

Brian Acosta

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SKILLS

Programming: C++, Python, MATLAB/Simulink, C, Git, Linux

Tools and Frameworks: Drake, Eigen, OpenCV, PCL, Pybind11, LCM, ROS, Bazel

Robotics and Controls: Humanoid and Legged Robot Control, Motion Planning, Model-Predictive Control, Whole-Body Control, Convex Optimization, Perception, Trajectory Optimization, Multibody Dynamics and Kinematics

EXPERIENCE

UPenn GRASP Lab (General Robotics, Automation, Sensing & Perception Lab) 2020-Present
Ph.D. Candidate Philadelphia, PA

- Built a perception and control stack in C++ for dynamic walking on rough terrain with the bipedal robot Cassie
- Developed a real-time mixed integer footstep planner for bipedal walking on rough terrain
- Developed a temporally stable terrain segmentation algorithm for vision-based reactive footstep planning
- Sole maintainer of Penn's Cassie robot since 2023
- Contributed to the [dairlib](#) and [Drake](#) open source robotics libraries

Intuitive Surgical Summer 2023
Systems Analyst Intern Sunnyvale, CA

- Developed, implemented, and validated integration tests and analysis tools for robot behaviors to support the da-Vinci minimally invasive robotic surgery platform

John Deere Summer 2020
Controls Engineering Intern Dubuque IA (Remote due to COVID-19)

- Automated mass property validation of CAD models used for rigid body dynamics simulations
- Designed a fan drive controller in Simulink which was successfully deployed on a prototype construction vehicle

John Deere Summer 2019
Product Engineering Intern Fuquay Varina, NC

McNeilus Truck and Manufacturing Summer 2018
Mechanical Engineering Intern Dodge Center, MN

EDUCATION

University of Pennsylvania Philadelphia, PA
Ph.D. Mechanical Engineering and Applied Mechanics | *NSF Graduate Research Fellowship* Spring 2025

University of Pennsylvania Philadelphia, PA
M.S.E Robotics December 2024

Purdue University West Lafayette, IN
B.S. Mechanical Engineering | *National Merit Scholarship, Purdue Presidential Scholarship* May 2020

PUBLICATIONS

- **Brian Acosta** and Michael Posa. Bipedal Walking on Constrained Footholds with MPC Footstep Control. *IEEE-RAS International Conference on Humanoid Robotics*, 2023.
- **Brian Acosta***, William Yang*, and Michael Posa. Validating Robotics Simulators On Real World Impacts. *IEEE Robotics and Automation Letters*, 2022.