Pedro Pontes García

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Education

Cornell University, College of Arts & Sciences — Ithaca, NY

B.A. in Computer Science, Mathematics – **GPA** 3.97 — *2022 – 2026 (expected)*

- **Relevant coursework:** Advanced Programming Languages and Logics, Intro to Programming Languages and Logics, Honors Discrete Structures, Honors Real Analysis, Advanced Probability, Functional Programming, C++ Programming, OOP & Data Structures, Advanced Game Architecture

Experience

Cornell Capra Research Group — Ithaca, NY

Student researcher with Adrian Sampson and Ayaka Yorihiro — *01/2025 – Present*

- Worked on hardware profiling and optimization for Calyx, a compiler infrastructure for generating custom hardware accelerators from Accelerator Design Languages (ADLs) like Allo and Dahlia.
- Maintained and extended the Calyx Rust codebase to support hardware synthesis automation and the profiler extension.
- Created tools to collect, structure, and visualize fine-grained performance data from Verilog simulations and FPGA designs.
- Used profiler to guide optimizations at the Calyx and the ADL level, including an Allo neural network model and Dahlia examples.
- Developed new area profiler to evaluate resource usage and frequency in synthesized designs, including instrumentation to map specific modules and primitives back to Verilog, Calyx, and at the ADL level.
- Conducted research part-time during the 2024–2025 and 2025–2026 academic years, and full-time during the summer.

Cornell Department of Computer Science — Ithaca, NY

Teaching Assistant — *01/2023 – Present*

- Worked as a TA for six semesters across four courses: Intro to Programming (CS 1110), Data Structures and Functional Programming (CS 3110), Intro to Game Architecture (CS 3152), and Computer Organization and Systems Programming (CS 3410).
- Served as Lab Lead in Intro to Programming (Python, ∼700 students) and Computer Organization and Systems Programming (C/RISC-V, ∼300 students), managing up to 40-person weekly lab sections and mentoring junior TAs.
- Served as Lab Czar in Data Structures and Functional Programming, the core functional programming course (OCaml, ∼300 students), managing all the lab materials for the class, writing grading rubrics and coordinating exam and assignment grading.

Equinor ASA – Equinor Research Center — Trondheim, Norway

Software Engineering Intern — *06/2024 – 08/2024*

- Developed a software tool for model predictive control in offshore energy production and carbon capture.
- Rebuilt the frontend using TypeScript, React, and D3.js to improve usability and responsiveness.
- Introduced TypeScript and developed robust types in a previously untyped codebase to improve type safety.
- Built a Python middleware server with gRPC to connect the frontend to a legacy C++ backend.
- Collaborated with a six-person international team; rotated through leadership roles and contributed to UI/UX decisions.

Honors and awards

- **Davis UWC Scholar Program**, full-tuition scholarship (2022–2026)
- **Cornell CS TA Annual Award Nomination** (2025)
- **Cornell Arts & Sciences Dean's List** (2022–2026)
- **Norway National Young Researchers' Award**, 2nd (2022)
- **Baltic Sea Philosophy Essay Event**, bronze (2021 and 2022)

Projects

- **Software Lead on Trigger Happy:** a multiplayer last-man-standing mobile card game in C++.
- **CUGLingo:** internationalization extension to the Cornell University Game Library (CUGL), developed for Prof Walker White.
- **Software Lead on Phytopolis:** a platforming and strategic resource management game in Java.
- **Zephyr:** a lightweight OCaml game engine with support for 2D physics.
- **Pendulum modeling:** an extended paper exploring different mathematical and computational pendulum models; worked with research advisor on multiple drafts.

Skills

- **Programming languages:** Rust, OCaml, C++, C, Python, Java, JavaScript/TypeScript, RISC-V assembly
- **Tools and frameworks:** data science (`numpy`, `pandas`, `matplotlib`, D3), web dev (Node, React, Next.js, Tailwind), hardware design (AMD Vivado, Xilinx FPGAs, Calyx), Docker, Git, Unix/Linux
- **Languages:** fluent Spanish, English, Italian; intermediate French; elementary Norwegian