Kyle Spink

(805) 455-6134 | kspink@uci.edu | linkedin.com/kylespink | kylespink.com

Education

University of California, Irvine — Expected June 2027
Bachelor of Science in Aerospace Engineering — Irvine, CA
Bachelor of Science in Applied & Computational Mathematics

- **Coursework:** Aerodynamics · Lightweight Structures · Composites · Propulsion · Hypersonics (grad) · Computational PDEs (grad) · Dynamical Systems (grad) · Calculus of Variations (grad)
- **Organizations:** UCI Anteater Electric Racing · Math Community Educational Outreach · Undergrad Math Committee · Sigma Eta Pi · Club Baseball

Experience

Structural Analysis Intern — Jun. 2025 – Aug. 2025
Northrop Grumman Space Systems — Goleta, CA

- Programmed MATLAB script to automatically generate the shock response spectrum for multiple accelerometer channels
- Conducted nonlinear contact analysis for spacecraft flight hardware in Femap
- Automated sensitivity analysis for critical loading scenarios using the Femap API/VBA
- Identified dimensionless parameters which enabled reducing the total number of simulations and decreased runtime by 6 orders of magnitude
- Trained neural network in PyTorch using simulation results to predict safety margins and relevant outputs within 5% of actual values
- Designed test articles in Creo, manually milled parts, released test procedure, and used Instron tensile testing machine to correlate analysis results and failure criteria
- Prepared and presented PowerPoint containing key findings to the analysis team and senior engineers

Undergraduate Research Assistant — Mar. 2024 – Jan. 2025
Aeronautics, Dynamics, & Control Laboratory — Irvine, CA

- Integrated a physics-informed neural network (PINN) with the Principle of Minimum Pressure Gradient to perform computationally inexpensive fluid dynamics simulations
- Coauthored *Predicting Magnus Force with Gauss-Constrained PINNs* (presented in 2025 AIAA SciTech Forum)

Engineering Intern — June 2023 – Sept. 2023
Heliospace Inc. — Berkeley, CA

- Programmed MATLAB script to determine the time of deployment for a spacecraft boom
- Oversaw thermal vacuum deployment testing of multiple aerospace mechanism assemblies

Mechanical Design Intern — June 2022 – Sept. 2022
Enerpro Inc. — Santa Barbara, CA

- Simulated electromagnetic noise to create an external cover that mitigates interference with control circuits

Projects

UCI Anteater Electric Racing | *ANSYS, SolidWorks, SW FEA/CFD Package* — Jan. 2025 – Present

- Performed quarter-long R&D on the implementation of a rear wing drag reduction system and compiled findings in a final design report
- Developing analysis, manufacturing, and testing procedures for a first-generation carbon fiber monocoque

Heat Sink Shape Optimization | *MATLAB* — Jan. 2024 – June 2024

- Programmed script from scratch using the finite element method to simulate heat being constantly emitted from the bottom of a heat sink cross section
- Implemented the adjoint method to generate updated geometry which minimizes average temperature
- Compiled work in a final presentation and paper accessible on Github

Dos Pueblos Engineering Academy Capstone | *SolidWorks* — Aug. 2022 – June 2023

- Project lead of a three-axis robotic gantry; allocated tasks, oversaw budgeting and scheduling
- Performed topology optimization on critical components to minimize mass while maintaining structural integrity

Technical Skills

NASTRAN · Femap · Creo Parametric · Mathcad · ANSYS Workbench · MATLAB · VBA · Python · Siemens NX/Fibersim · Fusion 360 · Certified SolidWorks Associate in Mechanical Design · Vim · LaTeX