
KARTIK BHATIA

College Park, MD

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EDUCATION

University of Maryland

B.S., Aerospace Engineering, GPA: 3.3

Minor, Global Engineering Leadership

Relevant Coursework: Structural Analysis; Control of Aerospace Systems; Space Flight Dynamics; Engineering Instrumentation; Systems Engineering

College Park, MD

Anticipated May 2027

SKILLS

Engineering – Requirements Management, Risk Management (FMEA), Systems Engineering Documentation (N² Diagrams, ConOps, V&V Plans, Trade Studies), Design Reviews, Environmental Test Planning, Stakeholder Communication, Schedule & Budget Management

Fabrication – FDM, SLA, SLS, Powder Bed Fusion (3D Printing), 3D Scanning, DMG Mori 5-axis CNC, Drill Mill, Lathe, Water Jet, Laser Cutting

Software – Fusion 360, Siemens NX, MATLAB, Python, C++, SolidWorks, ROS2, IBM DOORS, Jira, CFD (Ansys Fluent), Ansys STK, Geomagic X

Robotics & ML – ROS2, Gazebo, NVIDIA Jetson, PyTorch, OpenCV, Edge Inference

SUMMARY

Aerospace engineering student with **hands-on** experience in space **systems integration**, environmental qualification, **hardware verification** and launch campaign logistics. **Led** end-to-end readiness for a **12U-class payload flight**, coordinating **subsystem integration**, **test sequencing**, and launch-day operations. Bring a systems engineering mindset to delivering reliable hardware in demanding environments, on schedule.

EXPERIENCE

Terrapin Works - Advanced Fabrication Lab

Additive Manufacturing Technician

College Park, MD

February 2026 – Present

- **Operate** across **FDM, SLA, SLS, and powder bed fusion 3D printers**, handling slicing, setup, part harvesting, and customer inventory
- Perform **dimensional verification** and **3D scanning** using handheld scanners and the Hexagon ROMER Absolute Arm for part conformance
- Maintain and **troubleshoot** fabrication **equipment**, oversee scheduled upkeep, and enforce safety SOPs to ensure consistent lab operations

Collaborative Controls and Robotics Lab

Undergraduate Research Assistant

College Park, MD

August 2025 – Present

- Support robotic swarm development by **assembling hardware** and troubleshooting hardware and software faults to keep test cycles unblocked
- Implemented decentralized task-allocation nodes in **simulation** runs; completed tasks **~15% faster** than the initial centralized baseline
- **Built** a Python-based **automated data logging pipeline** for physics-based simulation trials to enable repeatable **KPI tracking** across **test runs**

V.A.A.C.E - NASA L'SPACE Program

Chief Engineer

College Park, MD

August 2024 – Present

- **Lead** a **NASA seed-funded** research project with **20+** members, building a **scientific instrument payload** and an **autonomous sensor-driven inspection and repair system** toward a **TRL-4** prototype
- Designed the **complete payload assembly** in **SolidWorks** and **3D-printed** the corresponding **sensor housing and structural components**
- Directed **electronics assembly**, **Arduino/ESP32 firmware development**, and **integration testing** across subteams for flight readiness
- Facilitated subsystem **FMEAs**, identifying failure modes and **mitigating high-severity risk** exposure by **~65%**
- Led the **flight operations** for the **12U-class payload's** launch to **90,000 ft**, **validating hardware in near-space** conditions
- Leading development of an **autonomous inspection and repair system**, architecting design in **SolidWorks** and iterating on the **control logic**

Space Copy Inc.

Robotics Mechanical Engineering Intern

Houston, TX

June 2025 – August 2025

- Mapped interactions between a 7-DOF robotic arm and an **industrial 3D printer**, documenting pick-and-place sequences and homing routines
 - **Designed** a **magnet-based end-effector assembly** in **SolidWorks**, **validating 1100 N grip strength**, communicating trade-offs to stakeholders
 - Built a **physics-based** model in **Gazebo**, **simulating** tool pick-and-place cycles, validating full workspace **coverage within ± 70 inches**
 - Performed **CFD** simulations in **Ansys Fluent** on **melted regolith** in microgravity, characterizing melt-pool stability at **1,600 K**
 - Surveyed **20+ lunar** sites via **LROC imagery**, ranking **Ilmenite/Anorthite** regions by solar exposure and extraction feasibility
 - **Characterized** thermal noise in **Raman spectra** of **heated regolith**, defining correction requirements for **material detection**
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PROJECTS

Zero Pressure Aerobot - UMD Balloon Payload Program

Prototyping Engineer

College Park, MD

September 2024 – December 2024

- Engineered a **high-altitude balloon** system for near-space payload testing, reaching **60,000 ft** while carrying a **4 lb payload** in a full-scale flight
- Designed and 3D-printed structural components that held **<2 % strain** during ascent, **extending flight duration by ~25 %**
- **Programmed** an **Arduino-based cut-down mechanism** with a fail-safe logic, enabling **payload recovery** within a **200 m landing radius**

Terraformers - URC Rover Team

Fabrication and Testing Engineer

College Park, MD

January 2024 – June 2024

- Conducted **CNC** machining and **welding** for a **7 ft × 4 ft rover** build, aligning fabrication execution to **±0.5 mm tolerance** requirements
- Owned **validation** trials and execution reporting, confirming **5 m/s traversal over 2 ft obstacles across ~50 km** with **zero structural failures**
- **Reinforced chassis** plates, **reducing predicted bending stress by ~35 %** and **vibration amplitude by ~25 %** under impact loads