

Campbell Downs

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Education

Purdue University

Bachelor of Science in Aerospace Engineering; Minor in Product Lifecycle Management

Expected May 2029

West Lafayette, IN

- **Major GPA: 3.61** | Cumulative GPA: 3.36 | U.S. Citizen

Relevant Coursework

- Aerospace Design
- Aeromechanics I
- Thermodynamics I
- Digital Manufacturing
- Simulation &
- Visualization
- Linear Algebra
- Differential Equations
- C Programming

Experience

Handshake AI

May 2026 – Present

AI Fellow (Independent Contractor)

Remote

- Completed **350+ contracted hours** supporting AI model evaluation, multimodal video annotation, and quality assurance, with primary participation from May–August 2026.
- Evaluated and compared AI model outputs and annotated 2–30 minute videos by labeling human actions, marking temporal boundaries, identifying hand-specific interactions, and documenting object state transitions for visual action-recognition and tracking tasks.
- Maintained approximately **4/5** on recurring quality assessments, advanced twice to higher work-access and compensation tiers, and was selected to perform quality-control review and correction of peer submissions.

Selected Engineering Projects | Portfolio

Multi-Station Fitness Rack | SolidWorks, Structural FEA, Fatigue Analysis

2026

- Designed an A36 steel multi-station fitness rack for a **250 lb user load**, defining factor-of-safety and fatigue-life requirements across balanced pull-up, single-arm pull-up, dip, and leg-raise load cases.
- Conducted multi-case linear static FEA and fatigue validation; reinforced the frame and increased critical member thickness based on simulation results until the final design satisfied structural requirements.

Bicycle Horn Mount Optimization | SolidWorks, Parametric & Topology Optimization

2026

- Rebuilt a non-robust Nylon 6/10 CAD model, defined five design variables, and evaluated **270 parametric configurations** for mass, stiffness, and factor of safety.
- Applied parametric and topology optimization to reduce part mass by approximately **30%** while maintaining factor of safety above 100 under the defined load case.

Thermal & Fatigue Design Studies | SolidWorks Simulation

2026

- Performed transient thermal/stress simulation of a double-wall mug and static/fatigue analysis of a pull-up bar, using simulation results to reduce stress concentrations, material use, and overdesign.

Technical Skills

CAD / PLM : Siemens NX, SolidWorks, Teamcenter (PDM), parametric modeling, assemblies, engineering change orders (ECOs)

Analysis : SolidWorks Simulation, linear static FEA, fatigue analysis, transient thermal simulation, parametric studies, topology/design optimization

Programming / Data : C, Python, C#, MATLAB, JavaScript, HTML, Microsoft Excel

Manufacturing / Methods : Additive manufacturing, 3D printing, introductory CNC/digital manufacturing, requirements definition, trade studies, technical documentation

Awards & Service

Lockheed Martin Code Quest | Two-Time Finalist

Nashville Adventure Science Center | 40+ Volunteer Hours Supporting STEM Education