ADRIANA HOLTZMAN

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OBJECTIVE

Engineer interested in research to help people: machine learning, autonomy, integrated circuit design, PCB design, computer architecture, embedded systems, robotics, biotechnology

EDUCATION

École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland — Spring 2026
Exchange student with Computer Science concentration

Carnegie Mellon University, Pittsburgh, PA — May 2027
Bachelor of Science in Electrical and Computer Engineering — GPA: 3.89/4.00
Additional Major in Robotics

Lexington High School, Lexington, MA — June 2023
High School Diploma — GPA : 4.12/4.31

RESEARCH EXPERIENCE

Optimal Route Generation Pipeline for CircumNav Lunar Rover — January 2025 - August 2025
Advised by Astrobotic Founder, Dr. William (Red) Whittaker

- Developed novel methodology using BFS, DFS, A*, and DBSCAN Clustering in Python to traverse binarized lunar terrains
- Identified and collaboratively solved coordinate system distortion bug to ensure viability of outputted routes
- Contributed this methodology to future CircumNav Rover NASA proposal to perform sun-synchronous navigation

Micro Robotics Lab, Undergraduate Researcher, Pittsburgh, PA — May 2024 - August 2024
Advised by Dr. Sarah Bergbreiter

- Lead project creating caudal fin actuators for autonomous fish-like robots, employing SolidWorks, Onshape, Arduino, rapid prototyping, and electrical design to develop caudal fin actuator with controllable inertia-based turning capability
- Designed safe, reusable test setup to isolate electronics above water tank and track fin location underwater
- Presented quantified actuation control using Segmentation Tracking and MATLAB data visualization at lab meeting

WORK EXPERIENCE

Draper Laboratory, Undergraduate Systems Engineer, Cambridge, MA — May 2025 - August 2025

- Wrote unit tests for Inertial Measurement Unit data analysis application to support acceptance testing in MATLAB
- Verified tests in Linux environment and deployed code to GitLab CI/CD Pipeline to be utilized during all merge requests
- Devised scalable approach to track utilization across 15+ Acutronic Rate Tables using C and ACUTROL Control Language

TechSpark Machine Shop, Teaching Assistant and Technician, Pittsburgh, PA — May 2024 - Present

- Guided shop users to operate machines safely and assisted professional shop machinists in manufacturing parts
- Instructed 50+ students and tested curriculum by machining C-clamp as Teaching Assistant for manual machining courses

SKILLS

Languages	C/C++, Python, MATLAB, SystemVerilog, x86-64/ARM Assembly, LaTeX, HTML/CSS, Svelte
Software	Cadence, VCS, Vivado, VSCode, Git, Autodesk Fusion, KiCad, SolidWorks, Onshape, Arduino
Machines	Mill, Lathe, CNC Mill, Waterjet, Laser Cutter, 3D Printer (FDM/SLA), Bandsaw
Hobbies	Music (Choir, Guitar, Listening, Synthesizers), Jewelry Making, Machining, Woodworking

RELEVANT COURSEWORK

Embedded Systems	Space Robotics Development	Fundamentals of Control
Electronic Devices and Analog Circuits	Computer Systems	Structure & Design of Digital Systems
Digital IC Design*	Intro to Machine Learning*	HW-SW digital systems codesign*

(*Planned spring 2026)

PROJECT EXPERIENCE

GPS Real Time Kinematics (RTK) Data Collection and Analysis January 2024 - Present

- Lead data collection and analysis for annual University Raceday 2025 (carbon fiber gravity racing) as CIA Data Chair, utilizing high-precision GNSS data to advise driver lines, push team selection, and energy loss analysis
- Upgraded analysis scripts in Python to generate and populate CSV with data at given coordinates of interest
- Redesigned and manufactured physical kits in SolidWorks to improve performance and user friendliness during weekly Rolls

Real Time Operating System Embedded Kernel August 2025 - December 2025

- Implemented RTOS Kernel with context switching, RMS scheduling, interrupt-based UART, I2C in C and ARM Assembly
- Using STM32 Cortex M4 and self-designed PCB in Autodesk Fusion to operate miniature car

Malloc Memory Allocator July 2025

- Optimized implementation in C to include segregated free list, footerless allocated blocks, and 16 byte miniblocks
- Achieved 73.8% Utilization and 5605 Kops/sec Throughput across 20 traces, significantly reducing internal fragmentation

FPGA Serial Communication Hardware Thread February 2025

- Built FSM and datapath in SystemVerilog, VCS, and Vivado to receive, decode, and transit serial hamming codes
- Accounted for inputted bit rates within 5% of nominal 12580 Hz by using edge detection to enable resynchronization

Analog Audio Synthesizer, Build18 Hardware Hackathon October 2024 - January 2025

- Manufactured analog synth with filter, echo, and oscillator functionalities for compatibility with instruments and mic inputs
- Presented product and live demonstration to team of corporate sponsors as 1 of 5 selected Innov18 teams

EXTRACURRICULAR EXPERIENCE

Carnegie Involvement Association (CIA Buggy), RD25 Data Chair, Mechanic, Build — August 2023 - Present
Build18 Hardware Hackathon, Web Development Officer — February 2025 - Present
Scotch'n'Soda, Actor, Co-Head Paint Implementer, Asst. Electrician — August 2023 - Present
Counterpoint A Cappella, Vocalist — August 2023 - May 2024