

# Carlos A. Carrasquillo Torres

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## Education

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| <b>Georgia Institute of Technology</b>   GPA: 3.9 / 4.0                        | <b>Aug 2021 – Present</b>  |
| ▪ PhD Candidate, <i>Robotics</i>   | Expected Spring 2026       |
| ▪ Master of Science, <i>Computer Science</i> , Machine Learning Specialization | May 2025                   |
| ▪ Master of Science, <i>Aerospace Engineering</i>                              | May 2025                   |
| <b>University of Florida</b>   GPA: 3.7 / 4.0                                  | <b>Aug 2017 – May 2021</b> |
| ▪ Bachelor of Science, <i>Mechanical Engineering</i> , Magna Cum Laude Honors  | May 2021                   |
| ▪ Bachelor of Science, <i>Computer Engineering</i> , Magna Cum Laude Honors    | May 2021                   |

## Experience

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| <b>Graduate Research Assistant</b>   Georgia Institute of Technology, Institute for Robotics and Intelligent Machines  | <b>Aug 2021 – Current</b>  |
| <b>Advisors:</b> Anirban Mazumdar, PhD; Aaron Young, PhD   |                            |
| ▪ Applied deep learning techniques (TCNs, VAEs, CNNs, GANs, Transformers, PPO) to estimate human motion, biological moments, and other physiological states.                                 |                            |
| ▪ Developed and validated novel exoskeleton controllers, including impedance-based, primitive-based, uncertainty-aware, and end-to-end biological torque controllers.                        |                            |
| ▪ Designed mechatronics components, including PCBs, sensor drivers, and orthoses components for several exoskeletons.  |                            |
| ▪ Built real-time exoskeleton software, including multiprocessing controller frameworks, communication packages, and GUIs.   |                            |
| ▪ Created AR/VR games in Unity to provide real-time biofeedback and simulate unstructured environments for human studies.  |                            |
| ▪ Conducted human-subject experiments using EMG, motion capture, metabolic systems, and AR/VR headsets.  |                            |
| <b>Software &amp; Mechanical Engineering Intern</b>   RTX  | <b>May 2021 – Apr 2023</b> |
| ▪ Developed a MERN stack web application that streamlined component discovery on printed circuit boards for engineers.   |                            |
| ▪ Designed and deployed five process programs and Splunk dashboards to monitor and optimize production-grade machinery.  |                            |
| ▪ Automated a manual material testing process by building a VBA-based application, improving data logging and tracking efficiency.   |                            |
| <b>Undergraduate Research Assistant</b>   University of Florida Dept. of Mechanical and Aerospace Engineering  | <b>Jan 2019 – Aug 2021</b> |
| <b>Advisor:</b> Riccardo Bevilacqua, PhD   |                            |
| ▪ Developed embedded C++ avionics software for the D3 CubeSat, creating custom libraries to interface with the satellite's IMU, antenna, radio, and GPS on a BeagleBone Black microcomputer. |                            |
| ▪ Developed a Python-based ground station application to manage satellite mission operations, enabling reliable telecommand transmission and downlink data acquisition.                      |                            |
| <b>Teaching Assistant</b>   University of Florida Dept. of Mechanical and Aerospace Engineering  | <b>May 2019 – May 2021</b> |
| ▪ <b>Design and Manufacturing Lab (6 semesters):</b> Taught >30 students on design for manufacturing principles and usage of shop equipment.   |                            |
| ▪ <b>Dynamics and Controls Lab (1 semester):</b> Lectured to >50 students on applying classical control theory to real-world systems.  |                            |
| ▪ <b>Thermal Systems and Design Lab (1 semester):</b> Guided student teams in designing models for internal combustion engines.  |                            |
| ▪ <b>Numerical Methods (2 semesters):</b> Lectured on iterative algorithms, linear algebra, Fourier analysis and held routine office hours.  |                            |

## Skills

- **Design & Manufacturing:** Altium Designer (PCB), SolidWorks (CAD, FEA), Fusion 360 (CAD/CAM), Machine Shop Equipment (Lathes, Mills, CNC, Welding), Rapid Prototyping
- **Programming:** Python (NumPy, Pandas, OpenCV, PyTorch, TensorFlow, ROS/ROS2, OpenMDAO), C/C++, C# (Unity), JavaScript (React.js, MongoDB, Express.js, Node.js), MATLAB, Simulink, VBA, VHDL
- **Experimentation:** AR/VR, Electromyography, Metabolics (COSMED, Parvo), Motion Capture (Vicon), OpenSim
- **Miscellaneous Projects:** reinforcement learning-based aircraft landing autopilot, microprocessor knee recommendation algorithm, bioreactor pump controller, 12-degree-of-freedom quadruped robot, 3D bioprinter, desktop lathe, MIPS CPU, assortment of websites
- **Certifications:** Amateur Radio Technician (2019, KN4ZUC), SolidWorks Associate (2020), Private Pilot (100 hours)
- **Languages:** English and Spanish

## Fellowships and Awards

- Georgia Space Grant Consortium Fellow **Aug 2025 - Current**
- Grad REACH Scholar **Aug 2024 – Current**
- National Defense Science and Engineering Graduate (NDSEG) Fellow **Aug 2022 – Aug 2025**
- Pathbreakers Fellow (formerly University Center of Exemplary Mentoring) **Aug 2023 – May 2025**