HAN ZHENG

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EDUCATION

Johns Hopkins University — Baltimore, MD
Bachelor of Science — Expected May 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

TECHNICAL EXPERIENCE

Chief Engineer — Baltimore, MD
Johns Hopkins University - Design/Build/Fly (DBF) — September 2023 - Present
- Led the design and fabrication of a 16 lb carbon fiber aircraft with high payload capacity for the 2026 DBF competition
- Simulated a 2-ft hard-landing scenario on a composite fuselage structure using ANSYS ACP and Explicit Dynamics, identified high-stressed regions in the fuselage skin, and applied 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 ±30° 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 — Rochester, NH
Albany Engineered Composites — June 2025 - August 2025
- Investigated the relationship between fiber crimp and elastic properties of 3D-woven composites, identifying a positive linear correlation ($R^2 = 0.66$) between crimp and in-plane moduli
- Devised and conducted experiments to characterize friction in woven preforms across varying temperature, moisture, and architectural conditions, establishing its role in compaction response and fiber buckling behavior
- 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 in SolidWorks to secure woven preforms during micro-CT scanning and 3D-printed it in ABS, replacing a foam fixture prone to sample movement and compromised scan quality

Mission Collaborator - Team VfOx, DAVINCI Mission — Baltimore, MD
Johns Hopkins University — 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)

PROJECT EXPERIENCE

Fabrication Engineer — Baltimore, MD
Johns Hopkins University Whiting School of Engineering — 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 — Baltimore, MD
Fluid Transport Lab — 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