JAMES CHAMBERS

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EDUCATION

GEORGIA INSTITUTE OF TECHNOLOGY

BS - Aerospace Engineering   Expected Graduation: Fall 2026

MS - Aerospace Engineering   Expected Graduation: Fall 2027

Guidance, Navigation and Control Rocket Club, Klaus Startup Challenge, Georgia Tech Outdoor Recreation, Yellow Jacket Fencing
GPA: 4.0 / 4.0

WORK EXPERIENCE

OnTrajectory
Research and Development Intern   May 2025 - August 2025
- Designed and implemented a Monte Carlo-based simulation framework in Python to evaluate and optimize user decision spaces under uncertainty.
- Developed numerical models incorporating statistical distributions, large datasets, and scenario analysis to quantify risk and performance tradeoffs.
- Validated simulation outputs through sensitivity analysis and comparative testing against baseline models.
- Integrated simulation logic into a functional application, contributing to system architecture and performance optimization.

OnTrajectory
AI Research Intern   May 2024 - August 2024
- Evaluated algorithmic performance of an AI assistant through structured testing and quantitative benchmarking.
- Conducted system-level analysis of AI-assisted workflows, identifying limitations and failure modes.
- Contributed to early-stage system integration, supporting data management, interface design, and deployment testing.

SPECIAL ACTIVITIES AND LEADERSHIP

Guidance Navigation and Control Rocket Club
Structural Engineer   September 2023 - Present
- Designed, modeled, and manufactured flight-critical subsystems, including a thrust-vector-control gimballing mechanism.
- Contributed to vehicle integration, structural modeling, FEA and static testing, and guided rocket assembly.
- Authored a technical article on the effectiveness of thrust vector control published with the AIAA.

Undergraduate Research - Analysis of Rotational Habitat Atmosphere Dynamics
Solar Wind Lead   May 2025- Present
- Developed numerical simulations for collisionless upper-atmosphere dynamics using Monte Carlo methods and PDE models.
- Implemented numerical integration and data analysis pipelines to model and report on solar wind-atmosphere interactions.
- Led a student subteam, translating observational data into validated dynamic models and presenting findings in a manuscript currently in preparation for journal submission.

PERSONAL PROJECTS

Solid Rocket Motor Design
Independent Project   July 2025 - August 2025
- Designed and fabricated a laboratory-scale solid rocket motor using composite propellant, applying principles of thermochemistry, gas expansion, and structural mechanics.
- Conducted static fire testing to measure thrust curve and burn time, and validate grain geometry.
- Reduced experimental data to compute specific impulse and total thrust, and compared results against analytical predictions.

Gimballed Computer Vision Tracking Project
Independent Project   August 2025 - September 2025
- Developed a real-time computer vision system on Raspberry Pi using OpenCV to track a moving target through 3D space.
- Implemented closed-loop control by transmitting positional data to servo actuation system, controlling pitch and yaw.
- Achieved <0.5 conversion time with smooth, stable tracking performance.
- Designed and fabricated a custom structure using CAD, DFM, and precision assembly techniques.

SKILLS

Engineering and Simulation: Solidworks, Ansys Fluent, Ansys Mechanical, OpenRocket, GMAT
Programming: Java, Python, Matlab, NodeJS, HTML, CSS, C#, C++, LaTeX
Technical Strengths: Control Systems, Numerical Simulation, Data Analysis, Design for Manufacturing, Experimental Testing

RELEVANT COURSEWORK

Thermodynamics and Fluids, Material Science & Engineering, Differential Equations, Object-Oriented Programming, Aerodynamics, Structural Analysis, Circuits and Electronics, Orbital Mechanics, System Dynamics and Vibrations, System Design, Control Systems