ARTURO E. NEGRETTE

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University of Central Florida *B.S. in Aerospace Engineering*

-Dean's List Recipient Fall 2024 / Spring 2025 ***May 2025***

WORK EXPERIENCE

Viable Engineering Solutions (Siemens Energy) | *Mechanical Engineering Intern* Jan 2025 – May 2025

- Designed and analyzed a "hard stop" assembly with full design ownership for an industrial wheel suspension with the primary goal of withstanding upwards of 22kip and dthe expectation of surviving past a million fatigue cycles.
- Presented several design reviews in front of a panel of seasoned engineers throughout the design life cycle, highlighting how different design approaches and implementations perform against requirements.
- Implemented and improved the process for sealing a turbine flow testing fixture, with the goal of minimizing leaks and decreasing turnaround times.

University of Central Florida | *Machinist* June 2023 – Jan 2025

- Pioneered the usage of a Stratasys Origin One resin printer in a machine shop environment to produce parts not conventionally manufacturable.
- Leveraged additive manufacturing to create fixturing and tooling and reduced machine setup times.
- Applied manual and CNC manufacturing methods to produce high quality parts for the UCF Office of Research.
- Created custom toolpaths for Haas CNC mills, Makino Wire EDM and ProtoTRAK lathes using MasterCam software, saving time and effort compared to other manufacturing approaches.
- Extended design aid to the UCF research body to facilitate access to functional prototypes and experimental setups to newer research groups.
- Designed prototypes and experimental setups for UCF researchers with a large focus on alleviating pain points and reducing turnaround times between project proposals and testing data gathering.

PROJECTS AND LEADERSHIP

Small Air-Breathing Rotating Detonation Engine (Project SABR) | *RDE Design* Aug 2024 – May 2025

- Designed initial revisions of a hydrogen fueled, air breathing small scale Rotating Detonation Engine (RDE) with the overarching goal of flight vehicle integration.
- Developed a torch ignition system based on the primary propellants with the goal of improving repeatability and ease of integration within a flight vehicle configuration.
- Designed a spark driver circuit based on a relay oscillator for simplicity and robustness, while also maximizing compatibility with the project's DAQ system as well as any other control setups.
- Oversaw the mechanical design and integration of the RDE combustor, with a special focus on design for manufacturing and ease of assembly.
- Generated engineering drawings for submission to the UCF Machine Shop.
- Aided in the process control integration, electrical connections and wire management for the project's Test Support Equipment.

Knights Experimental Rocketry Aug 2022 – May 2024

IREC Combustion Lead Aug 2023 – May 2024

- Oversaw the research, development, manufacturing, integration and testing of UCF's most powerful hybrid rocket motor, reaching upwards of 40000Ns of total impulse, and a peak thrust of ~9kN.
- Developed a brand-new approach to producing fuel grains by leveraging 3D printing and vacuum casting methods derived from candle and mold making industries
- Leveraged NASA's Project Management and System Engineering techniques to ensure the project stayed on schedule and under budget.
- Carried out a PDR and CDR to study the team's design approach and presented it to a panel of industry professionals from Vaya Space and Firehawk.

IREC Propulsion Manager Aug 2022 – July 2023

- Developed a combustion chamber and fuel grain composition capable of delivering 15,000 Ns of impulse
- Performed propulsion system validation tests ranging from simple valve actuation to full duration static fires, all of which met their respective requirements.
- Researched and developed a novel way of emulsifying fuel grain components, allowing for repeatability and consistency between production batches.
- Launched Project Pegasus in September 2023 to an altitude of 4500ft, a partial success due to an anomaly during flight.

SKILLS

Proficient in: SolidWorks, MathCAD, ANSYS Mechanical, ANSYS Fluent, MS Office, Machining, Design for Manufacturing, MATLAB, Siemens NX, StarCCM, PCB Design, Electrical Wiring and Integration, FCC Amateur Radio Licensed (**KO4YIX**)
Relevant Coursework: Orbital Mechanics, Flight Mechanics, Space Systems Concepts, Aerothermodynamics of Propulsion.