

Thelonious Cooper

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EDUCATION

University of California Berkeley

PhD, Electrical Engineering and Computer Science

Aug 2025 —

- Major: Signal Processing, Minors: Integrated Circuits, Theoretical Neuroscience
- Awarded the prestigious UC Berkeley Chancellor's Fellowship upon admission

Massachusetts Institute of Technology

Bachelor's of Science, Electrical Science and Engineering

Aug 2021 — May 2025

- Cumulative GPA: 4.1/5.0 |
- Scholar titles: MIT Climate Grand Challenges Undergraduate Research and Innovation, MIT Arts Scholar
- Coursework: Linear Algebra and Optimization; Probability Theory and Statistics; Statistical Signal Processing; Nonlinear Dynamics; Partial Differential Equations; Electromechanical Systems; Silicon Photonics; Embedded Systems; Computation Structures; Integrated Digital System Design and Verification; Music Technology; Algorithms and Interactions for Human-AI Creative Partnerships.

SKILLS

- **Embedded Systems Engineering** in C/C++ and Rust
- **Applied Mathematical Modeling and Machine Learning** in Julia and Python (PyTorch)
- **Digital Hardware Development** in SystemVerilog and BlueSpec

WORK EXPERIENCE

Research Fellow

Jun 2024 — Sep 2024

Center for Innovation in Vision and Optics

Berkeley, CA

- Designed and implemented pipeline to generate large-scale synthetic 3d scene data for computer vision applications.
- Built on the Nvidia [Omniverse](#) and IsaacLab frameworks to write a library that integrates a simulacrum of a human visual system into a 3d rendering environment.
- Trained CV models with the ability to decide where to look based on visual cues, and be able to reason about their location in the environment purely from visual data.

Firmware Features Intern

May 2023 — Aug 2023

Cisco Meraki

San Francisco, CA

- Implemented the BGP routing protocol stack within the next generation firmware for the Meraki MX routing security appliance in an embedded Linux environment.
- Integrated legacy C software into a modern C++ development environment.
- Performed extensive unit and integration testing in proprietary Python-based test environment and in Google's C++ GTest framework.
- Gained experience in an AGILE production environment with rigorous code review.

Firmware Developer

May 2022 — Aug 2022

Elemind Technologies

Cambridge, MA

- Implemented communication and control codes in C++ for a closed-loop EEG monitoring and stimulation device which was used in Neuroscience studies.

Undergraduate Researcher

Jan 2022 — Sep 2022

MIT CSAIL Human-Computer Interaction Laboratory

Cambridge, MA

- Designed web platform for embedding spatial codes into laser cut joint designs
- Fixed and accelerated OpenCV C++ code for decoding embedded messages in images
- Modernized and streamlined an inherited tangle of javascript spaghetti code
- Implemented ArUco marker tracking on Infrared Cameras on Microsoft HoloLens for lightweight object tracking in AR.

RESEARCH AND PERSONAL PROJECTS

Founder and Lead Developer, VitalVault

March 2025 —

- FOSS project I started dedicated to the secure storage and easy retrieval of medical documents.
- Written in Rust and React Native using the Tauri framework for security guarantees and cross platform deployment
- Document retrieval across languages and contexts via LLM semantic embedding run natively on one's mobile device.

Researcher, Bespoke

Sep 2024 — Jan 2025

- Individual thesis project for a graduate course in Digital Integrated Systems at MIT.
- Designed and implemented a compiler for synthesizing FPGA stream processors from 8-bit quantized neural network specifications.
- SystemVerilog design of composable dataflow modules for ML Pipelines
- Python discrete optimization for allocation of BRAM and DSP slices to various dataflow units on the FPGA.

Corresponding Author, Drone Autopilot Failure Modeling

Jan 2022 — May 2024

- Developed and implemented novel methodology for the evaluation of resilience in sophisticated drone autopilots. Simulated communications failures within an RTOS embedded-linux flight stack and modeled autopilot recovery performance.
- Presented at PX4 Developer Summit in 2023. Recorded talk available on youtube [PX4-DevSummit](#)
- Published first-author publication detailing methods in 2024 IEEE International Conference on Unmanned Aerial Systems where I served as reliability systems program co-chair [IEEE Conference Publication](#) | [IEEE Xplore](#)

EXTRACURRICULAR ACTIVITIES

Academics Chair of Chocolate City

Jan 2024 — Jan 2025

- Served as an academic mentor and advisor for underclassmen in [Chocolate City](#), a living group of underrepresented men of color at MIT
- Hosted office hours for various technical subjects
- Resolved academic conflicts with professors and advisors

Board Member of INFINITE Magazine

Jan 2022 — May 2024

- Board member, website developer and spread lead for [INFINITE Magazine](#), MIT's undergraduate fashion magazine