

Patrick W. Spencer - everything engineer

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Experience

(click job titles to read more)



- Full Stack Engineer**, Anderson Biotech (YC W22) - Atlanta, GA May 2024 - June 2025
- Architected and maintained software for cell therapy development machine, as sole software engineer, spanning Python backend, React frontend, and embedded C++ running on custom PCBs
 - Built infra: Distributed database (Postgres + SQLite) with user dashboard, custom OTA update system
 - Designed and tested PCBs (100+ components), controlling various motors and sensors over I2C, SPI, UART
 - Solved fundamental electrical problem: Chased down over months, prototyped, then implemented fix into PCBs
 - Implemented and iterated core application logic including control system regulating liquid flow and pressure
- NASA** **Software Engineering Intern**, NASA Ames Research Center - Mountain View, CA Aug – Dec 2023
- Developed rotor testing software (frontend + backend) using Python + Qt GUI framework
 - Improved Mars Helicopter flight dynamics analysis (MATLAB), enabling discovery of new flight regime risks
 - Developed computer vision software (Python + OpenCV) to determine pointing angle of aerodynamic tufts
- Masten** **Propulsion Engineering Intern**, Masten Space Systems - Mojave, CA Sep 2021 – Apr 2022
- Managed lunar lander propulsion system routing, including valves, regulators, fittings, tubes, clamps
 - Coordinated with structures, integration, and systems teams on interfaces, integration schedule, mass budgets
 - Operated VTVL rocket (Xodiac) for 6 flights, as part of small team: armed abort system, system checkouts
- Mechanical Engineering Intern**, Conn Center for Renewable Energy - Louisville, KY Feb – May 2021
- Managed research project evaluating performance of sodium and phosphorus as battery electrode materials
 - Assembled batteries, tested, then used Raman and X-ray diffraction spectroscopy for performance analysis

Education

- University of Louisville**, KY: Bachelor of Science in Mechanical Engineering May 2024

Projects

(click project names to read more)

- Vision-LLM Car** Dec 2024
- Programmed interface and agentic loop letting any VLLM (API or local) control a Raspberry Pi-based robot car
 - Tested & optimized, using custom webapp for observability, on tasks like finding objects in a room
- Pterobot - quadruped trained with reinforcement learning** Apr 2024
- Created 3D model mimicking pterodactyl bodyplan and trained on cloud GPUs using JAX, Brax, MuJoCo
 - Iterated reward function weights and terms to encourage desired behavior. Not walking (yet), but hopping!
- PCB Motor** Dec 2024
- Designed and tested axial flux BLDC motor with highly configurable (serial- or parallel-izable) PCB stator
 - Wrote Python script for entirely automated and modular PCB creation in Kicad format
- Rocket Team Captain & Propulsion Lead**, River City Rocketry, Univ. of Louisville Oct 2019 – Apr 2023
- Led team of 30+ engineering students to top third finish at Spaceport America Cup / IREC 2022
 - Secured \$50k+ in funding, managed conflicts, held design reviews, led recruiting efforts

Skills and Tools

Soft: self-teaching, self-direction, efficient collaboration, prioritization, resilience & adaptability, documentation

Programming: Git, Python (Torch, OpenCV, Qt), Linux, TypeScript+React, embedded C/++, system design

Electrical: Circuit design, PCB design (Kicad) & debugging, oscilloscope, soldering

Mechanical: Machining, 3D printing, welding, waterjet, composites, CAD (Solidworks, Onshape)

Interests & hobbies: AI, hiking, unicycling, drones, rockets, paleontology