

Pranit Mohnot

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PhD researcher in robotics and machine learning, combining classical control and data-driven methods for safe, reliable autonomous systems. My work spans reinforcement learning, optimal control, and deployment on physical robots.

EDUCATION

Stanford University

Doctor of Philosophy in Aeronautics and Astronautics

June 2029

- NSF Graduate Research Fellow, 2025

University of California, Berkeley

Bachelor of Science in Mechanical Engineering, Minor in Computer Science

December 2023

EXPERIENCE

Autonomous Systems Laboratory (Professor Marco Pavone)

August 2024 – Present

Researcher (Safe Learning-Based Humanoid Control)

Stanford, CA

- Co-developed ConstrainedMimic, a JAX framework that applies kinematic and dynamic control barrier functions to pretrained humanoid motion-tracking policies.
- Developed CoFiT, a reinforcement learning method that adapts humanoid motion control to real-time safety constraints. Reduced TWIST2 violation time by 91% in simulation and 83% on Unitree G1 hardware.

Hybrid Robotics Lab (Professor Koushil Sreenath)

August 2022 – December 2023

Researcher (Robust Optimal Control for Hybrid Systems)

Berkeley, CA

- Co-developed robust hybrid differential dynamic programming for legged systems with uncertainty in contact-reset dynamics.
- Derived cost approximations and convergence guarantees, then implemented and evaluated the algorithm in Python.

Design for Nanomanufacturing Lab (Professor Hayden Taylor)

January 2021 – May 2022

Researcher (Volumetric Additive Manufacturing in Microgravity)

Berkeley, CA

- Designed imaging and motion systems for a Zero-G flight experiment that printed 150 parts in May 2022.
- Used Background Oriented Schlieren to image parts for post-experimental structural evolution analysis.

Northrop Grumman

2018 – 2021 (Four Summers)

Engineering Intern – F-35, GBSD, and Digital Products

California and Utah

- Completed four summer internships in aircraft integration, model-based systems engineering, and digital hardware verification.
- Built Cameo and DOORS models, resolved F-35 integration issues in CATIA, and wrote C++ FPGA and ASIC verification tools.

PUBLICATIONS

- **Mohnot**, Helten, Gammelli, and Pavone. “Filter-Aware Fine-Tuning for Safe Humanoid Whole-Body Tracking.” arXiv:2610.02341, 2026. Submitted to ICRA 2027. [\[link\]](#)
- Morton, **Mohnot**, and Pavone. “Constrained Whole-Body Tracking for Humanoid Robots.” Conference on Robot Learning (CoRL), 2026. [\[link\]](#)
- **Mohnot**^{*}, Thirugnanam^{*}, Choi^{*}, and Sreenath. “Robust Hybrid Systems Differential Dynamic Programming for Worst-Case Disturbance.” Preprint, 2023. (^{*} equal contribution) [\[link\]](#)
- Waddell, Toombs, Reilly, Schwab, Castaneda, Shan, Lewis, **Mohnot**, Potter, and Taylor. “Use of Volumetric Additive Manufacturing as an In-Space Manufacturing Technology.” Acta Astronautica, Vol. 211, October 2023, pp. 474–482.

TECHNICAL SKILLS

Programming: Python (JAX, PyTorch, NumPy, SciPy), C++, MATLAB

Robotics and ML: Reinforcement learning, optimal control, control barrier functions, MuJoCo/MJX, Isaac Lab, ROS 2

Hardware: Unitree G1, Unitree A2