HAN ZHENG

516-402-1048 • hzheng34@jh.edu • https://hanzheng-portfolio.com • www.linkedin.com/in/hanzheng04

EDUCATION

Johns Hopkins University   Baltimore, MD
Bachelor of Science   Expected June 2026
- Mechanical Engineering (Aerospace Track)
- GPA: 3.78

SKILLS

Design & Manufacturing: SolidWorks, Creo, Onshape, GD&T, CNC Machining, 3D Printing, Composites Manufacturing
Simulation & Analysis: Abaqus, ANSYS (Mechanical, CFX, Fluent), Creo Simulate, SimScale, Micro-CT
Electronics, Programming & Tools: C/C++, Arduino IDE, MATLAB, Circuit Analysis & Implementation, Microsoft Office Suite

EXPERIENCE

Chief Engineer   Baltimore, MD
Johns Hopkins University - Design/Build/Fly (DBF)   September 2023 - Present
- Leading design and fabrication of a full carbon-fiber aircraft using wet layup techniques 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 localized reinforcement through additional carbon-fiber plies
- Completed an aerodynamic trade study using ANSYS CFX to evaluate landing gear wheel fairings, validating a 5% reduction in drag that outweighed the induced-drag penalty from the added weight of the fairings
- 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
- Researched the relationship between fiber crimp and the elastic properties of 3D-woven composites, observing a moderate linear correlation ($R^2 \approx 0.66$) in which 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   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 using 5×5 matrices and presented final recommendations and trade study results to engineers from NASA Goddard Space Flight Center (GSFC) and Johns Hopkins Applied Physics Laboratory (APL)

ADDITIONAL POSITIONS HELD

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