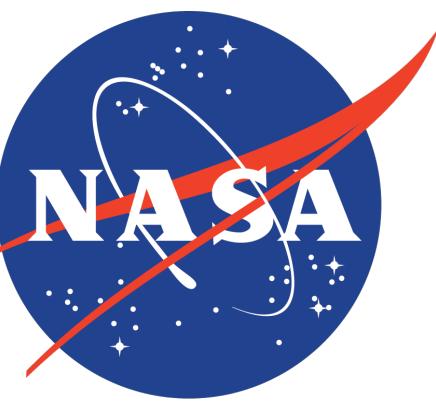
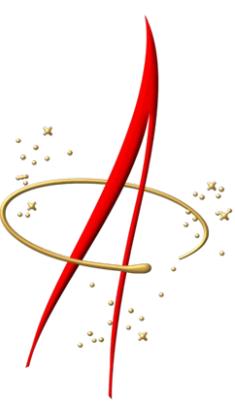


# NASA Langley Research Center Academy & NASA Glenn Research Center Internship

Lawrence Giron Jr.

Graduate MSME Student, UAA | [lgironjr@alaska.edu](mailto:lgironjr@alaska.edu)



## NASA LaRC | Hampton, Virginia | Summer 2023

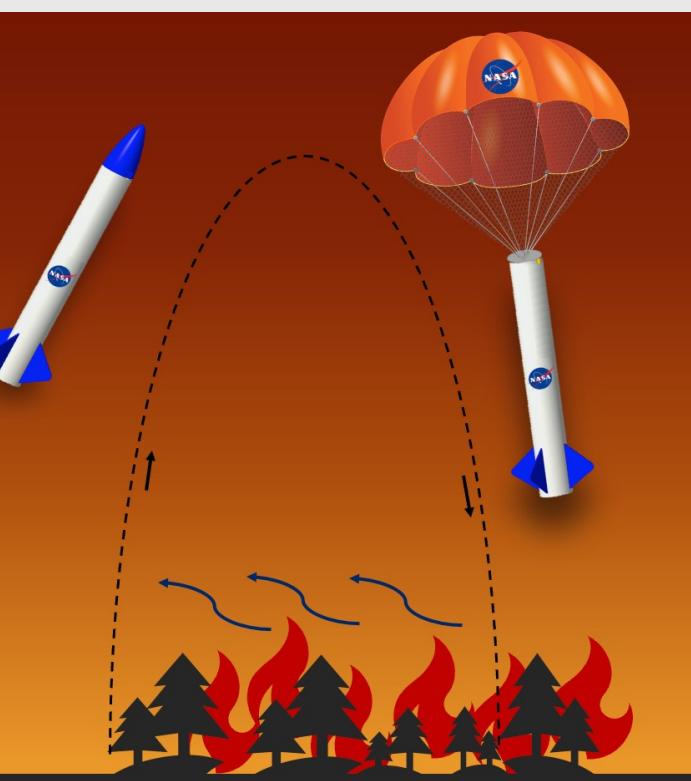
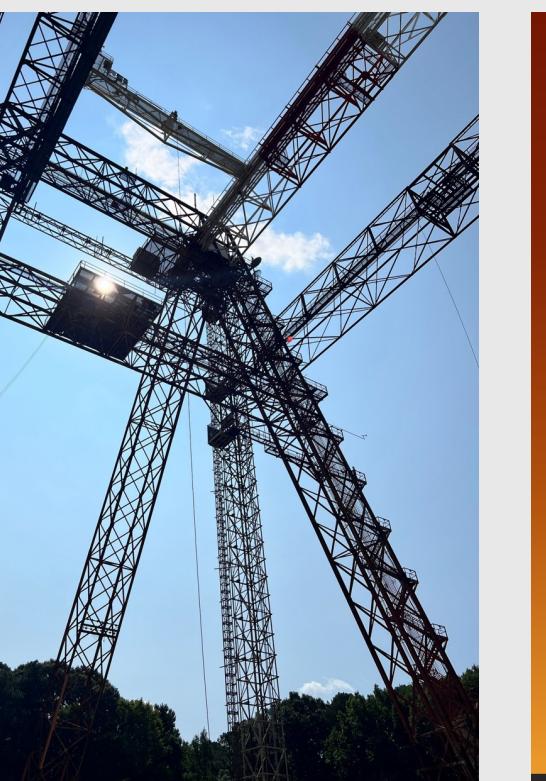
### Introduction:

- 10-Week Program, Aeronautics Research Directorate, In-Time System-Wide Safety Assurance Academy Research Associate
- Multidisciplinary Research Project with 16 other students from around the country
- Solved current problems in the world of aeronautics and aerospace using available resources and facilities on center
- Included a Technical Advisory Committee composed of NASA experts
- Multiple projects split between the academy built from the ground up



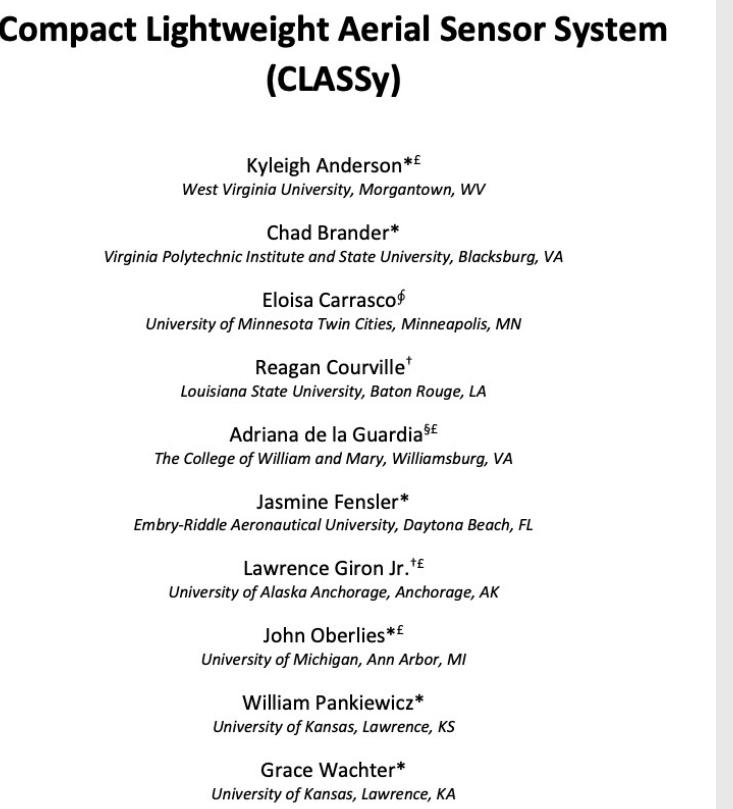
### Project:

- CLASSy – Compact Lightweight Aerial Sensor System
  - Designed and tested a cost-effective disaster mitigation tool that provides an aerial perimeter point of view for first responders in natural disaster situations
  - Split into sub teams focusing on the sensor package, descent system, launch mechanism, and body design
  - Studied, designed, and tested parachute recovery systems to provide stable and steady descents of launched sensors
    - Design parameters included parachute diameter, canopy shape, vent hole, suspension method, materials, gore number, and reefing line length
  - Were able to work with wildfire experts such as CalFire to ensure our development suited current needs



### Opportunities:

- Ability to turn to NASA engineers who specialize in certain topics such as descent systems
- Conducted tests using facilities on center such as NASA's Landing and Impact Research Facility
- Authored and published papers on our projects onto the NASA Technical Reports Server
- Had tours of the many projects and facilities that exist on center
  - Such tours include: F-22 tour, wind tunnels, Wallops Flight Facility



### Take Aways:

- Had a deep dive into engineering concepts, principles, and systems engineering
- Gained experience developing a project from the ground up and working on a multidisciplinary team of engineers from different backgrounds
- Gained experience turning to professional engineers to gain input and knowledge
- Gained experience with research and writing



## NASA GRC | Cleveland, Ohio | Fall 2023

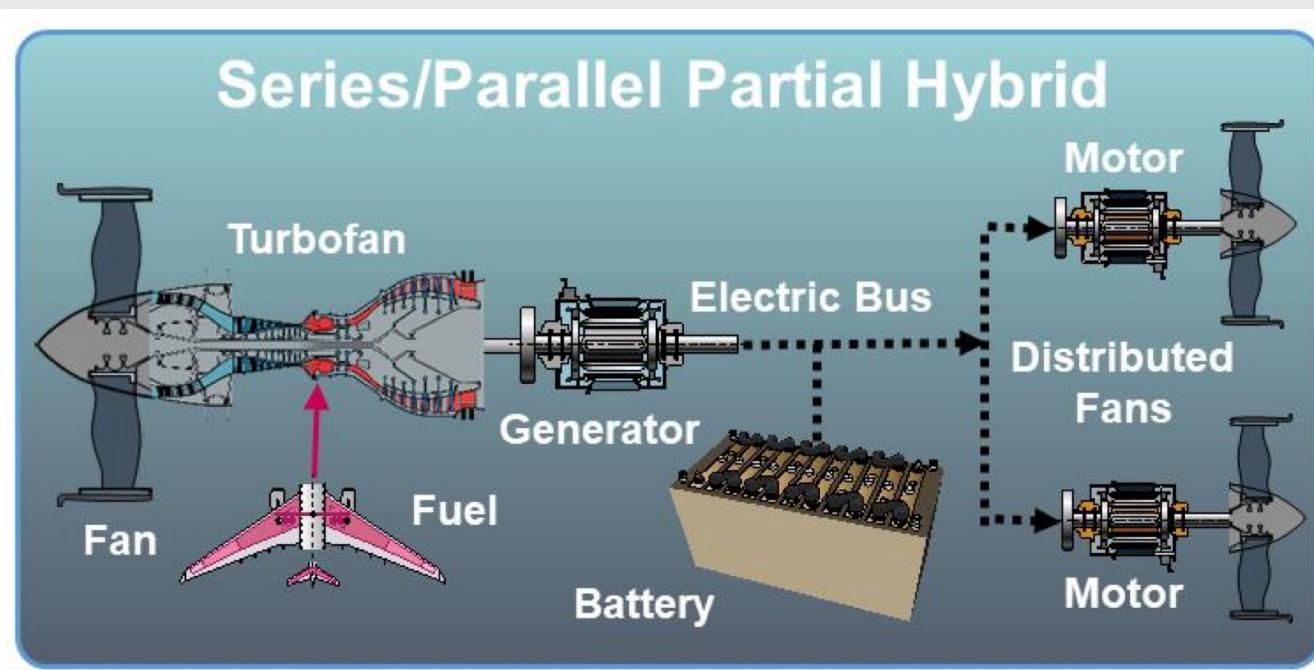
### Introduction:

- 16-Week Program, Aeronautics Research Mission Directorate, Intelligent Control and Autonomy Intern
- Traditional intern setting working closely with a mentor and other professional engineers on center
- Worked on a full-scale research project spanning the different research centers across the country
- Made advancements and held responsibilities towards project development



### Project:

- SUSAN – Subsonic Single Aft Engine Hybrid-Electric Passenger Aircraft
  - Expanded the SUSAN concept simulation powertrain model for the optimization and management of thermal health
  - Thermally modeled the electrical components of the aircraft with additions made to the MATLAB Simulink Electrical Modeling and Thermal Analysis Toolbox (EMTAT) developed by NASA
- VULCAN Fire Response Ops – Virtual Utility for Locating, Containing, and Assisting Notification
  - Project awarded first place at the NASA GRC Space Apps Hackathon Competition
  - Designed to enhance fire prevention, monitoring, and response operations using machine learning, SMS notifications, and available data from NASA satellites



### Opportunities:

- Attended the 2023 Energy & Mobility Conference and Expo to share our work and share with others where the project stands in development
- Met with multiple astronauts from the past
- Had tours of the many labs and facilities that exist on center
  - Such tours include: wind tunnels, Planetary Exploration SLOPE Lab, Microgravity Research Facility Drop Tower



### Take Aways:

- Directly applied what was learned from UAA through the BSME Program
- Gained experience working on a full-scale research project communicating with multiple branches across the centers
- Gained experience turning to and working alongside NASA engineers
- Presented my work to the branch and prepared it for future public release

