

Cedric Hollande

US/French Citizen | (917) 774-3946 | cedrich@upenn.edu | bit.ly/cedrich | github.com/cedrichld | linkedin.com/in/cedric-hollande

EDUCATION

University of Pennsylvania - School of Engineering and Applied Science | Philadelphia, PA

- Master of Science in Engineering — Robotic and Mechatronic Systems; *GPA: 3.5/4.0* May 2026
- Bachelor of Science in Engineering — Mechanical Engineering and Applied Mechanics; *cum laude* May 2025

TECHNICAL SKILLSET

- **Robotics Platforms:** Mobile Robots (Rocker-Bogie, Holonomic), Drones (Quadrotors), 7-DOF Robotic Arms
- **Autonomy, Planning & Estimation:** MPC/PID, ARA*/RRT*, IK, UKF, Particle Filters, Computer Vision, Supervised Learning
- **Middleware & Simulation:** ROS 2 (Nav2, MoveIt, ros2_control, grid_map, lifecycle nodes), Gazebo, RViz, Foxglove, URDF
- **Programming & Systems:** Python, C/C++17, Embedded C, Linux (Ubuntu 22.04/24.04), Docker, Git/GitLab
- **Mechanical & Embedded:** SOLIDWORKS, CNC (mill/lathe), FDM/SLA 3D printing, laser cutting, circuit prototyping

PROFESSIONAL EXPERIENCE

UPenn GRASP – ModLab, Prof. Mark Yim | *Graduate Researcher*, Philadelphia, PA June 2025 – Present

- Lead end-to-end design, simulation and hardware deployment of an [off-road holonomic robot](#) with rocker suspension and gimbal
- Developed sim-to-real autonomy pipeline, building real-time traversability map from Intel RealSense point clouds using [grid_map](#)
- Integrated perception-driven traversability into ARA* global planning and MPC local control for safe and stable navigation
- Led dual-University collaboration with GMU; [Paper](#) submitted to IEEE ICRA 2026 Conference
- Applied Bayesian optimization to micro-propeller geometry (camber, AoA, RPM) for [Mini Piccolissimo](#) drone (+20% Lift/Drag)

NASA Goddard Space Flight Center | *Software Development Intern*, Greenbelt, MD June 2023 – May 2025

- Led development of a rocker-bogie Mars Rover mockup based on NASA JPL designs – testbed for Telemetry and Telecommand
- Bridged ROS 2 and Flight Software Communication Systems ([cFS](#)), oversaw mechanical assembly, wiring, and PCB soldering
- Reduced communication-error from 10^{-6} to 10^{-16} bits through advanced space-communication encoding/decoding systems in C

UPenn Rapid Prototyping Laboratory Space | *Supervisor / Lab Manager*, Philadelphia, PA Sep 2022 – May 2025

- Created and led streamlining initiative to reduce material waste: yielded savings of 20% earmarked for machinery purchase
- Trained makerspace staff and supported clients across Engineering (~1000) providing 3D Printing and Laser Cutting expertise

RELEVANT PROJECTS

Independent Robotics Projects | Senior Capstone Project September 2025 – Present

- Competing in the SICK \$10K LiDAR Challenge: autonomous library robot, reverse-engineering an undocumented warehouse base
- Developed an LPV-MPC [quadcopter controller](#) for real-time operation in cluttered forest firefighting environments

Autonomous Drone for Rural Emergency Response | Senior Capstone Project August 2024 – August 2025

- Led full-stack development of an emergency-response [quadcopter](#), coordinating a 6-member team through requirements, CAD, controls, Electronics, UI, Computer Vision and flight tuning/testing to deliver an autonomous prototype
- Built custom C++ firmware with a quaternion geometric controller directly driving motors, achieving < 10 cm trajectory error

Machine Design and Precision Manufacturing | Stirling Engine Manufacturing Jan 2025 – May 2025

- Designed, machined, and assembled a Stirling engine running at 1600+ RPM
- CNC machining on end mills and lathes to manufacture custom parts with a precision of $1/2000^{\text{th}}$ of an inch

7-DOF Industrial Robotic Arm Path Control | Robotic Arm Path Planning Jan 2024 – May 2024

- Designed Artificial Potential Field and RRT* algorithms for path planning in complex, obstacle-dense environments
- Integrated vision processing with AprilTags, and multithreading in ROS 1, significantly improving real-time performance

LEADERSHIP EXPERIENCE

Phi Gamma Delta (FIJI) | *Philanthropy Chair*, Philadelphia, PA Jan 2023 – May 2025

- Led fundraising and persuasive communication initiative; set record for highest funds collected for local charities
- Designed, fine-tuned and implemented Excel frameworks to maximize returns on charity fundraising events

The ASASE Foundation (NGO) | *Researcher and Communications Manager*, Accra, Ghana Sep 2018 – Dec 2022

- Partnered with ETH Zürich researchers to identify and implement global best-practice recycling strategies in Ghana
- Recommended plastics repurposing projects such as 70/30 sand-plastic pavement blocks, achieving +30% cost reduction