

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

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 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
- 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

Berlin Institute of Technology

Berlin, Germany

International Research Intern

April 2019 – July 2019

- Verified 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

Remote Controlled Propeller Driven Hovercraft

Ann Arbor, MI

Aerodynamic and Electrical Engineer (Team of 4)

January 2020 – May 2020

- Performed internal CFDs using STAR-CCM+ to evaluate hovercraft lift force, predicting the amount of propeller power and inlet diameter needed to achieve take-off
- Designed the electrical harnessing for the hovercraft, ensuring enough voltage and current is provided to flight-critical hardware such as the engine controller and the flight computer