Gilberto Briscoe-Martinez

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Qualifications Summary

- Experienced with Classical (OMPL, RRT, MoveIt) and Learning-based (Reinforcement Learning, Stable Diffusion, Transformers) Motion and Manipulation Planning, Tactile Sensors, Multi-material 3D Printing, ROS, Git & CI, Python, C++, MATLAB & Simulink, Machine Learning Frameworks (PyTorch & TensorFlow), Robotics Simulators (Isaac, Bullet, MuJoCo, Gazebo), Multi-Camera Perception Systems, Data Analysis (R, Pandas), and Development on Linux
- Familiar with Foundational and Generalist Models, Cloud Computing (Heroku, AWS, Google Cloud), Computer Vision (Point Cloud Library, OpenCV, YOLO), CUDA, Numerical Optimization, Docker, Machine Shop Skills

Education

Doctor of Philosophy in Computer Science *Graduating in 2026*

The University of Colorado Boulder

Advisor: Alessandro Roncone, HIRO Group

Bachelor of Science in Aerospace Engineering *Class of 2021*

The University of Texas at Austin

Capstone Project: An Autonomous Plant Habitat and Harvesting System for Artemis

Awards

NASA Space Technology Graduate Research Opportunity – *2022*

- 4-year, $336k research fellowship to develop failure-active, or operating with system failures, task and motion planning approaches for future NASA robotic manipulators.

Graduate Education for Minorities Industry Fellowship – *2021*

- 1-year, $50k grant, sponsored by Johns Hopkins Applied Physics Laboratory for funding the first year of PhD.

Work Experience

Visiting Technologist *August 2024 – November 2024*

NASA Johnson Space Center, Houston, TX

- Engineered an Isaac-based, automated multi-environment (10k+) synthetic motion planning and environmental context data generation pipeline for training diffusion and transformer models.

Visiting Technologist *August 2023 – November 2023*

NASA Johnson Space Center, Houston, TX

- Created a simulator-in-the-loop motion planning approach for whole-body, nonprehensile manipulation to enable post-joint failure task completion, with an 80% success rate for failure conditions that prevent the use of the end effector during manipulation.

Selected Publications

- Briscoe-Martinez, G.; et al., “Exploring How Non-Prehensile Manipulation Expands Capability in Robots Experiencing Multi-Joint Failure,” in 2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2024.
- Shah, R.; Jiang, Y.; Karnan, H.; Briscoe-Martinez, G.; et al. “Solving Service Robot Tasks: UT Austin Villa@Home 2019 Team Report.” 2019.