Brody A. Gatza

Lawrence, Kansas
LinkedIn.com/in/brodygatza | brodygatza@gmail.com

Education

The University of Kansas, Lawrence, Kansas

Pursuing a Doctor of Philosophy in Aerospace Engineering *Expected May 2027*

- Cumulative GPA 3.95

Bachelor of Science in Aerospace Engineering *May 2023*

- Cumulative GPA 3.93
- Graduated from the University Honors Program, with departmental honors, and with a Leadership Engagement Certificate.
- Member of Tau Beta Pi and Sigma Gamma Tau Honor Societies.

Technical Skills

- Reduced-Order Modeling
- ANSYS Fluent
- STAR-CCM+
- Fidelity Pointwise
- Python
- Linux
- HPC Systems
- Fortran
- MATLAB/Simulink
- Siemens NX
- Finite Element Analysis
- Wiring & Soldering

Publications & Presentations

- Gatza, B, et al. "KUbeSat Ground Station: Revision and Future Expansion," presented at the 58th International Telemetry Conference, Las Vegas, NV, October 2023.
- Owen, D, et al. "Satellite Side Data Collection and Transmission for a Cube Satellite Mission," presented at the 58th International Telemetry Conference, Las Vegas, NV, October 2023.
- Prinsloo, A, et al. "KUbeSat Ground Station: Test and Operations," presented at the 57th International Telemetry Conference, Phoenix, AZ, October 2022.

Work Experience

NASA Cryogenic CFD RDRE Modeling Intern *Summer 2024*

- Adapted NASA's CFD solver to attain a 300% performance gain, increasing productivity for the research unit.
- Presented weekly updates on Fortran code development to gain input and gauge the impact of design decisions.
- Developed a model of thermophysical properties from the ground up to validate the CFD solver and resolve unseen bugs.

Graduate Research Assistant *Summer 2023 – Present*

- Completed CFD simulations of a 2-D combustor on multiple HPCs to validate the performance of a CBROM framework.
- Modified a non-intrusive tool to work with one-dimensional flow and tested its efficacy in creating ROMs for lower-dimensioned systems.
- Worked with the GEMS CFD solver to model a nine-injector rocket engine simulation for future ROM work using two high-performance research computer clusters.

Ball's Food Stores *June 2017 - Present*

Shift Manager

- Received six promotions for exceptional work ethic, the ability to adapt to new situations quickly, and a disposition to exceed management's expectations in problem-solving and attention to detail.
- Trained more than forty cash-handling teammates and conducted monthly audits of department operations.

Leadership Roles & Projects

KUbeSat: The University of Kansas CubeSat Organization

Project Manager *Fall 2022 – Present*

- Managed seven teams with over 50 total members to develop a proposal for NASA CSLI outlining the next CubeSat mission from the organization that will benefit NASA's strategic plan, students, and the university.
- Lead a team to debug a communications issue between the organization's on-orbit satellite and the ground station.
- Coordinated the final stages of satellite development and handled the logistics of transporting a satellite 1,700 miles.

- Worked with flight hardware in a cleanroom environment and traveled to integrate a satellite with its launch vehicle.

President *Summer 2021 – Spring 2023*

- Attended conferences, news interviews, and other outreach events to promote the organization to the public.
- Collaborated with team leadership and interfaced with a hardware manufacturer to solve a mission-critical uplink issue between the onboard radio and the ground station.

Jayhawk Rocket Propulsion Design *Fall 2024 – Present*

- Founded a liquid-fuel rocket design team and brought together 45 students to start the development of a rocket to pass the Kármán line with the ambition of making the university the first to put a liquid-fuel rocket into space.

Undergraduate Research in Reduced Order Modeling *Fall 2021 – Spring 2023*

- Self-taught Python and used data analysis methods to reconstruct flow state data with reduced computational complexity.
- Used non-intrusive methods to develop a ROM that could reconstruct flow states without access to the source code.

Extracurricular Activities

Self Graduate Fellowship Fall 2024 - Present

- Recipient of the four-year fellowship with financial support surpassing $200,000 and a professional development program.
- Cultivated a deeper understanding of the impact communication styles have on a team's success, and developed an action plan to implement strategies for effective communication in a tangible manner.
- Reflected on career goals to seek out experiences and skills to achieve them while identifying obstacles.

Self Memorial Scholarship Fall 2023 – Spring 2024

- Reflected on personal strengths in a collaborative setting to better recognize the situations where I can best perform as well as understand the strengths of others and how they influence interpersonal interactions.
- Formed connections with interdisciplinary researchers and shared my research while learning about theirs to elevate my communication skills and broaden my knowledge of research techniques from outside my field of study.

KU Honors Program Fall 2019 – Spring 2023

- Completed 4 Enhanced Learning Experiences focused on leadership, research skills, professional development, and aesthetic engagement that involved engaging with the community and developing skills outside of the classroom.
- Pursued coursework and activities outside of engineering to broaden my comprehension and appreciation of the world.

FIRST LEGO League Volunteer Fall 2023

- Provided guidance on the engineering process and collaboration to elementary students as a competition judge.

University Orchestra *Fall 2019 – Spring 2022*

- Performed the cello in a fast-paced creative environment and built on skills developed over a decade of dedication.

Coursework

Computational Fluid Dynamics Fall 2023

- Developed a 2-D Euler solver that solved for the state variables over a complete space shuttle geometry, going beyond project expectations and resolving shock waves.

Rocket Propulsion Spring 2023

- Developed a program in MATLAB that takes engine performance parameters and outputs the engine specifications required to result in the desired performance and plots a 2-D model of the nozzle and combustion chamber.

Spacecraft Design *Fall 2022 – Spring 2023*

- Designed four spacecraft using a systems-based approach while considering science payload requirements and the mission goal of collecting data that would lead to a decrease in satellites that are damaged by solar wind.

Awards

- Recipient of the $36,000 First Year Dean's Doctoral Fellowship.
- Recipient of the $10,000 Madison and Lila Self Memorial Scholarship.
- Awarded the School of Engineering Outstanding Senior in Aerospace Engineering Award at spring commencement.
- Selected as the Outstanding Senior at the annual aerospace engineering department banquet.
- Recipient of $48,000 in undergraduate scholarships from The University of Kansas.
- Recipient of the $2,000 Kansas Space Grant Consortium Fellowship for work done as an undergraduate researcher.
- Two-time runner-up for Most Valuable Teammate at Ball's Food Stores.