Aref Abdala

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EDUCATION

University of Central Florida — December 2024
B.S. Mechanical Engineering and Aerospace Engineering — *GPA: 3.37*

Publications:
- "Base Drag Considerations to Determine Equivalent Available Pressure in the Rotating Detonation Rocket Engine" - AIAA AVIATION 2023
- "Exploring Operability and Design Characteristics of a Small-Scale Methane/Oxygen Jet-in-Crossflow Rotating Detonation Engine" - AIAA Regional Student Conferences 2024

PROFESSIONAL EXPERIENCE

National Aeronautics and Space Administration | *Data and Controls Engineer* — August 2024 - Present
- Owning data acquisition system comprised of 16 pressure transducers, 16 pressure gauge transducers, 16 thermocouples, 25 RTDs, and 23 solenoid valves
- Creating interconnect diagrams, wiring diagrams and cable assembly drawings for electrical ground support
- Designing and assembling housing of electrical components for TVAC testing
- Managing Labview, cRIO and NI MAX interface to facilitate modular testing

Propulsion & Energy Research Lab (PERL) | *Lead Researcher* — November 2021 - Present
- Writing test procedures for hot fire tests conducted on Rotating Detonation Engines
- Owning P&ID components, high-speed cameras, LabVIEW, circuitry, and propellant supply of testing campaign
- Calculating operating regimes of Rotating Detonation Engines for compressible propellants using MATLAB

LDS Vacuum | *Machinist* — January 2024 - July 2024
- Testing manufactured components using helium leak detection devices, ensuring leak rates were below $1E-9$ mbar, consistent with high vacuum standards
- Interpreted and analyzed technical drawings, making modifications and design suggestions when required
- Welded (TIG) and inspected high vacuum components for high vacuum requirements
- Fabricated various stainless steel and aluminum laboratory components by turning, tapping, threading, and milling

Jet Propulsion Laboratory | *Data Analytics Intern* — February 2023 - July 2024
- Parsed through dozens of granules, each with 54,000 data points, identify sea surface temperature anomalies
- Detailing accessibility challenges in extracting data from NASA's PO.DAAC repository in Jupyter Notebooks
- Leading analytical efforts to understand anomalies in rising climate temperature at the coast of Florida

Boeing | *Satellite Testing and Evaluation Intern* — May 2023 - August 2023
- Executed 30 test procedures, documenting equipment anomalies, to verify 8 spacecraft subsystems within one week
- Calibrated simulators and power equipment for high-bay testing and launch-site operations
- Provided technical and troubleshooting support for 5 spacecraft's STE in an ESD controlled environment

Raytheon Intelligence and Space | *Systems Engineering Intern* — May 2022 - August 2022
- Created a self-auditing directory of all employees on the Joint Polar Satellite System Common Ground System
- Facilitated data quality checks by creating dashboards and filters in Atlassian Jira, thereby increasing the team's reliability and accountability
- Created a information platform in Atlassian Jira for teams to document work and desk instructions

National Security Innovation Network | *Design Engineering Intern* — June 2021 - August 2021
- Utilized nTopology to reduce material of additively manufactured hardware while maintaining structural integrity
- Increased the storage of 81mm Mortars in a Light Armored Vehicle by 150%
- Designed and documented modification to the Light Armored Vehicle that would reduce thermal detection

PROJECT MANAGEMENT

Emergency Insights | *Co-Founder and CEO* — January 2024 - August 2024
- Developed a platform that allows future home owners or property managers to access comprehensive hazard information for their properties
- Streamlined the process of creating hazard mitigation plans for government entities, enabling effective prioritization of resources and actions
- Recognized with 4th-Place at the 21st Annual Joust Venture Challenge Finals resulting in $2000 for the venture

Gaseous Rotating Detonation Rocket Engine | *Project Manager* — August 2023 - May 2024
- Managed student team to develop and test a methane/oxygen bipropellant engine components and systems
- Created an analytical model using MATLAB to predict the lowest allowable reactant injection rates that would produce detonation waves
- Wrote engine testing procedures, calibrated PT/TC DAQ systems, and led testing operations

SKILLS & INTERESTS

Programming: Python, MATLAB, C programming, HTML, CSS, LATEX
Software: Solidworks, ANSYS, LabVIEW, Jira, Confluence, Excel, Gantt, Teamcenter, Word, Overleaf
Fabrication: ASME Y14.5 GD&T, Metrology, Manual Lathe & Mill, TIG & MIG Welding, 3D Printing, P&ID
Interests: Geographic Information Systems (GIS), Space Economy, Automotive Refurbishing, Volunteering