

Zerong (Jason) Huang

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SUMMARY

Aerospace engineering MSE student at the University of Michigan (GPA 4.0) with a BSc from Purdue University. My work spans aerodynamic analysis, multidisciplinary design optimization, eVTOL and air traffic operations, and aircraft design, backed by hands-on CAD, fabrication, ground testing, and data acquisition. Internships at GE Aerospace and COMAC; co-author of an ICAS 2026 paper; FAA private pilot.

EDUCATION

University of Michigan | MSE, Aerospace Engineering | GPA 4.0/4.0 Aug 2025 – Dec 2026

Purdue University | BSc, Aerospace Engineering | GPA 3.67/4.0 Aug 2021 – May 2025

UWC Maastricht, Netherlands | International Baccalaureate Diploma Programme Aug 2019 – May 2021

Relevant coursework: Aerodynamic Design; Multidisciplinary Design Optimization; Air Transportation System Management; Computational Fluid Dynamics; Aeroelasticity; Compressible Flow; Thermal Analysis; Structural Design and Analysis; Turbojet and Turbofan Engine Design; Rocket Propulsion; Flight Vehicle Control

PROFESSIONAL EXPERIENCE

GE Aerospace | Diagnostics Engineering Intern, Fleet Support Jul 2026 – Aug 2026

- Reworked the diagnostic process for LEAP-1A fuel nozzle flow divider valve (FDV) alerts: reviewed every triggering case from the past two years, redrew the decision boundaries between dispositions, and rebuilt the decision flow chart, cutting false alarms by 40%.
- Recalibrated alert thresholds against trends in onboard snapshot parameters such as exhaust gas temperature (EGT), and validated detection rate against false alarm rate with replay simulations on historical fleet data in Dataiku.
- With product support engineers, set up a data-based grading of fuel system component degradation that separates immediate replacement from continued service with an estimated remaining time.
- Delivered the flow chart, alert logic, SOP, and a case review library; ranked first of eight interns in final presentations.

COMAC | Test and Validation Engineering Intern May 2023 – Jul 2023

- Supported operation of the C919 engineering simulator and test validation platform, covering high-fidelity data acquisition, troubleshooting, and compliance reports.
- Integrated and updated engine and high-lift system models in C++ on Linux, verifying simulation behavior against the expected performance envelope.
- Streamlined platform configuration and automation, raising test execution efficiency by 20%.

RESEARCH

UAV Route Planning and Augmented Reality (Joby, Detroit Metro Airport) | Core Developer Aug 2025 – Jun 2026

- Independently built an open-source web planning tool for eVTOL air taxi routes: a Leaflet 2D planner with approach corridor and Class B overlays, a FastAPI backend that rechecks feasibility on every edit, and CesiumJS 3D replay from free, onboard, and control tower cameras.
- Developed a point-mass kinematic model with Joby S4 limits (90 kt cruise, 3°/s turn rate, 884 m minimum turn radius) that converts waypoints into time-resolved trajectories and flags infeasible waypoints.
- Designed four candidate routes to a vertiport at DTW Concourse C within Class B limits, TERPS approach surfaces, and FAA JO 7110.65 separation, compared north and lateral holding strategies, and proposed a BVLOS concept of operations.
- Co-author, ICAS 2026 (DOI 10.71945/icas2026_0682); code open-sourced on GitHub.

Coverage Path Planning Optimization (NASA, Mosaic ATM) | Core Developer Aug 2025 – Jun 2026

- Built a coverage path planning model in Python with Gurobi that generates feasible plans for multi-facility scenarios, including urban scan paths for a small VTOL fixed-wing aircraft and the fastest route through multiple waypoints.
- Ran 20+ large-scale scenarios through an automated test framework, tracking feasibility rate, objective value, and run time; more than 80% of the approach was adopted in technical review. Led version control and integration in Bitbucket.

LEADERSHIP AND COMPETITIONS

GoAERO Prize | Co-founder, Overall Design and Competition Strategy Lead May 2024 – Present

- Co-founded and lead a student team of 20+ building a single-occupant multirotor rescue eVTOL; the team received the NASA Innovation Award.
- Set the concept of operations and requirements from the mission rules, compared energy sources, down-selected configurations, sized the aircraft, and predicted performance to decide trade-offs across missions.

- Owned the interface control document and V&V across mechanical, avionics, and energy systems, ran staged design reviews, and tracked requirements in Jira; multidisciplinary optimization cut mission turnaround time by 20%.
- Modeled the primary load-bearing truss in SolidWorks and iterated FEA through 15+ load cases to meet strength and stiffness requirements at 2g.

Design Build Fly (Purdue AAE 451 Senior Design) | Fixed-Wing UAV

Aug 2024 – Dec 2024

- First place in three of four main awards (mission, design, innovation). Led development from layout and airframe fabrication, including 3D-printed parts, through flight test.
- Designed a modular payload bay with a quick-change mechanism in SolidWorks that swapped between several payloads in integration tests.
- All of my proposed weight-saving and stiffness changes were adopted; 10+ test iterations with a six-person team improved payload efficiency by 12%.

SELECTED PROJECTS

Lunar Lander Leg Thermal Measurement Test (Purdue University, Exos Aerospace)

Aug 2024 – Dec 2024

- Led integration and test readiness planning for the Pitot rake DAQ system in a single-engine plume impingement test, and wrote the risk matrix and contingency plans.
- Fixed three hardware communication and sensor calibration faults on site, completing 100% of planned data collection in the test window, then post-processed the data into a traceable dataset.

Winglet Analysis for a Long-Endurance Cargo UAV (University of Michigan, AEROSP 638)

Jan 2026 – May 2026

- Used Whitcomb span equivalence to recast winglets on a 3,500 kg, 19 m span aircraft as a planar sweep (aspect ratio 12 to 21, taper 0.3 to 1.0, twist -5° to $+3^\circ$), minimizing induced drag with SLSQP in OpenAeroStruct and OpenMDAO.
- A 1.5 m equivalent winglet raised L/D by up to 15%, compared with about 5.7% from planform optimization alone; mesh doubling changed results by less than 0.5 drag counts.

MDO Architectures for Two-Passenger eVTOL Sizing (University of Michigan, AEROSP 588)

Aug 2025 – Dec 2025

- Implemented MDF and IDF in OpenMDAO on a coupled propulsion, mass, and performance model with a 30% structural mass fraction; both reached 538.44 kg, with the IDF consistency residual falling from 10^3 to 10^{-10} (SLSQP 14 iterations, COBYLA 19).
- Showed that a multi-segment mission profile raises drive motor mass from 16.35 kg to 21.32 kg compared with hover-only sizing.

High-Fidelity CFD of the ONERA M6 Wing (Purdue University, AAE 412, team of three)

Dec 2024 – May 2025

- Simulated four cases in ANSYS Fluent (Mach 0.84 and 0.5, 3.06° and 6.06° angle of attack, Re 14.6 million) and compared Mach 0.84 pressure coefficients with NASA wind tunnel data.
- Built zoned unstructured meshes with inflation layers (y^+ below 0.75), refined from about 6 million to 8.4–11.2 million nodes to capture the upper-surface shock.

Fuel-Optimal Cruise Trajectory Optimization (University of Michigan)

2026

- Posed cruise planning as a nonlinear constrained optimization modeling aircraft dynamics, fuel burn, and wind.

Inter-Island Commuter Aircraft Concept Design (Purdue University)

Jan 2023 – May 2023

- Built a parametric Siemens NX model of a twin-turboprop, high-wing commuter airliner; traded economics against performance.

SKILLS

CAD and mechanical: SolidWorks (parametric modeling, assemblies, drawings), Siemens NX, modular mechanisms and quick-change interfaces, airframe fabrication including 3D-printed parts

Structures and thermal: FEA, multi-case load iteration, mass reduction and stiffness compensation, thermal analysis, dynamics and vibration

Fluids: ANSYS Fluent, structured and unstructured meshing, transonic and shock flows, vortex lattice methods, OpenAeroStruct, ADflow, XFOIL

Optimization and software: OpenMDAO, Gurobi, Python (NumPy, Pandas), MATLAB/Simulink, C/C++, Linux, Git, Bitbucket, Jira, Dataiku, React, Leaflet, CesiumJS, FastAPI, Docker

Test and measurement: DAQ integration, sensor calibration, fault diagnosis, test readiness reviews, risk matrices, V&V, SOPs

FAA regulations: Part 107 and waivers, Part 108 (proposed), UAM ConOps 2.0, Innovate28, powered-lift SFAR, SRM/SMS

Certifications: FAA Private Pilot License; EBEC Python certification