

# Esteban Flores

MS STUDENT IN ROBOTICS

📍 Atlanta, Georgia

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## Education

### ETH Zurich

M.S. IN ROBOTICS, SYSTEMS, AND CONTROL

Zurich, CH

2025 – Present

### Georgia Institute of Technology

B.S. IN MECHANICAL ENGINEERING; GPA 3.9 / 4.0

Atlanta, GA

2021 – December 2024

- Provost Scholarship (40 selected out of 3000)
- Dean's List and Faculty Honors

### Ramstein High School

HIGH SCHOOL DIPLOMA; GPA 4.0 / 4.0

Ramstein, Germany

May 2021

- Valedictorian (1st of 180 students)

## Research Experience

### Complex Rheology and Biomechanics (CRAB) Lab

Georgia Institute of Technology

UNDERGRADUATE RESEARCHER (PI: PROF. DANIEL GOLDMAN)

2022 – 2024

- Modeled, machined, and assembled a 1-meter, 5-segment centipede robot capable of traveling 0.35 body lengths per second to study steering via traveling-wave superposition.
- Programmed and characterized geometric-mechanics-based steering gaits for centipede robots, leading to acceptances to IROS, SICB, and APS conferences.
- Designed compliant foot sensors for proportional and reinforcement-learning controllers to improve locomotion on rough terrain.

## Professional Experience

### Ground Control Robotics LLC

Atlanta, GA

ROBOTICS INTERN

Jan – July 2025

- Implemented closed-loop path following on multi-legged robotic platforms using Linux and Python
- Developed the software suite for control (IMU, GPS, camera, servo systems) and autonomy currently used on all commercial and research models
- Modeled robot virtual twin in MuJoCo used in gait optimization via bayesian optimization
- Tested various algorithms in locomotion and manipulation tasks resulting in a variety of autonomous behaviors (automatic fall recovery, laser targeting, step detection and climbing, point-to-point locomotion)

### Zipline International Inc.

South San Francisco, CA

GROUND SYSTEMS TEST INTERN

Aug – Dec 2023

- Designed and instrumented system-level docking tests for drones, including high-load conditions (>5000 N).
- Developed Python/Rust tools for GNSS phase windup correction to reduce position drift.
- Built data acquisition system to synchronize multi-rate sensors (200–10 000 Hz) to capture docking dynamics.
- Processed 3D motion-capture data to correlate docking velocity and impact loads.

### Forterra

Sunnyvale, CA

MECHANICAL ENGINEERING INTERN

May – Aug 2023

- Designed custom sensor mounts for a Class 8 truck with lidar, radar, and camera arrays; optimized sensor FOV coverage.
- Performed FEA and hand calculations to validate mounts for vibration and structural integrity (MIL-STD-810).

## Skills

### Professional

Experimental setup, Mechatronics, Robotic control, Mechanical design, Materials testing, Motion capture, GNSS systems

### Software

Python, MATLAB, Linux, C++, Docker, MuJoCo

<b>Design &amp; Analysis</b>	SolidWorks, Siemens NX, ANSYS Mechanical, Inventor, Inkscape
<b>Manufacturing</b>	Additive (FDM, SLS, PolyJet), Carbon composites (pre-preg, wet layup), Metal machining (lathe, mill, laser), Woodworking
<b>Languages</b>	English (Native), Spanish (Conversational)

## Extracurriculars

<b>Georgia Tech Solar Racing</b>	Atlanta, GA
MECHANICAL & SUSPENSION LEAD	2021 – 2023
<ul style="list-style-type: none"> <li>• Led 30+ engineers in design and fabrication of a multi-occupant solar vehicle for the American Solar Challenge.</li> <li>• Directed 4 mechanical sub-teams and coordinated integration with electrical and strategy divisions.</li> </ul>	
<b>Georgia Tech Beekeeping Club</b>	Atlanta, GA
LEAD BEEKEEPER	2022 – 2024
<ul style="list-style-type: none"> <li>• Conducted weekly hive inspections and trained members in honey extraction and pest control.</li> <li>• Managed wild swarm mitigation for campus safety.</li> </ul>	

## Publications

Steering Elongate Multi-Legged Robots by Modulating Body Undulation Waves.	IROS 2025
<i>E. Flores, B. Chong, D. Soto, D. Goldman.</i>	
Steering Multilegged Robots by Body Undulation Modulation.	SICB 2025
<i>E. Flores, B. Chong, D. Soto, D. Tatulescu, C. Pierce, D. Goldman.</i>	
Probabilistic Approach to Feedback Control Enhances Multi-Legged Locomotion on Rugged Landscapes.	IEEE Transactions on Robotics 2025
<i>J. He, B. Chong, J. Lin, Z. Xu, H. Bagheri, E. Flores, D. Goldman.</i>	
A Geometric Phase Approach to Body-Driven Steering in Multi-Legged Robots.	APS March Meeting 2025
<i>E. Flores, B. Chong, D. Soto, D. Goldman.</i>	
Tactile Feedback Enhances Multi-Legged Matter Transport on Rugged Landscapes.	SICB 2024
<i>J. He, B. Chong, E. Flores, Z. Xu, D. Soto, D. Goldman.</i>	