**Joshua Holder**

Seattle, WA | (914) 552-7414 | josh.holder72@gmail.com

**Education**

**Rice University**, Houston, Texas

BS in Mechanical Engineering – graduated **summa cum laude, Phi Beta Kappa** May 2022

**University of Washington,** Seattle, Washington

MS in Aerospace Engineering, NSF Graduate Research Fellow Expected June 2024

**Technical Skills**

* **Programming Languages:** Python (Expert), Matlab/Octave (Expert), C++ (Expert), Linux/Bash (Expert), Julia (Beginner), Excel VBA (Beginner), FORTRAN (Beginner)
* **Other:** Simulink (Intermediate), PCB design (Intermediate), Tensorflow (Intermediate), Linux (Intermediate), LabView (Intermediate), ANSYS (Beginner)

**Selected Awards and Honors**

**NASA Intern Special Achievement Award,** Summer/Fall 2020, Summer 2022–awarded to ~3 top interns at Johnson Space Center each semester, received 3x in connection to work on Orion GN&C flight software algorithms.

**Best Innovative Technology - Rice Senior Capstone,** April 2022 – awarded for medical robotics based senior capstone project on which I served as the electronics and control systems technical lead

**Most Outstanding MECH Senior,** January 2022 – awarded to the top student in Mechanical Engineering at Rice

**Selected Work Experience**

**NASA Johnson Space Center,** Houston, TX May 2022 – July 2022

*Orion Backup Flight Software Intern*

* Independently identified significant defect in Orion thrust allocation algorithm which made 6 DOF control impossible in new thruster configuration
* Developed multiple analysis tools across C++, Matlab, and Python to validate performance of proposed fixes
* Led significant redesign of algorithm, finishing project ahead of schedule and fixing defect while increasing thrust allocation performance even when compared to the easier thruster configuration

**Robotics and Intelligent Systems Lab**, Houston, TX January 2021 – May 2022

*Undergraduate Research Assistant*

* Conducted research to develop model reference adaptive control scheme for bio-inspired autonomous underwater vehicle capable of changing buoyancy and mass properties dynamically with soft actuators
* Developed hardware platform to implement novel control scheme, integrating sensors, microprocessors, and thrusters, validating control scheme to 7% accuracy

**NASA Johnson Space Center**, Houston, TX May 2021 – July 2021

*Flight Control Engineering Intern*

* Developed multiple display and computation tools to aid in control of Orion GN&C systems during flight
* Streamlined process of reading flight procedures with Python and Excel automation, saving 60+ person hours
* Completed multiple flight controller trainings, gaining deep understanding of usage of GN&C systems during flight

**NASA Johnson Space Center,** Houston, TX May 2020 – December 2020

*Orion Backup Flight Software Intern*

* Led and completed C++ development of multiple critical control algorithms for Orion backup flight software
  + Algorithm to order thruster firings to satisfy hardware constraints while still achieving desired thrust
  + Method of tracking fuel consumption based on propellant pressure, accurate within 5% based on analysis
* Developed linear model of Orion control system in Matlab/Simulink, performed stability analysis to derive PID gains and update Orion control system algorithm structure