Fernando E. Ramos Siguenza

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EDUCATION

Bachelor of Science, Mechanical and Aerospace Engineering – Double Major **Expected: May 2024**
University at Buffalo, the State University of New York **GPA: 3.91/4.0**

ENGINEERING EXPERIENCE

Model Based Systems Engineering Intern - ***The Boeing Company*** **May – Aug 2022**

- Evaluated the application of a new technology to showcase actionable insight for customers.
- Automated raw data transformation into a usable hierarchy data using python and data engineering.
- Developed interactive web-based data visualizations targeted at cost conscious decision making around part design.
- Executed and supported system and integration testing of Boeing custom Model-Based Systems Engineering capabilities included in enterprise-wide release of Magic Systems of Systems Architect within an Agile Release Train.

Dynamics and Controls Research Intern - ***Iowa State University*** **May – Aug 2022**

- Pioneered development of an image-processsing-based control model using an onboard camera to autonomously allow a drone to follow a colored marked flying object.
- Derived and applied linear and non-linear dynamics model to program a quadcopter to autonomously fly through a desired set of 3D space points and detect ground objects underneath with Simulink.
- Analyzed post-flight data containing vehicle's 12 stability and control derivatives to create a detailed 2D flight path.
- Presented and demonstrated control system model at Iowa State University Research Symposium.

Aerodynamics Research Intern - ***Georgia Southern University*** **May – Aug 2021**

- Cooperated in a group of 5 to analyze aerodynamic and structural effects caused by adding various winglet designs to Cessna 172, Piper Malibu, and Boeing 737-300 model-based wings.
- Modeled and 3D printed multiple winglet and wing designs to be tested in a wind tunnel.
- Implemented Finite Element Analysis and Computational Fluid Dynamics simulations to find generated stresses and aerodynamic coefficients of lift and drag of each wing-winglet combination.
- Devised an Arduino-based data acquisition system that uses pressure and load-cell sensors to determine overall lift and drag of wing models being tested in a wind tunnel at various angles of attack.
- Concluded winglets with a high cant-angle provided ~5-7% increase in efficiency at cruise configurations, while providing no significant increase at take-off/landing configurations.

ENGINEERING PROJECTS

Captain - ***Design, Build & Fly (DBF)*** **Sep 2022 – May 2023**

- Managed a team of 25+ members in the design, build, test, and flight of a 6-feet wingspan RC aircraft capable of being assembled in under 5 minutes to complete warfare missions.
- Conducted mission requirements analysis and generated an aerodynamic model employed to identify optimal aircraft dimensions that maximized mission score.
- Directed writing of a 60-page technical report outlining aircraft design process, capabilities, and testing. Report achieved a score of 78.58, earning a ranking of 37 out of 99 teams.
- Performed static and dynamic stability analysis to determine optimal mass distribution of aircraft ensuring stable flight characteristics for all mission configurations.
- Manufactured wings and fuselage with carbon fiber and fiberglass wet-layup on XPS foam techniques.

Project Lead - ***Unmanned Aerial Vehicle Competition*** **Sep 2021 – May 2022**

- Led a team of 4 students in designing and building an unmanned ground and aerial vehicle capable of operating together to achieve a reckon-based mission in under 4 minutes.
- Created an Arduino-based control system with multiple sensors to autonomously direct car to detach itself from the aerial vehicle and utilize line tracking to reach a target location under 25 seconds from landing.
- Identified combination of battery, motor, and propellers granting quadcopter ability to carry up to 2.5 kg of payload for 10.7 minutes of mixed-motion flight time leveraging eCalc simulations.
- Designed frame-structures, soldered all electronic components, and assembled both vehicles.

SKILLS

Skills: Microsoft Office Suite, SolidWorks, AutoCAD, Simulink, CFD, FEA, LaTex, GD&T, XFLR5, XFoil, SysML
Programming Languages: Matlab, Arduino, Python, Jupyter Notebook, C ++, JavaScript, HTML, CSS
Languages: English (Fluent), Spanish (Native)