# JASON Y. CHEN

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**A senior at U-M passionate about propulsion systems with a strong software background**

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## EXPERIENCE

### SpaceX

**Starship Stage Propulsion RE Intern | May 2024 – Aug 2024**

- Owned the Starship GN2 spin-start system test stand from conception through build. It characterized transient stage/engine interactions, greatly mitigating Ship V2+ mission risk
- Designed GSE P&ID, created CAD and coordinated build & integration for >$100k of parts, and wrote test/data review plans to achieve a delivery of the stand within 10 weeks
- Created a tool that models the spin, pneumatics, press, and igniter systems numerically and integrates flight data comparison, allowing rapid iteration on Ship V2+ sizing
- Set Flight 5 leakage abort thresholds utilizing the software—demonstrating its capability

**Starship Stage Propulsion Hardware Intern | May 2023 – Aug 2023**

- Owned complete redesign of main tank press and forward pneumatics trays for Starship V2, routing 40+ valves, halving integration overhead, and reaching PDR within 2 months
- Led an innovative manifold design to delete >20 ft of tubes and 10+ flange joints, while remaining single-fault tolerant and juggling numerous AVI, ECS, & thermal requirements
- Automated human-safe pressures rollup document, critical for safety of all future test ops

**Raptor Flight Software Engineering Intern | May 2022 – Aug 2022**

- Owned automation for throttle valve purge checkouts on B7/S24 test campaign, saving flight operators 2000+ manual console tasks and shortening mission timeline by >1 hour
- Rapidly implemented and merged flight software for a major Raptor V2 startup sequence compression in under 2 days, ultimately reducing GN2 spin/purge mass by 5+ metric tons

### Project Caelus

**President & Chief Engineer | Nov 2018 - Jun 2021**

- Founded Project Caelus, a fully student-run 501(c)(3) aiming to launch the world's first high-school suborbital liquid rocket. Led from scratch to water cold flow test in 2½ years
- Main author of design reviews presented at AIAA conferences, system PDR is linked here
- Spearheaded technical design while managing 50+ people and fundraising over $20k

## RESEARCH & TEAMS

### Michigan Aeronautical Science Association

**Fluids Lead | Jan 2024 - Present**

- Created numerical fluids simulator to generate a transient engine curve. Models regulator & TPC dynamics, unsteady flow rates, real losses, heat transfer, and engine performance
- Leading design of modular shaft seal test rig and custom liftoff seal for a cryo turbopump
- Ran thermal/structural FEA to analyze chamber liner failure modes and thermal loading, size pintle injector transpiration orifices, and manage rotational loads on a turbine blisk

### Blue Origin Payload Team

**Avionics Lead | Aug 2022 - May 2023**

- Spearheaded full-stack (SRR to FRR) AVI system design for New Shepard 2U GNC databox
- Utilized MBSE methods to derive AVI architectures & trades from customer requirements
- Designed & delivered a custom DAQ and auxiliary power distribution PCB from scratch

### Research Assistant

**Various Roles | Summer 2021 and Aug 2024 - Present**

- **Research with Professor Krzysztof Fidkowski:** Developing improved supervised learning techniques for initial anisotropic mesh generation in varying external aerodynamic flows
- **U.S. Naval Research Lab:** Used kPCA and manifold learning to detect anomalies in satellite hyperspectral imagery. Also created and tuned controllers for a VTOL tiltwing drone

## EDUCATION

### Aerospace Engineering B.S.E.

**GPA: 3.78/4.0 | Class of 2025**

University of Michigan—Ann Arbor

### High School Diploma

**GPA: 4.36/4.0 | Class of 2021**

TJHSST—Alexandria, VA

## ACHIEVEMENTS

- **Matthew Isakowitz Fellow (2024)**
- Extended Reality Midwest Hackathon: Best in Immersive Experiences (2024)
- Integration Lead @ TJREVERB: A 2U nanosat deployed from the ISS (2021)
- ISEF International Finalist (2020)
- International Finalist for Breakthrough Junior Challenge (2018) · International Finalist at the New York Academy of Sciences (2017) · NASA Goddard Space Flight Center ELO Program (2019, 2020)
- Air Force ROTC Type 1 Scholarship, American Legion Military Excellence Award, You Can Fly Scholarship

## SKILLS

**Mechanical/Robotics**

- **CAD**: Siemens NX & Fusion. Drawings, large assemblies, mechanical routing
- **Avionics**: KiCAD for PCB design, DAQ systems (data protocols, sensor filtering, RF telemetry), vibe & radiation testing + HOOTL/HITL testing with software
- **Analysis**: ANSYS (coupled thermal & structural) for mechanical component design, StarCCM+ for CFD analysis on internal valve flows and airfoil behavior
- **Manufacturing**: CNC milling & lathe, 3D printing, laser cutting, basic MIG welding
- **More**: Unity, Blender, Premiere Pro + AE

**Programming**

Mature: Python | C/C++ | Git | Matlab | Flight Software | Linux | PyTorch & TF

Experienced: SysML/Cameo | ReactJS | Embedded SW | Rust | Simulink | ROS

## COURSEWORK

Control Theory · Rocket Propulsion · Gas Dynamics · Mechanical Behavior of Materials · Orbits · Intro ML · Data Structs/Algs · Computer Architecture