

Jonathan Katz

Cambridge, MA | (201) 250-0512 | jmkatz15@gmail.com | <https://www.linkedin.com/in/jonathan-katz-218b63216> | <https://www.j-katz.com>

EDUCATION

Massachusetts Institute of Technology (MIT)

May 2026

Bachelor of Science in Mechanical Engineering | GPA: 4.7/5.0

Cambridge, MA

Relevant Coursework: Design for Manufacturing I & II, Design of Compliant Mechanisms, Thermal-Fluids Engineering I & II, Elements of Mechanical Design, Electronics for Mechanical Systems

EXPERIENCE

Mechanical Engineering Intern

June – August 2025

Accelaron Fusion

Cambridge, MA

- Designed and fabricated a compact thermal management system to maintain a translating X-ray detector at $-30\text{ }^{\circ}\text{C}$ in vacuum. Machined custom mounts and a water-cooled heat exchanger in-house using a manual mill to accommodate 10 cm of detector travel near the fusion reaction.
- Developed a flexible thermal strap from 50 layers of $10\mu\text{m}$ copper foil to conduct heat from the moving detector to the stationary cooling system without constraining its motion; analytically optimized thermal resistance and stiffness, validated mechanical behavior with force-gauge testing, and achieved $-28\text{ }^{\circ}\text{C}$ under a 5 W worst-case load in vacuum.
- Designed and manufactured flexure-based limit-switch mounts with coarse positioning and fine-pitch adjustment to achieve 0.1 mm positioning resolution for alignment of compressed tritium with the muon beam; validated flexure performance analytically and through SolidWorks FEA.
- Engineered, plumbed, and assembled vacuum hardware for tritium purity testing and residual gas analysis (RGA), incorporating vacuum-, radiation-, and tritium-compatible components and supporting hardware for fusion diagnostics and optical instrumentation.

Aerospace Projects Consultant

July 2023 – August 2024

Learn Ventures Inc.

Malden, MA

- Redesigned and fabricated a 20-ft, three-stage high-power rocket, optimizing aerodynamics, stability, structure, and mass; achieved 15 km altitude and Mach 1.88, an 11% improvement over the previous vehicle.
- Engineered carbon-fiber fins and developed a custom wet-layup process using packed, low-shear sand for consolidation where geometry prevented vacuum bagging; maintained fin alignment within $\pm 20\mu\text{m}$.
- Developed and validated low-drag black-powder staging systems, calculating separation charges and vacuum-testing at simulated 8–13 km altitudes; redesigned flight avionics and electronics packaging, with staging and avionics operating successfully in flight.

Independent Contractor

March – June 2024

CRABI Robotics

Boston, MA

- Designed and fabricated tooling for safe handling and storage of high-force magnetic components using 3D printing, laser cutting, and woodworking, reducing handling time from 2 min to 10 seconds and validating performance across ~30 repeated trials.
- Developed precision magnetic-assembly fixtures to maintain $\pm 20\mu\text{m}$ alignment over 6 in, fabricating components manual milling and verifying alignment with a surface plate and dial indicator.

Undergraduate Researcher

June – September 2023

MIT HAUS

Cambridge, MA

- Led structural design of a 5×8 ft recycled-PET floor system for a large-format 3D-printed house, completing 13 design iterations to maximize strength-to-weight ratio while meeting residential building-code loading and continuous-extrusion manufacturing constraints.
 - Developed FEA models incorporating anisotropic printed-layer behavior and interlayer adhesion, evaluating stress, deflection, and buckling to optimize strut, crossbeam, and floorboard geometry and eliminate designs that failed code requirements.
 - Fabricated 10×16 in PET scale models and performed three-point bending and concentrated-load testing on an Instron to validate simulations, with FEA predicting experimental stiffness and failure load within 15%.
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SKILLS

- Software:** SolidWorks, Fusion 360, MATLAB, Altium Designer, KiCad, OpenRocket, Adobe Illustrator, Microsoft Office
- Manufacturing:** CNC/manual milling & turning, waterjet, laser cutting, MIG welding, composite layup