Sam Langley-Hawthorne

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EDUCATION

Purdue University, West Lafayette, IN — August 2023 – December 2027
Bachelor of Science in Mechanical Engineering — GPA: 3.98/4.00

WORK EXPERIENCE

National Renewable Energy Laboratory (NREL) – Golden, CO — May 2025 – July 2025
Undergraduate Research Intern, DOE SULI
- Improved electrochemical performance and microstructure of solid-state battery materials using fabrication pressure
- Built 40 coin cells in a glovebox, imaged samples using FIB/SEM, and presented research poster to national lab staff

SpaceX – Starbase, TX — January 2025 – May 2025
Engineering Intern, Starship Tooling
- Delivered 4 large-scale tools used to install engine reaction structures, flap reaction structures, and COPVs onto Starship V3. Worked with design and production team to provide flight part alignment, work access, and utilities
- Owned CAD design, hand calcs, FEA, engineering drawings, purchasing, and tool build to meet aggressive deadlines

Composites Manufacturing & Simulation Center – West Lafayette, IN — January 2024 – August 2024
Undergraduate Research Intern
- Supported manufacturing and integration of carbon fiber superstructures to brace the inner silicon pixel detector of the CERN Large Hadron Collider CMS phase II upgrade project, with my machined parts installed into the collider
- Designed & built composite supports for cooling silicon sensors, with posters featured at 2 international conferences
- Responsible for CFRP layups, CNC machining, tooling design, optical metrology and data analysis of detector parts

LEADERSHIP & TECHNICAL EXPERIENCE

Purdue Solar Racing – West Lafayette, IN
President — April 2025 – Present
- Leading club operations and advising engineering decisions for 60+ member solar car team

Chief Engineer — August 2024 – April 2025
- Coordinated CAD design of 2026 competition car using NX, MATLAB to ensure vehicle stability and reliability

Composite Materials System Lead — August 2023 – August 2024
- Built 2 Kevlar-composite 5 kWh Li-ion / lead-acid battery enclosures, ensuring driver protection with FEA simulation
- Machined 40+ composite parts within 4 months, enabling completion of chassis, aeroshell, and battery systems
- Race crew member for team's first successful qualification and completion of the 2024 American Solar Challenge

Purdue EPICS – West Lafayette, IN — August 2023 – December 2024
Design Lead, Indiana School for the Blind and Visually Impaired team
- Directed modification of a braille typewriter, enabling visually impaired students to communicate wirelessly with teachers using Hall effect sensors, rotary encoder, Raspberry Pi, battery, and 3D printed / CNC machined housings
- Enabled team of 8 to deliver first fully functional device since 2014 after 2 semesters of work

SKILLS & AWARDS

Manufacturing skills: 3-axis CNC milling, waterjet, CAM, 3D printing, shop tools, glovebox
Design skills: Siemens NX, Teamcenter, SolidWorks, Fusion 360, Excel, PowerPoint
Languages: C, Python/Jupyter, MATLAB, Intermediate Proficiency Spanish
Awards: Eagle Scout – Troop 373, Centennial, CO