HAN ZHENG

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EDUCATION

Johns Hopkins University Baltimore, MD
Bachelor of Science Expected June 2026

- Mechanical Engineering
- GPA: 3.77

SKILLS

CAD (SolidWorks, Onshape), MATLAB, C, C++, Arduino IDE, Circuit Analysis and Implementation, Machining, GD&T, 3D Printing, CFD (SimScale), FEA (Abaqus), Material Selection (Ansys Granta EduPack), Microsoft Office Suite (Word, PowerPoint, and Excel)

RELEVANT EXPERIENCE

Lead Mechanical Engineer Baltimore, MD
Johns Hopkins University - Design/Build/Fly (DBF) September 2023 - Present

- Designed and integrated an aircraft empennage with a steerable tail gear into a carbon fiber fuselage 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 computational fluid dynamics (CFD) using SimScale for the aircraft payload at angles of attack from 4° to 16° and 20 mph airflow, analyzing flow patterns around pylons to improve aerodynamic performance

Mission Collaborator - Team VfOx, DAVINCI Mission Baltimore, MD
Johns Hopkins University August 2024 - Present

- Identified optimal accommodations for the Venus Oxygen Fugacity (VfOx) sensor on the mission probe based on flow simulations at descent speeds of 20 and 30 m/s using COMSOL Multiphysics
- Quantified risk levels of VfOx accommodations with 5×5 risk matrices, evaluating each accommodation through trade studies
- Delivered a comprehensive presentation on the final recommended VfOx accommodation to the DAVINCI crew at NASA Goddard Space Flight Center (GSFC) and scientists from Johns Hopkins University Applied Physics Laboratory (APL)

Research Assistant Baltimore, MD
Fluid Transport Lab September 2023 - May 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 pyOpenLPT, a Python package designed for 3D Lagrangian particle tracking in experimental fluid dynamics, and optimized user interfaces for workflow tracking and camera calibration

ADDITIONAL POSITIONS HELD

Product Design Intern Baltimore, MD
Open Avenues Foundation [Build Project] August 2024 - October 2024

- Redesigned a multi-purpose veterinary syringe in SolidWorks, implementing an advanced locking mechanism at the syringe tip for secure attachment to feeding tubes and needles
- Developed detailed user needs and product specifications for the redesigned syringe, enhancing user experience and ensuring compliance with Class II medical device regulations

Fabrication Engineer Collegeville, PA
Johns Hopkins University Whiting School of Engineering July 2024 - August 2024

- Developed detailed process sheets for manufacturing Stirling engine components, including the flywheel, piston housing, and base plate, based on CAD drawings
- Operated lathe, mill, and other machine tools to fabricate and assemble a functional Stirling engine running at approximately 200 rpm

Project Lead Baltimore, MD
Johns Hopkins University Whiting School of Engineering January 2024 - May 2024

- Conducted numerical analysis on beam bending to identify the optimal cross-section shape, gear ratio, and material within a $25 budget, adhering to constraints including maximum deflection (0.5"), required load (10 lb), and power source (6V battery)
- Utilized SolidWorks to create CAD models of components including crane booms, gear trains, a gearmotor housing, and mounting mechanisms