IAN PEDROZA

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EDUCATION

University of Pennsylvania, *Jerome Fisher Program in Management and Technology* — Philadelphia, PA

- *School of Engineering and Applied Science*: **MSE in Robotics** — *May 2026*
- *School of Engineering and Applied Science*: **BAS in Computer Science** — *May 2025*
- *The Wharton School*: **BSE in Economics**, Concentration in OIDD — *May 2025*
- ***Master's GPA***: **3.94** | ***Undergraduate GPA***: **3.73**
- ***Leadership***: Penn Climate Ventures - Co-Director, 2022-2024 | ***Honors***: Turner ESG Fellow
- ***Coursework***: Real-World Robot Learning; Control & Optimization in Robotics; Deep Learning; Machine Learning; Machine Perception; Databases; Operating Systems; Computer Systems; Management of Technology; Negotiations

PROFESSIONAL EXPERIENCE

Daxo Industries | VC-backed AgTech Soft Robotics Start-up for Apple Harvesting — *May 2024 - August 2024*

Robotics Software Engineering Intern, Philadelphia, PA

- Built a robust data collection pipeline in ROS2 to capture teleoperated demonstrations for a custom tendon-driven soft robot, facilitating efficient training for apple harvesting tasks.
- Trained advanced models, including ACT (Action Chunking Transformer) and Diffusion Policy, on teleoperation data, enabling sample-efficient vacuum-based apple grasping on only 50 collected episodes
- Designed and tuned position-based PID controllers in firmware for precise tendon control and smoother performance.
- Migrated the codebase to ROS2, modularized sensory inputs, created launch files for key functions, and containerized the workspace with Docker for streamlined deployment and onboarding.

Perception, Action, and Learning (PAL) Group | Penn research lab for robot learning — *October 2024 - Present*

Undergraduate Robotics Research Assistant, Philadelphia, PA

- Conducted experimental trials with a Franka Emika robot arm, implementing imitation-learned policies derived from human demonstration videos on every-day tasks like opening / closing drawers, pouring, stirring, etc.
- Developed and integrated software for deploying policies on a WidowX-250s robot arm using the Interbotix Python library
- Showcased cross-embodiment generalization through experimental trials of the imitation-learned policy on the WidowX arm in tasks like pouring, stirring, and closing a cupboard.

Hack4Impact UPenn | Building software for nonprofits — *August 2021 - May 2024*

Full Stack Developer, Philadelphia, PA

- Staffed on five semester-long MERN (MongoDB, Express, React, Node) full-stack development projects over three years
- Developed backends in JavaScript and TypeScript using Express.js and Node.js; wrote unit and integration tests
- Utilized Docker to ensure consistent containerization and smooth deployment across various environments

ADDITIONAL PROJECTS

TAMOLS-RL: Terrain-Aware Motion Optimization for Legged Systems | Github — *October 2024 - December 2024*

- Built a hierarchical control framework combining trajectory optimization and reinforcement learning for adaptive legged locomotion of a Unitree Go2 on uneven and sparse terrains.
- Developed a terrain-aware footstep planner in PyDrake to solve direct collocation problems for valid footsteps
- Trained a low-level reinforcement learning policy in NVIDIA Isaac Gym to enable robust execution of planned footsteps.

Learning and Planning in Deformable World Models | Github — *October 2024 - December 2024*

- Built a vision transformer-based dynamics model to predict deformable object shape changes in MIT Plasticine Lab, enabling efficient planning and control in latent space.
- Encoded visual observations using both DINOv2 pre-trained and learned embeddings for compact state representation.
- Optimized trajectories with the Cross Entropy Method (CEM), enabling zero-shot generalization to novel target shapes.

PennOS: UNIX-like OS implemented in C — *February 2024 - April 2024*

- Built a UNIX-like operating system in C with a multithreaded priority-based scheduler, supporting shell interactions and external storage management via a FAT file system.
- Implemented efficient memory management and process scheduling, optimizing system performance for core OS operations.

SKILLS

Programming Languages:	Python; C; C++; Java; JavaScript/Typescript (React/Node); SQL; OCaml;
Software & Tools:	Isaac Gym; Drake; ROS2; PyTorch; AWS CLI; React; Node; Express; MongoDB; Flask;
Interests:	Swingdancing; Singing; Acting; Stage Lighting; Hosting events; Speakeasies; Watch parties; Hiking