

# Gilberto G. Briscoe-Martinez

gilberto.martinez.phd | gilberto.briscoe-martinez@colorado.edu | LinkedIn | GitHub

## SKILLS

### PROGRAMMING

Proficient:  
Python • C++ • ROS/ROS2  
Experienced:  
PyTorch • CUDA • CMake  
NumPy • OpenCV •  $\LaTeX$

### ROBOTICS / AI

Diffusion Policies • Imitation Learning  
Motion Planning • Trajectory Opt.  
Non-Prehensile Manipulation  
Contact-Rich Control  
Multi-Robot Coordination  
Computer Vision

### PLATFORMS

Franka Panda • 7-DoF Arms  
NVIDIA Jetson / Orin  
Industrial Pick-and-Place

## LINKS

Website:// [gilberto.martinez.phd](http://gilberto.martinez.phd)  
GitHub:// [ggb367](https://github.com/ggb367)  
LinkedIn:// [gbmartinez](https://www.linkedin.com/in/gbmartinez)  
Scholar:// [G. Briscoe-Martinez](https://scholar.google.com/citations?user=G.Briscoe-Martinez)

## EDUCATION

### UNIVERSITY OF COLORADO BOULDER

PH.D. IN COMPUTER SCIENCE  
Aug. 2021 -- May 2027 (exp.) | Boulder, CO  
HIRO Group  
Advisor: Prof. A. Roncone

### UNIVERSITY OF TEXAS AT AUSTIN

B.S. IN AEROSPACE ENGINEERING  
Aug. 2017 -- May 2021 | Austin, TX  
Human Centered Robotics Lab  
(2018–2021)

## EXPERIENCE

### HIRO GROUP, CU BOULDER | PHD RESEARCHER & NASA NSTGRO FELLOW

Aug. 2021 -- Present | Boulder, CO

- Built **DEFT**, a diffusion policy conditioned on embodiment & task that recovers from arbitrary joint failures on a 7-DoF Franka Panda: **99.5%** success on unconstrained motion (vs. 42.4% RRT) and **46.4%** on constrained motion (vs. 30.9% diff. IK) across **4.7M** trajectories / **4.7k** failure conditions (ICRA'26).
- Achieved **10/10** real-world task completion (drawer manipulation, whiteboard erasing) under multi-joint failures where classical trajectory optimization fails entirely.
- Showed pushing/poking primitives expand a failure-constrained workspace by up to **79%** and recover **88.9%** task success when the end-effector is unusable (IROS'24).
- Co-authored CERG (IFAC'26) with the ROCC Lab; mentored junior PhD and undergraduate researchers.

### PLUS ONE ROBOTICS | ROBOTICS AI/ML RESEARCHER (SUMMER INTERN)

Jun. 2025 -- Aug. 2025 | Boulder, CO

- Built vision-driven recovery for intelligent package sorting: detect failed picks, formulate recovery plans, and re-engage without operator intervention.
- Coordinated a fleet of robotic arms and conveyor systems to keep warehouse throughput high under partial failures.

### JOHNS HOPKINS APL | ROBOTICS ENGINEER (SUMMER INTERN)

May 2021 -- Aug. 2021 | Laurel, MD

- Robotics engineering on APL programs combining hardware integration, controls, and applied research.

### HUMAN CENTERED ROBOTICS LAB, UT AUSTIN | UNDERGRADUATE RESEARCHER

Jan. 2018 -- May 2021 | Austin, TX

- Multi-year undergraduate research role (Prof. Luis Sentis) spanning perception, planning, and task execution for service robots.
- Member of the **UT Austin Villa @ Home** RoboCup team; co-authored the AAI AI-HRI 2019 team report.

### METECS | ROBOTICS SOFTWARE ENGINEER (SUMMER INTERN)

May 2020 -- Aug. 2020 | Houston, TX

- Robotics software for space-station / aerospace applications: multibody dynamics, controls, simulation, and HW/SW integration.

## SELECTED PROJECTS

- **DEFT – Embodiment-aware Diffusion Policy** – Conditioned on per-joint position/velocity limits and task type; used start-goal inpainting + output clamping to hard-enforce endpoint feasibility. Generalized to 4.7k unseen failure conditions on hardware (ICRA 2026).
- **Non-Prehensile Failure Recovery** – Modeled failure-constrained workspaces; pre-computed pushing/poking primitives selected via a sim-in-the-loop planner. 88.9% task success without a working end-effector (IROS 2024).
- **CERG – Compliant Explicit Reference Governor** – Online reference modulation for safe contact-rich manipulation (IFAC 2026).

## PUBLICATIONS & PATENTS

5+ papers (peer-reviewed & preprint): IEEE ICRA, IEEE/RSJ IROS, IFAC, AAI AI-HRI, arXiv.  
Recent preprint: **PBD-R** – Physically Accurate Rigid-Body Dynamics in Particle-Based Simulation (arXiv:2603.14634).  
Issued U.S. Patent: **US 10,339,827**.  
Full list: Google Scholar.

## AWARDS

2022 – / NASA NSTGRO Fellowship  
(Grant 80NSSC22K1211)