Hirsh Kabaria

[hkabaria@umich.edu](mailto:hkabaria@umich.edu) | (813) 766-2335 | [linkedin.com/in/hirsh-kabaria](https://www.linkedin.com/in/hirsh-kabaria) | US Citizen

# EDUCATION­­­

|  |  |
| --- | --- |
| **­­****University of Michigan – Ann Arbor** | **3.7 / 4.0 GPA** |
| **Master of Eng. Space Engineering** – May 2025  **B.S.E Aerospace Engineering** – May 2024 |  |

Computer Science, Minor

Notable Classes: Mech. of Composites, CubeSat Design, Electric Spacecraft Propulsion, Spacecraft Dynamics, Systems Engineering

# SPACE & SYSTEMS ENGINEERING

|  |  |
| --- | --- |
| **Planet Labs** | **Summer 24** |
| *Spacecraft Systems Engineering Intern* | San Francisco, CA |

* Participated in bus build, payload integration, vibration / TVAC testing, and anomaly investigation across the Planet smallsat program.
* Engineered a test of spacecraft deployables and calculated spacecraft dynamics to ensure deployment on orbit.
* Developed a dashboard using on-orbit telemetry to characterize power consumption and optimize power budget margins.
* Conducted a multidimensional trade study to identify and select improved adhesive materials for the LEO environment (AO, UV, outgassing)
* Collaborated with internal and external stakeholders to improve the demisability of the spacecraft propulsion system.

**CubeSat Flight Lab**

|  |  |
| --- | --- |
| *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.

**Space Traffic Control System for Low Earth Orbit Constellations Spring 23**

* Modeled as 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**

|  |  |
| --- | --- |
| *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.
* Applied systems engineering principles to develop project requirements, plan a timeline, and pass multiple gateway reviews.

# COMPOSITE MATERIALS

|  |  |
| --- | --- |
| **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.

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

|  |  |
| --- | --- |
| *Nosecone and Recovery, Systems Engineer and Build Manager* | **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.

|  |  |
| --- | --- |
| *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.
* Researched and conducted trade studies to find the best COTS parts to ensure successful separation in an abort case.

# LEADERSHIP

|  |  |
| --- | --- |
| **EARTH 380: Natural Resources, Economics, and the Environment,** *Graduate Student Instructor* | **Fall 24** |

* Responsible for a class of 25+ students, teaching technical memo writing through the lens of environmental and energy policy.

|  |  |
| --- | --- |
| **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.

# SKILLS

**Engineering and Programming:** CAD in SolidWorks & Siemens NX, Ansys Mechanical FEA, STK, Ubuntu, C, C++, Python, MATLAB

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