`Hirsh Kabaria

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

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| **­­****University of Michigan – Ann Arbor** | **3.6 / 4.0 GPA** |
| **M.S.E Aerospace Engineering** – May 2025  **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: ΣΓΤ Aerospace Honors Society, Dean’s List (Winter ’21 & Winter ‘23), AIAA

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

**Engineering:** CAD in SolidWorks & Siemens NX, MATLAB, Teamcenter PLM, Ansys Mechanical FEA, Fluent CFD, STK

**Manufacturing:** Manual Lathe, Composite Layup, Waterjet, Metal and CO2 Laser Cutter, 3D Printing

**Languages and Programs:** C, C++, Java, Ubuntu Linux, Adobe CC (Lightroom Classic, Photoshop, Illustrator), ArcGIS

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

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| **AeroVironment** | **Summer 23** |
| *Composite Materials & Performance Analysis 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.
* Conducted multiple design, build, test loops, increasing structural strength, better integrating hardware, and building a resilient system.

**Orbital Slot Dynamics for Low-Earth Orbit Constellations Spring 23**

* Modeled an orbital slot system, representative of a large communications constellation in low earth orbit.
* Built a high-fidelity propagation model, accounting for satellite path perturbations due to irregularities in Earth’s gravitational field.
* Explored the viability of employing a low-fidelity slot model by contrasting different fidelity slots against a high-fidelity satellite propagation.

**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 analyzed flight data 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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| *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.

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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 - Spring 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.
* 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.