

# ANDI ZHOU

Canadian Citizen

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## Education

### University of Michigan

*Master of Science in Engineering*

### Major: Aerospace Engineering (Aerodynamics and Computational)

*Bachelor of Science in Engineering*

### Major: Aerospace Engineering

Awards: **Dean's Honor List & University Honors (2018 – 2022) | Sigma Gamma Tau – National Aerospace Honor Society**

**Ann Arbor, MI**

Expected November 2023

**GPA N/A**

Graduated May 2022

**GPA 3.7/4.00**

## Skills

**Engineering Skills:** Aerodynamics Design, Compressible Flow, Structure Analysis, Multi-Phase Flow, Thermodynamics

**CAE Software:** CATIA v5, PowerFLOW, ANSA, Star CCM+, Solidworks, ANSYS, NASTRAN, Linux OS, Linux HPC

**Coding Language:** MATLAB, Python, C++, Simulink

## Work Experience

### Volvo Group Truck Technology

Greensboro, NC

*Powertrain CFD Engineer Intern*

January 2022 – May 2022

- Designed, investigated, and optimized, using STAR CCM+ multi-phase flow, a swirl air-water separation tank which maintained a separation efficiency of 99% while decreased its mass from the original concept by 40%
- Collaborated with Dassault Systèmes, optimized water draining in truck air intake using PowerFLOW multi-phase flow, ensuring the system is up to standards as per SAE J554
- Cleaned 100s of powertrain CAD models and generated for them fine and efficient meshes for thermal simulations using ANSA

## Research Experience

### Berlin Institute of Technology

Berlin, Germany

*Automotive Aerodynamic Research Intern*

April 2019 – July 2019

- Decreased drag coefficient of a 1967 Volkswagen Notchback by 0.05 with measurements from both wind tunnel and computational modeling
- Verified drag coefficients and forces of experimental vehicles again using wind tunnels measurements and compared with ANSYS Fluent results for complete verification

## Project Team Experience

### MASA (University Rocketry Project Team)

Ann Arbor, MI

*Aerostructure Lead – Rocket Fins (Team of 12)*

September 2019 – Present

- Led a team of 12 in designing, simulating, and manufacturing the largest rocket fins that MASA has ever built (3-ft wide, 4-ft tall)
- 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
- Organized design reviews, conducted engineering work sessions, led to team to eventually optimizing the apogee of our rocket by 30%
- Coordinated with out-of-house manufacturers; in 3-months, fabricated the entire fin assembly leveraging advanced sheet metal manufacturing techniques such as bump bending and brake pressing

*Aerodynamic 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 5<sup>th</sup> order of accuracy
- Conducted transient aero-thermal-structure interaction studies and optimized thermal-structural SF to 2
- 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+

*Test Engineer Lead (Team of 6)*

September 2021 – December 2021

- Led a team of 6 in testing and evaluating the largest fin assembly (3-ft wide, 4-ft tall) that MASA has ever built
- Investigated dynamic roll behaviors using a 5' by 7' wind tunnel; quantified moment and angular acceleration due to aerodynamic effects and explored the possibility of inertial roll coupling
- Conducted static testing of the fin surface, analyzed data and compared with those given in Finite Element Analysis; confirming that the error range stayed within 20%
- Optimized team design cycles; accelerated design duration by 70%