

Brian Acosta

Robotics Engineer

bjacosta {at} seas {dot} upenn {dot} edu

Skills

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

Robotics and Controls Legged and Humanoid Robot Control, Simulation, Rigid Body Kinematics and Dynamics, Model Predictive Control, Whole-Body Control, Trajectory Optimization, Optimization, Linear Systems

Education

2020–2025 **Ph.D. Mechanical Engineering and Applied Mechanics**, *University of Pennsylvania*
Philadelphia, Pennsylvania

2020 **B.S. Mechanical Engineering**, *Purdue University*
West Lafayette, Indiana

Academic Positions

2020–Now **Graduate Research Assistant**, *Dynamic Autonomy and Intelligent Robotics (DAIR) Lab*
University of Pennsylvania

2018–2020 **Undergraduate Research Assistant**, *XYZT Lab*
Purdue University

Industrial Positions

2023 **Systems Analyst Intern**, *Intuitive Surgical*, Sunnyvale, CA
– Developed, implemented, and validated integration tests and analysis tools for robot behaviors to support the da Vinci minimally invasive robotic surgery platform

2020 **Controls Engineering Intern**, *John Deere*, Dubuque, IA
– Automated mass property validation of CAD models used in rigid body dynamics simulations
– Designed fan drive controller deployed on prototype construction vehicle

2019 **Product Engineering Intern**, *John Deere*, Fuquay Varina, NC

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

Awards and Honors

2020 NSF Graduate Research Fellowship

2020 Mallot Innovation Award for Best Senior Design Project

2018, 2019 Bottomley Undergraduate Research Scholarship

2016 Purdue Presidential Scholarship

2016 National Merit Scholarship

Peer-Reviewed Publications

- [C0] **Brian Acosta** and Michael Posa. Bipedal Walking on Constrained Footholds with MPC Footstep Control. *IEEE-RAS International Conference on Humanoid Robotics*, 2023.
- [J0] **Brian Acosta***, William Yang*, and Michael Posa. Validating Robotics Simulators On Real World Impacts. *IEEE Robotics and Automation Letters*, 2022.

Reviewing

Journal – IEEE Robotics and Automation Letters

Conference – IEEE-RAS International Conference on Humanoid Robotics
– IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)

Supervised Students

- Frank Gonzalez ROBO Masters - Kindo-dynamic MPC for Bipedal Robots
- Minku Kim MEAM Masters - Reinforcement Learning for Vision-Aided Footstep Planning on Rough Terrain
- Chandravan ROBO Masters - Implementing Robot-Centric Elevation Mapping on Cassie (Supported [C0])
Kunjeti

Teaching Experience

- Fall 2023 University of Pennsylvania, MEAM 517, Control and Optimization With Applications in Robotics, *Teaching Assistant*
- Fall 2022 University of Pennsylvania, MEAM 517, Control and Optimization With Applications in Robotics, *Teaching Assistant*
- Spring 2022 University of Pennsylvania, MEAM 513, Feedback Control, *Teaching Assistant*

Leadership

- 2021-2022 **President**, *Mechanical Engineering Graduate Association*
University of Pennsylvania
- 2016-2020 **Cofounder, Crew Chief, Director**, *Honors College Racing Crew*
Purdue University
- 2017-2018 **Peer Mentor**, *College of Engineering Honors Program*
Purdue University