

HAN ZHENG

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EDUCATION

Johns Hopkins University

Bachelor of Science

Baltimore, MD

Expected June 2026

- Mechanical Engineering (Aerospace Track)
- GPA: 3.79

SKILLS

Design & Manufacturing: SolidWorks (PDM), PTC Creo, Onshape, GD&T, CNC Machining, 3D Printing, Composites Manufacturing

Simulation & Analysis: Abaqus, ANSYS (Mechanical, ACP, CFX, Fluent, Granta), Creo Simulate, SimScale, Micro-CT

Electronics, Programming & Tools: MATLAB, C/C++, Arduino IDE, Circuit Analysis & Implementation, Microsoft Office Suite

EXPERIENCE

Chief Engineer

Johns Hopkins University - Design/Build/Fly (DBF)

Baltimore, MD

September 2023 - Present

- Leading the design and fabrication of a full carbon-fiber aircraft with a 5-ft wingspan for the 2026 DBF competition
- Simulated a 2-ft hard-landing scenario on a composite fuselage structure using ANSYS Explicit Dynamics, identified high-stressed regions in the fuselage skin, and applied additional carbon-fiber plies locally for reinforcement
- Completed an aerodynamic trade study in ANSYS CFX evaluating landing gear wheel fairings, confirming a ~5% drag reduction and a net performance benefit over weight-induced drag penalties
- Designed and integrated an empennage with a steerable, rudder-linked tail gear providing $\pm 30^\circ$ rotation using Onshape
- Performed structural analysis on the aircraft wing using a self-developed MATLAB-based beam analysis tool to optimize fuel tank placement, reducing maximum bending moment by 16%
- Conducted CFD simulations in SimScale for the aircraft payload at angles of attack from 4° - 16° at 20 mph airflow, analyzing flow patterns around pylons to improve aerodynamic performance

Mechanical Engineering R&T Intern

Albany Engineered Composites

Rochester, NH

June 2025 - August 2025

- Researched the relationship between fiber crimp and the elastic properties of 3D-woven composites, observing a linear correlation where higher crimp was associated with lower in-plane moduli
- Devised and conducted experiments to characterize friction in woven preforms across varying temperatures, moisture levels, and weaving architectures, revealing how friction influences compaction behavior and fiber-buckling tendencies
- Developed a Fortran subroutine linking strain and modulus from test data, enabling Abaqus simulation of a micro-CT-compatible preform compaction fixture to assess stress and deflection under compaction loads
- Designed a fixture for securing woven preforms during micro-CT scanning in SolidWorks and 3D-printed it in ABS, replacing the previous foam fixture that allowed sample movements and compromised scan quality

Mission Collaborator - Team VfOx, DAVINCI Mission

Johns Hopkins University

Baltimore, MD

September 2024 - December 2024

- Identified optimal placement for the Venus Oxygen Fugacity (VfOx) sensor on the mission probe using COMSOL Multiphysics flow simulations at descent speeds of 20 and 30 m/s, ensuring fresh airflow over the sensor
- Quantified risk levels of VfOx accommodations with 5×5 matrices and presented final accommodation results to engineers from NASA Goddard Space Flight Center (GSFC) and Johns Hopkins Applied Physics Laboratory (APL)

ADDITIONAL POSITIONS HELD

Fabrication Engineer

Johns Hopkins University Whiting School of Engineering

Baltimore, MD

September 2024 - December 2024

- Created detailed process sheets for manufacturing Stirling engine components (flywheel, piston housing, base plate) from CAD drawings, incorporating GD&T to define tolerances for each manufacturing step
- Operated lathe, mill, and other tools to fabricate a Stirling engine running at approximately 200 rpm

Research Assistant

Fluid Transport Lab

Baltimore, MD

September 2023 - August 2024

- Engineered grid plates with filleted square holes ranging from 6×6 cm to 16×16 cm to vary turbulence intensity for studying how fish schools respond to eddies of different length and time scales
- Coauthored the user manual for a Python package built for 3D Lagrangian particle tracking