CURRICULUM VITAE

ADAM JONES

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PROFESSIONAL STATEMENT

Aerospace engineering undergraduate student at the University of Michigan, with the goal of leveraging computer science knowledge and experience to tackle complex aerospace problems. Strong academic and industry experience in systems engineering for aerospace systems with two successful internships in Collins Aerospace's Space Systems business unit. Heavily involved with Michigan student project team organizations, highlighted by several successful leadership experiences. Currently conducting optimization-focused research in Prof. Oliver Jia-Richards' Space Systems Lab and helping further industry partnerships in Prof. George Halow's MBSE Leadership Lab. Looking to build on current experience and skill set by pursuing graduate internship experience and higher education at the University of Michigan with a Master's in Aerospace Engineering.

EDUCATION

CREDENTIALS

University of Michigan, Ann Arbor, Michigan GPA: 3.99 (unweighted)

2021 - 2025 **Bachelor's in Aerospace Engineering** with **minor in Computer Science**

Awards: Dean's Honor List (all semesters), James B. Angell Scholar (2023), Aerospace Engineering Centennial Scholarship (2023)

COURSEWORK

Total A+ in degree-relevant coursework: 14

Aerospace science: Solid Mechanics, Aircraft/Spacecraft Structures, Dynamics/Vibrations, Gas Dynamics, Aerodynamics, Aircraft/Spacecraft Propulsion, Rocket Propulsion, Aerospace Controls, Spacecraft Dynamics

Computer science: Programming and Data Structures, Data Structures and Algorithms, Aerospace Computing

Systems engineering and leadership: MBSE Product Development Fundamentals, MBSE Product Development Tools and Methods, MBSE Product Development Leadership, Space System Design

PROFESSIONAL EXPERIENCE

Collins Aerospace Systems Engineering Intern – xEVAS and Dragonfly TTS May 2024 – Aug 2024

xEVAS PCAI - *Exploration Extravehicular Activity Services Power, Communications, Avionics, and Informatics*

- Created test material for SEE radiation testing of two COTS candidates for DCU (Display Control Unit) display
- Analyzed driver chip architecture for two COTS display candidates to determine methodology for detecting and categorizing SEEs
- Developed test plan, procedure, and other documentation in compliance with JSC-67551 and program-level specifications
- Determined necessary hardware and C-based software to interface with driver chips and inspect memory during live radiation testing
- Designed transportable SEE test rig, considering compliance to test requirements, failure modes, and facility compatibility

Dragonfly TTS – *Dragonfly Thermal Transport System*

- Analyzed line pressure drop under various flow conditions for worst-case sensor offset to inform sense line configuration
- Determined check valve crack pressure under worst-case expected loads to verify assembly operation during test and launch
- Developed fan package leakage allocation and estimated leak rates during test by leveraging legacy data in analysis
- Converted several legacy Excel VBA flow calculation functions to MATLAB scripts to efficiently perform analyses

CORE Process Improvement – MBSE Development

- Developed simple fluid loop model in Cameo to validate common component library methodology and inform best practices
- Trailblazed behavioral modeling to demonstrate component library potential and validate interface structure

Collins Aerospace Systems Engineering Intern - Advanced Oxygen Generator Assembly (AOGA) May 2023 – Aug 2023

- Presented 60-minute portion in AOGA dCDR with Boeing and NASA resulting in acceptance of paths to closure for relevant items
- Compiled/assessed compliance to all AOGA customer requirements and dormancy kit specification for dCDR preparation
- Compiled comprehensive AOGA integrated parts list and CDR-mature drawing tree for dCDR preparation
- Analyzed AOGA post-maintenance leak test fidelity, confirming ability to detect all possible leak failure modes
- Analyzed dormancy preparation water crossover hazards, confirming worst-case volume crossover was insufficient to cause hazard

Program Assistant for Prof. George Halow Aug 2024 – Present

- Assisting Prof. George Halow in building industry relations and partnerships with the MBSE Leadership Lab
- Producing material for proposals, statements of work, internal discussions, and requests for information
- Participating in discussions with organizations like Boeing, Leidos, and GTRI to better understand potential partnership objectives

RESEARCH EXPERIENCE

UNIVERSITY OF MICHIGAN SPACE SYSTEMS LABORATORY

Directed Research, Power Optimal Control under Prof. Oliver Jia-Richards, University of Michigan Jan 2024 – Apr 2024

- Improved on prior work on power-optimal control considerations in the context of regenerative reaction wheel clusters
- Incorporated real-world constraints and considerations into full-trajectory optimization and desired energy extraction rate
- Leveraged several system models and optimization techniques in MATLAB: dynamic programming; linear, nonlinear programming

Directed Research, In-Space Thrust Estimation under Prof. Oliver Jia-Richards, University of Michigan Aug 2024 - present

- Extending prior work by Prof. Jia-Richards determining optimal measurement set to minimize uncertainty in thrust estimate
- Investigating impact of thrust vector direction on propulsive thrust estimation uncertainty during cooperative in-space thruster firing
- Determining optimal thrust vector direction for a given orbit, thruster duty cycle, and measurement sequence using MATLAB

UNIVERSITY OF MICHIGAN STUDENT PROJECT TEAMS

Bioastronautics and Life Support Systems (BLiSS) Student Project Team

BLiSS Co-President: managed BLiSS administration, logistics, and operations for 2023-2024 academic year May 2023 – May 2024

- Managed internal and external leads in hosting professional speakers, professional development, team culture, and other events
- Reorganized organization structure and pursued heavy recruitment/retention to enable 3x organization growth in one year
- Developed annual administrative cadence, including new tasks, to streamline administrative duties in following years
- Rewrote organization constitution to solidify new leadership structure, election process, and membership responsibilities
- Oversaw project proposal development (schedule management, mentorship, and authorship), resulting in proposal acceptance

BLiSS CARGO Controls Lead: led embedded systems team on NASA autonomous cargo management project Aug 2022 – May 2023

- Developed power delivery, sensor suite, motors, controllers, and system autonomous action elements
- Developed backend Arduino (C++) scripts to handle commands, item tracking, system motion, and execution interrupts for safety
- Verified and validated controls subsystem requirements to ensure hardware and software compliance with specification
- Worked through project lifecycle, including requirements cascading, CONOPS, modeling, design, and V&V, using MBSE tools
- Participated in 9 successful design reviews with industry auditors and stakeholders, including SDR, SRR, PDR, CDR, and FRR

Michigan Sustainable Aviation with General Electric (M-SAGE) Student Project Team

M-SAGE Director: led successful high-performance sustainability demonstrator MBSE project with GE Mar 2023 – May 2024

- Created and managed team, ideated and delivered project, through coordination with industry sponsors and university faculty
- Led 14 undergraduates through product development lifecycle for high-performance sustainability demonstrator baseline
- Directed design reviews with GE auditors and representatives, including SRR, PDR, CDR, and an on-site FRR at GE Aerospace
- Developed inexperienced students into MBSE-versed engineers with technical expertise on a project with real-world context
- Delivered on or exceeded stakeholder expectations and mission requirements, on time and under budget, capturing lessons learned

UNIVERSITY OF MICHIGAN UNDERGRADUATE RESEARCH OPPORTUNITY PROGRAM

Research Assistant under Dr. Mark Hammig, University of Michigan Jul 2022 - Dec 2022

- Undertook highly-independent, NASA-funded research into lightweight, flexible, composite conductors
- Synthesized and analyzed 40+ samples to characterize conductive performance
- Achieved 1000x better conductor performance through materials synthesis improvements

Undergraduate Research Opportunity Program (UROP), University of Michigan Oct 2021 - Apr 2022

- Performed physics calculations to determine feasibility and expected results of thrusting from ultrafast laser
- Designed and assembled system to measure force output from 1 mJ pulse ultrafast laser
- Converted DARPA-funded laser system into successful long-range ionization detection demonstration to DoD

PORTLAND STATE UNIVERSITY CENTER FOR LIFE IN EXTREME ENVIRONMENTS

Research Intern, Stedman Lab, Portland State University May 2020 - Oct 2020

- Wrote Python program, CRUISE, to identify iterons in crucivirus genomes, including API to Geneious, a leading bioinformatics tool
- Identified iteron candidates in over 250 genomes for further analysis by Stedman Lab mentor and other interested parties
- Published in Microbiology Resource Announcements; 550+ publication downloads (journals.asm.org/doi/10.1128/mra.01123-22)

SKILLS

Programming: Extensive experience in C++, Python, and MATLAB. Additional experience with C and Excel VBA.
Modeling: Cameo/SysML, Simulink, SMW, STAR-CCM+, NX, Fusion 360
Laboratory: Soldering, 3D printing, laser cutting, benchtop instrumentation, chemical lab training
Extracurricular: Michigan Football megafan, intramural soccer/flag football athlete, DIY engineer, outdoor enthusiast