Carlos Carrasquillo

(787) 668-8096 | ccarrasquillo3@gatech.edu | www.carloscarras.tech | U.S. Citizen

Education

Georgia Institute of Technology | GPA: 4.0 / 4.0 **Aug 2021 – Present**

- PhD, *Robotics,* NDSEG Fellow — Expected May 2026
- Master of Science, Computer Science, Machine Learning Specialization — Expected May 2024

University of Florida | GPA: 3.68 / 4.0 **Aug 2017 – May 2021**

- Bachelor of Science, *Mechanical Engineering*, Magna Cum Laude Honors — May 2021
- Bachelor of Science, *Computer Engineering*, Magna Cum Laude Honors — May 2021

Experience

Graduate Research Assistant | Georgia Institute of Technology, Institute for Robotics and Intelligent Machines **Aug 2022 – Current**

Advisors: Anirban Mazumdar, PhD, Aaron Young, PhD

- Designed exoskeleton controller to help humans with impaired vision navigate around obstacles. Fractional potential fields help steer wearers away from danger zones (high potentials) and toward safe zones (low potentials). Experiments conducted in virtual reality.
- Controller Design: Designed hip exoskeleton impedance controllers for lifting, ramp/stair ascent, etc. Validated using indirect calorimetry.
- Mechatronics: Developed software modules and PCBs to interface with exoskeleton motor controllers, sensors, and master computer.

Computer Science / Mechanical Engineering Intern | Raytheon Intelligence & Space **May 2021 – May 2022**

- Fully developed a web application to find components on a PCB by search and mouseover. Developed using MERN stack.
- Created five Splunk dashboards and ~10 process programs for production-grade machinery.
- Wrote a desktop application to log and track material testing using VBA.

Undergraduate Research Assistant | University of Florida Dept. of Mechanical and Aerospace Engineering **Jan 2019 – Aug 2021**

Advisor: Riccardo Bevilacqua, PhD

- Wrote custom C++ libraries for the D3 CubeSat's IMU, antenna, radio, and GPS avionics aboard a BeagleBone Black.
- Developed a C++ onboard radio framework to enable data uplink/downlink and implemented command & data handling logic.
- Created a ground station Python application to transmit telecommands and receive downlinked data.

Undergraduate Teaching Assistant | University of Florida Dept. of Mechanical and Aerospace Engineering **May 2019 – May 2021**

- *Dynamics and Controls Lab*: Led 6 lab sessions to assist students with LabVIEW programming and controller design.
- *Thermal Systems and Design Lab*: Taught ~70 students about the principles of IC engines in lectures, office hours, and exam reviews.
- *Design and Manufacturing Lab*: Taught students to design robots in SOLIDWORKS and build them using machine shop equipment.
- *Numerical Methods*: Held lectures, office hours, and exam reviews; wrote the homework solutions in MATLAB.

Journal Publications

[1] A. Bajpai, **C. Carrasquillo**, J. Carlson, J. Park, D. Iyengar, K. Herrin, A. Young, A. Mazumdar. "Design and Validation of a Versatile High Torque Quasi-Direct Drive Hip Exoskeleton". IEEE Transactions on Mechatronics. 2023. (Submitted)

Conference Papers

[1] **C. Carrasquillo**, A. Bajpai, D. Iyengar, K. Collins, A. Young, A. Mazumdar. "Enhancing Human Navigation Ability Using an Active Wearable Exoskeleton". American Society of Biomechanics. 2023. (Submitted)

[2] **C. Carrasquillo**. "A Versatile and Open-Source Radio Framework for the D3 CubeSat Mission". Small Satellite Conference. 2021. (Student Competition Best Paper Honorable Mention)

[3] S. Buckner, **C. Carrasquillo**, M. Elosegui, R. Bevilacqua. "A Novel Approach to CubeSat Flight Software Development Using Robot Operating System (ROS)". Small Satellite Conference. 2021.

Skills

- *CAD*: SolidWorks (CAD, FEA), Fusion 360 (CAD, CAM), Inventor (CAD)
- *Programming*: Arduino, Bash, C, C++, C#, Java, JavaScript, LabVIEW, MATLAB, Python, Simulink, VBA.
- *Technical Software*: Altium Designer, LaTeX, Linux, LTSpice, MERN Stack, OpenSim, ROS, Splunk, Unity, VHDL, Vicon
- *Technical Hardware*: Shop (Lathes, Mills, Waterjets, Welding, etc.), Electronics (oscilloscopes, microscopes, etc.), 3D Printing
- *Certifications*: Amateur Radio Technician (KN4ZUC), Nvidia Computer Vision Certificate of Competency, SOLIDWORKS Associate
- *Personal Projects*: 12-DOF Quadruped Robot, 3D Bioprinter, Desktop Lathe, MIPS CPU, Personal Website, PC Builds
- *Languages:* English and Spanish