

Carlos Carrasquillo

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Education

Georgia Institute of Technology | GPA: 4.0 / 4.0

- PhD, *Robotics*, NDSEG Fellow, UCEM Fellow
- Master of Science, *Computer Science*, Machine Learning Specialization
- Master of Science, *Aerospace Engineering*

Aug 2021 – Present

Expected May 2026
Expected Dec 2024
Expected May 2025

University of Florida | GPA: 3.68 / 4.0

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

Aug 2017 – May 2021

May 2021
May 2021

Experience

Graduate Research Assistant | Georgia Institute of Technology, Institute for Robotics and Intelligent Machines

Aug 2021 – Current

Advisors: Anirban Mazumdar, PhD, Aaron Young, PhD

- *Generalized Exoskeleton Control:* Creating a metabolically optimal exoskeleton torque controller that generalizes across tasks.
- *Exoskeleton Navigation:* Designed exoskeleton controller to help humans navigate around obstacles in low visibility environments.
- *Classical Exoskeleton Control:* Designed hip exoskeleton impedance controllers for everyday tasks. Validated using metabolics [2].
- *Mechatronics:* Developed software libraries and PCBs to interface with exoskeleton motor controllers, sensors, and master computer.

Computer Science / Mechanical Engineering Intern | Raytheon Intelligence & Space

May 2021 – May 2022

- *Web App Development:* Fully developed a web application to find components on a PCB by search and mouseover. MERN Stack.
- *Database Management:* Created five Splunk dashboards and ~10 process programs for production-grade machinery.
- *Local App Development:* 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

- *Embedded Programming:* Wrote custom C++ libraries for the D3 CubeSat's IMU, antenna, radio, and GPS aboard a BeagleBone [4].
- *OS Design:* Developed a C++ radio framework to enable data uplink/downlink and implemented command & data handling logic [5].
- *Mission Operations:* 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

- Design and Manufacturing Lab (6 semesters), Dynamics and Controls Lab (1 semester), Thermal Systems and Design Lab (1 semester), Numerical Methods (2 semesters)

Journal Publications

- [1] **C. Carrasquillo**, A. Bajpai, D. Iyengar, K. Collins, A. Mazumdar, A. Young. "Enhancing Human Navigation Ability Using Active Wearable Exoskeletons". IEEE Transactions on Robotics. 2024. (Submitted)
- [2] 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

- [3] **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.
- [4] **C. Carrasquillo**. "A Versatile and Open-Source Radio Framework for the D3 CubeSat Mission". Small Satellite Conference. 2021. (Student Competition Best Paper Honorable Mention)
- [5] 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, C/C++, C#, Java, JavaScript, LabVIEW, MATLAB, Python, Simulink, VBA, VHDL
- *Technical Software:* Altium Designer, LaTeX, Linux, LTSpice, MERN Stack, OpenMDAO, OpenSim, ROS, Splunk, Unity, Vicon
- *Technical Hardware:* Shop (Lathes, Mills, Waterjets, Welding, etc.), Electronics (oscilloscopes, microscopes, etc.), 3D Printing
- *Certifications:* Amateur Radio Technician (KN4ZUC), Nvidia Computer Vision Certificate, SOLIDWORKS Associate, Student Pilot
- *Personal Projects:* 12-DOF Quadruped Robot, 3D Bioprinter, Desktop Lathe, MIPS CPU, Personal Website, PC Builds
- *Languages:* English and Spanish