**ANDI ZHOU**

Canadian Citizen

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**Education**

**University of Michigan Ann Arbor Ann Arbor, MI**

*Bachelor of Science in Engineering* Graduating May 2022

**Major: Aerospace Engineering 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 –** HonorSociety

**Experience**

**MASA (University Rocketry Team)** Ann Arbor, MI

*Rocket Fin Lead* *September 2019 – Present*

* Led a team of 4 in designing, analyzing, and manufacturing a complex $5000 aerodynamic structure which included 100s of parts and various form of supporting structures
* 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 to figure out how 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 ANSYS Fluent Thermal solver, and performed high fidelity transient aerothermal simulation from Mach 0 – Mach 4.99 to investigate the thermal-structure behaviors of the fins, ensured the flight stress is never beyond the material yield stress even under high temperature due to aerodynamic heating

*CFD Engineer January 2021 – Present*

* Prepared 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 5 by performing high-fidelity fluid simulation leveraging K-Omega, K-Epsilon and Spalart-Allmarasturbulence models using ANSYS Fluent and STAR-CCM+, successfully converted the simulation from 2D to 3D
* Spent at least 40 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 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

**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 both staggered grids and collocated-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