JASON Y. CHEN

LAST UPDATED: 12 SEPT 2023

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

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EXPERIENCE

SpaceX

Starship Propulsion Hardware Systems Intern | May 2023 – Aug 2023

- Owned complete redesign of main tank press and forward pneumatics trays for Starship Block 2, routing 40+ valves, halving integration overhead, and reaching PDR in 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 Starship human-safe pressures rollup document, critical for safety of all future test ops—updating every valve, seal, and tube in the fleet is now automatic & streamlined
- Created a standardized prop checkout test plan for Ship aft to improve RE quality control

Raptor 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, tested, and merged software for a major Raptor V2 startup sequence compression in under 2 days, lightening GN2 spin/purge mass by 5+ tonnes
- Ran top-to-bottom root cause analysis → solution patch for 10+ erroneous prevalve & actuator alarms following the B7 anomaly. Substantially reduced operator UI saturation

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 full cold flow test in 2½ years
- Main author of research presented at AIAA conferences, system PDR is linked here
- Spearheaded full engine design: managed 50+ people across 4 teams, iterated pressure budgets, valve trades, injector types, and build plans for most cost-effective design

U.S. Naval Research Laboratory

Machine Learning Intern | Jun 2021 - Aug 2021 | Jun 2019 - Aug 2019

- Used kPCA and manifold learning to detect anomalies in satellite hyperspectral imagery
- Designed software GNC system on autonomous VTOL tiltwing aircraft for disaster relief

RESEARCH & TEAMS

Blue Origin Payload Team

Avionics Lead | Aug 2022 - May 2023

- Spearheaded full-stack (SRR to FRR) AVI system design for New Glenn 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

Michigan Aeronautical Science Association

Propulsion Member | Aug 2021 - Present

- Developed transient thermal analysis to help quantify regen liner & wall stresses for FRR
- Co-led rapid design, prototype, and test of two critical cryogenic flanges on main prop line in 2 weeks: sized bolts, orifices, O-rings. Ran structural sims and hydrostatic tests

TJ Nanosatellite Program

Flight Software & Avionics Integrator | Sep 2019 - Jun 2021

- Developed a 2U cubesat that is currently in Earth orbit, testing viability of Iridium comms
- Wrote code that determined satellite attitude via sunsensors & propagated orbital decay

EDUCATION

Aerospace Engineering (BSE) & CS (BSE) | GPA: 3.78/4.0

University of Michigan—Ann Arbor

Aug 2021 – Present (Junior)

H.S. Diploma | GPA: 4.36/4.0

Thomas Jefferson High School for Science and Technology

Aug 2017 - Jun 2021

SKILLS

Mechanical/Robotics

- CAD: Siemens NX (1 yr), Fusion (3 yrs)
- Avionics (3 yrs): KiCAD for custom PCB design, device interfaces (i2c, UART, SPI), ADCs, controllers (Arduino, Teensy, RPi), cable harnessing, soldering, ESCs
- Machining (1 yr): CNC milling & lathe, 3D printer, laser/hydro cutter, bandsaw
- ANSYS (1 yr): basic thermal and statics, compressible flows, modal analysis

Programming

Mature (3+ years): Python, C/C++, Linux, Git, Flight Software, Matlab

Experienced: SysML/Cameo, OpenCV, Tensorflow, Rust, Simulink, HOOTL

AWARDS

- **ISEF Science Fair International Finalist (2020)**: nozzle contour design using ML
- 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 T1 Scholarship, USAFA T-6 PDT, AL Military Excellence, YCFS

COURSEWORK

Gas Dynamics · Statics · Mechanics of Materials · Orbital Mechanics · Intro ML · Computer Architecture · Data Structs/Algs · Aerodynamics · Diff Eqns · STK Level 1 · Systems (INCOSE)