- Adobe Illustrator, Photoshop, Premiere
- Autodesk Eagle, KiCad
- GD&T
- Python, Java, C/C++, HTML/CSS, MATLAB, Unix/Linux CLI
- 3D printing, Laser/waterjet cutting
- Machine shop training on lathe, mill, drill press, bandsaw