Cade Byer

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EDUCATION

University of Kentucky, Lexington, KY | May 2026 (Expected)
Bachelor of Science Mechanical Engineering | 4.0 GPA
Bachelor of Science General Mathematics

EXPERIENCE

University of Kentucky, Lexington, KY | January 2023-Present
College of Engineering Research Fellow – *Autonomy, Robotics, and Control Lab*

- Developed spacecraft testbed for Guidance, Navigation, and Control (GNC) experiments, simulating space
- Used soldering iron and hand tools to assemble satellite frame and embedded hardware
- Wrote embedded software in C/C++ for IMU sensors, radio modules, and data logging
- Performed experimental data analysis, e.g. determined the time constant of a first order actuator
- Simulated satellite vehicle and actuator dynamics with time delay in MATLAB/Simulink
- Developed PD and LQR controllers for attitude control and Kalman filter for state estimation in MATLAB
- Used optimization methods for actuator allocation and developing an optimal control law
- Wrote funded grant proposal ($10,000) for rendezvous and orbital mechanics research

University of Kentucky, Lexington, KY | January 2024-May 2024
Tau Beta Pi Peer Tutor

- Helped students with Thermodynamics, Fluid Mechanics, Dynamics, Solids, and Statics
- Explained complex engineering topics and worked in a team of other tutors to assist students

Barnes Aerospace, Cincinnati, OH | May 2023-August 2023
Mechanical Engineering Intern – *MRO Division*

- Performed material and process studies to streamline high-pressure turbine (HPT) shroud repairs, reducing turnaround time by 10% and decreasing cost of poor quality (COPQ)
- Analyzed defective jet engine components and collaborated with engineering team to create rework solutions
- Led 3D printing project to prototype air seals for a HPT shroud test stand, accelerating design iterations
- Designed precision manufacturing fixtures in SolidWorks, applying GD&T for part drawings

TECHNICAL SKILLS

Software: MATLAB, Simulink, C/C++, Python, OOP, Git/version control
Hardware: Arduino, Robotics, Actuator selection, IMUs, Radio modules, Motion tracking cameras
Dynamics and Control: LQR, PID Controllers, Kalman Filtering, Spacecraft Dynamics, Orbital Mechanics
Engineering Tools: SolidWorks, Creo, Excel, LaTeX

HONORS AND AWARDS

- NASA KY Space Grant REU, $10,000 | 2024
- College of Engineering Undergraduate Research Fellowship, $2,500 | 2024
- Dean's List | 5 Semesters
- SEC Academic Honor Roll | 3 Years

PROFESSIONAL ASSOCIATIONS

- Institute of Electrical and Electronics Engineers (IEEE) Member | Since 2023
- Tau Beta Pi Honor Society | Inducted Fall 2023

LEADERSHIP

University of Kentucky, Lexington, KY | August 2022-Present
D1 Track and Field and Cross Country – *Distance*

- Competed at the South Eastern Conference (SEC) and regional level
- Balanced engineering courses and D1 athletics, demonstrating time management (20 hrs/week commitment)
- Attended personal development sessions and gave back to the local community