Hirsh Kabaria

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# EDUCATION­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **­­****University of Michigan – Ann Arbor** | **3.6 / 4.0 GPA** |
| **M. Eng. Space Engineering** – May 2025 (Pending Admission)  **B.S.E Aerospace Engineering** – May 2024 |  |

Computer Science, Minor

Notable Classes: Hypersonics, Electric Propulsion, Model Based Systems Engineering, Spacecraft Dynamics, Aerospace Structures

Honors and Memberships: Sigma Gamma Tau (Aerospace Honors Society), Dean’s List (Winter ’21 & Winter ‘23), AIAA

# SKILLS \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Engineering:** SolidWorks, MATLAB, Ansys Mechanical FEA, Siemens NX, Teamcenter, Siemens System Modeling Workbench

**Manufacturing:** Manual Lathe, Composite Layup, Waterjet, Metal and CO2 Laser Cutter

**Languages and Programs:** C, C++, Java, Ubuntu, Adobe CC (Lightroom Classic, Photoshop, Illustrator), MS Office Master Cert

# WORK EXPERIENCE\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **AeroVironment** | **Summer 23** |
| *Aeromechanical Engineering Intern* | Petaluma, CA |

* Conducted a trade study between wet layup and prepreg carbon fiber operations, considering material properties, tooling, core, and cost.
* Interfaced with suppliers, production, and engineering in order to determine needs and capabilities for prepreg composite manufacturing.
* Developed a user-friendly weight and balance calculator, allowing seamless flight operations in adverse conditions, incorporating all aircraft configurations and payloads. Further accounted for aircraft performance limitations, future capabilities, and customer requirements.
* Analyzed post-life material to evaluate current production methods and lifecycle fatigue.

# PROJECT EXPERIENCE\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**CubeSat Flight Lab**

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| *Payload Integration Engineer* | **Fall 23** |

* Responsible for sensor integration and flight survivability for a CubeSat simulator being flown on a high-altitude balloon in November 2023.

**Model-Based Systems Engineering Lab**

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| *Formation Flying Space Interferometer, Firmware and Integration Lead* | **Fall 22 – Spring 23** |

* Demonstrated formation flight, stabilization, and optical systems using drones for future telescope formation in space.
* Conducted multiple flight tests and evaluated flight telemetry to determine the stability of drone platforms.

**Michigan Aeronautical Science Association (MASA) Rocket Team**

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| *Nosecone and Recovery, Systems Engineer* | **Fall 21 – Summer 22** |

* Determined design requirements and coordinated deadlines, funding, and design reviews between the nosecone, recovery, and airframe teams to facilitate nosecone attachment and separation as part of our recovery sequence.
* Laid up multiple couplers and airframes, delivering flight components ahead of schedule despite redesign due to equipment failures.
* Conducted full system testing and integration with deployment, including redesign of pyrotechnic bolt.

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| *Tank Pressure Control Vibration Testing, Engineer* | **Summer 22** |

* Designed mounting hardware for high pressure systems resulting in a design with a resonant frequency outside of the test range.

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| *Fin Testing, Project Manager* | **Summer 21** |

* Designed a rotating test stand for the fin can allowing for induced roll and fin loading evaluation in a wind tunnel.
* Collaborated with the fin team and wind tunnel management to determine requirements and timelines for wind tunnel testing.

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| *Separation Mechanism, Engineer* | **Fall 20 - Summer 21** |

* Conducted FEA and multiple redesigns to ensure survival given significant bending moment loads on the nosecone-airframe interface.

**MACH AIAA Aircraft Design-Build-Fly Team**

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| *FEA and Structures Engineer* | **Spring 22** |

* Simulated loads on a wing box and motor mount and proposed a composite design for the motor mount to better survive given loads.
* Designed a one-step removable rear fairing for easy and quick access to the aircraft cargo bay during competition.

# LEADERSHIP\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **MASA Business Team,** *Director* | **Summer 21 - Winter 22** |

* Led a team of 5 to manage over $100,000 in funding, design team merchandise, and oversee public relations.
* Raised $28,000+ in NASA and UMich grants, corporate sponsorships, and crowdfunding.
* Responsible for 600% growth of the team’s Twitter, Facebook, and LinkedIn pages through engaging visual content.
* Collaborated with NASA, airport, and local authorities to find a suitable liquid engine test site.
* Participated as a panelist at AIAA SciTech 2022 discussing student rocketry and the creation of the Academic Rocket Launch Alliance.

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| **Sigma Gamma Tau (Aerospace Honors Society),** *Fundraising Lead* | **Fall 22 - Spring 22** |

* Built business experience among society members through merchandise sale, marketing opportunities, and professional development events.