Alec Perkins

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MY PORTFOLIO: alec-perkins.github.io/portfolio

RELEVANT SKILLS

FEA - ABAQUS | Material Research | MATLAB | CAD - SolidWorks | HTML | CSS | JavaScript | Machining | CNC | Python | Teaching

EDUCATION

The University of California, Santa Barbara | IP: Bachelor of Science, Mechanical Engineering — Expected Jun. 2026
Cumulative GPA: 3.6 | UCSB C.O.E. Honors Program

WORK EXPERIENCE

Undergraduate Research Assistant - Begley Research Group — May. 2024 - Present
College of Engineering | UC Santa Barbara, CA
I use the FEA tool ABAQUS to conceptualize, develop, and analyze three dimensional models of 3D-printed lattice (meta) materials. I document each of my projects with presentations overseen by M.E. Professor Mathew Begley and Patrick Ziemke (postdoctoral research advisor). These presentations are to be used to repeat, replicate, and expand on the structural analyses.

Undergraduate Research Collaborator - Materials & Manufacturing for Aerospace Extremes Lab — Oct. 2024 - Present
College of Engineering | UC Santa Barbara, CA
In order to test the material strength of the ABAQUS lattice models described above, I taught myself how to use a Tethon Bison 1000 DLP 3D Printer in the MMAX Lab. Using a ceramic and resin combination, the main problem to overcome is the difficulty of repeatability of this type of additive manufacturing. Small variations in environmental conditions cause large errors in printed results, skewing the desired material data. Even in perfect conditions, the models will sometimes come out distorted.

The Coder School Code Coach & Lead Python Camp Instructor — Jun. 2021 - Jul. 2022
The Coder School | San Mateo, CA
Responsible for tutoring children ages 8 - 16 in various back-end and front-end programming languages. Additionally responsible for leading and developing curriculum for 14-student summer coding camps.

Macrometa Resilience Team Internship — Jun. 2021 - Aug. 2021
Macrometa Corporation | San Mateo, CA
Member of the "Resilience Team" primarily writing a JSON creating and parsing program in Google's Golang aimed at creating JSON files that met clients' size requirements. Participated in meetings with global team members; from LA, India, and Bulgaria; developing skills in Golang, Python, and JSON.

PROJECTS

Engineers Without Borders - Solar Table Project with Local Team — Oct. 2023 - Present
Using SolidWorks and ABAQUS, I modeled our Solar Table prototype design in order to test it for safety and structural strength so that it can be placed on UCSB campus when we complete the project. Wind force is the greatest threat to the structure, so we analyzed which direction would cause the most deflection and resultant force and then made sure the table would stand up to 100 mph wind forces. We hope to have the table finished and installed by the end of this school year.

Spring-Mass System Simulation - MATLAB — Oct. 2023 - Nov. 2023
In order to practice simulating real world physical situations using mathematical analysis in MATLAB, I modeled a system of two masses and three springs connected in alternating seriesThe system is initially at rest in equilibrium and then set in motion by displacing the masses arbitrarily. In order to simulate this type of movement, eigenvalue and eigenvector analysis was used to create equations for motion which was later plotted in MATLAB.

Phone to Microscope/Telescope Eyepiece Mount with Two-Axis Linear Actuation — Apr. 2023 - June. 2023
This project was created to assist in taking high-quality photos through a microscope or telescope eyepiece with a cellphone. The mount fastens to the eyepiece and cellphone while the x-axis and y-axis positions can be adjusted with a wireless remote to adjust either of the two stepper motor linear rail actuators in order to get the phone lens lined up perfectly with the eyepiece.

***More information about recent projects and coursework is featured on my website: alec-perkins.github.io/portfolio**