

ANDI ZHOU

Canadian Citizen

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Education

University of Michigan Ann Arbor

Bachelor of Science in Engineering

Major: Aerospace Engineering

Ann Arbor, MI

Graduating May 2022

GPA 3.66/4.00 (With Great Distinction)

Clubs/Programs – Michigan Aeronautical and Science Association (MASA), Sigma Gamma Tau, Michigan Active Aeroelasticity and Research Laboratory, AIAA

Skills

Engineering Skills: CFD, FEA, Thermodynamics, CFD-FEA Coupled Analysis, CFD-Thermal Coupled Analysis, CAD

CAE Software: CATIA, Solidworks, ANSYS, STAR CCM+, NASTRAN, Linux

Coding Language: MATLAB, C++

Awards: **Dean's Honor List (2018 – 2021) | Sigma Gamma Tau – National Aerospace Honor Society**

Experience

MASA (University Rocketry Team)

Ann Arbor, MI

Rocket Fin Lead

September 2019 – Present

- Led a team of 4 in designing, simulating, and manufacturing rocket fins able to take on supersonic flight loads
- Designed and optimized the structure to a SF of 1.5 with a loading condition of 2-degree AoA at Mach 2.77, reducing the weight of the overall rocket by 10% while maintaining the same performance at identical loading conditions
- Created 2D manufacturing drawings with relevant GD&T symbols for high-tolerance sheet metal operations (± 1 degree)
- The first on the team of 18 years to transiently couple ANSYS Fluent solver with FEA, and used it to ensure the flutter speed of the fins are always 30% beyond the flight speed given the same density and dynamic pressure
- The first on the team to transiently couple ANSYS Fluent CFD solver with Fluent Thermal solver, and performed high fidelity transient aerothermal simulation from Mach 0 – Mach 4.49

CFD Engineer

January 2021 – Present

- Performed high-fidelity 3D full body CFD for a 27-ft rocket traveling at Mach 4.49 and converged the simulation to the 5th order of accuracy
- Prepared over 20 CFD-optimized geometries using Solidworks and CATIA, utilizing functions such as extrude-cut, loft-cut, cavity, and fillet to trim out little imperfections and round off sharp edges
- Analyzed both steady and transient rocket aerothermodynamic behavior at Mach 4.49 by performing high-fidelity fluid simulation leveraging K-Omega and K-Epsilon turbulence models using ANSYS Fluent and STAR-CCM+
- Spent 100s of hours after school to generate fine and efficient meshes with Y+ values below 5 and is the first on the team to successfully converge the simulation using the U of M Great Lakes HPC Cluster

Active Aeroelasticity and Research Laboratory

Ann Arbor, MI

Undergraduate Research Assistant

September 2020 – May 2021

- Evaluated BWB type aircraft with NASTRAN FEA using SOL 101, 103, 144, 145 and 400 to study its structural, modal and aeroelastic behaviors under subsonic speed with varying angle of attack and compressibility factor
- Wrote finite element codes with MATLAB, allowing for NASTRAN to iteratively solve for varying loading conditions and automatically provide the most optimized structure for the load case given

Berlin Institute of Technology

Berlin, Germany

International Research Intern

April 2019 – July 2019

- Validated drag coefficients and forces of experimental vehicles using wind tunnels measurements and compared with ANSYS Fluent results
- Optimized vehicle aerodynamic based on geometry changes guided by wind tunnel experiments and decreased the overall drag coefficient by 0.02

Projects

Custom CFD Solver

Ann Arbor, MI

Programmer

April 2021 – September 2021

- Single-handedly coded a custom CFD solver utilizing the SIMPLE algorithm to solve the steady incompressible Navier-Stokes equations with unstructured mesh
- Debugged and verified the custom solver with the classic lid-driven cavity test case
- Currently working on implementing a custom-unstructured Delaunay triangular mesh generator using the Bowyer-Watson algorithm