Pedro Pontes García

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Education

Cornell University, College of Arts & Sciences Ithaca, NY

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

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

Preprint

- **Understanding Accelerator Compilers via Performance Profiling**: Ayaka Yorihiro, Griffin Berlstein, *Pedro Pontes García*, Kevin Laeufer, Adrian Sampson (arXiv:2511.19764)

Experience

Cornell Capra Research Group Ithaca, NY

Student researcher with Adrian Sampson and Ayaka Yorihiro *01/2025 – present, full-time during summer 2025*

- Worked on hardware profiling and optimization for Calyx, a compiler infrastructure for hardware accelerator design.
- Co-authored paper on cycle-counts profiler for acelerator design, for submission to OOPSLA '26.
- Developed new area profiler to evaluate resource usage and frequency in synthesized designs targeting FPGAs (Vivado) and ASICs (Yosys), including instrumentation to map specific modules and primitives back to Verilog, Calyx, and accelerator design language source code.
- Maintained and extended the Calyx Rust codebase to support hardware synthesis automation and the profiler extension.

Cornell Department of Computer Science Ithaca, NY

Teaching Assistant *01/2023 – present*

- Worked as a TA for six semesters across four courses: Computer Organization and Systems Programming (C/RISC-V, 300 students), Functional Programming (OCaml, 300 students), Intro to Game Architecture (Java, 100 students), and Intro to Programming (Python, 700 students).
- Served as lab lead for five semesters, managing 40-student weekly lab sections, mentoring junior TAs and developing assignments.
- Served as lab czar in Functional Programming, managing all the lab materials for the class, writing exam questions, grading rubrics and coordinating exam and assignment grading.

Equinor ASA – Equinor Research Center Trondheim, Norway

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

- Worked on the development of a software tool for model predictive control in offshore energy production and carbon capture.
- Rebuilt frontend using TypeScript, React, and D3.js, and developed comprehensive types in a previously untyped codebase.
- Built a functional-style Python middleware server with gRPC to connect the frontend to a legacy C++ backend.
- Rotated through leadership within a six-person international team.

Honors and awards

- **Davis UWC Scholar Program**, full-tuition scholarship (2022–2026)
- **Cornell Bowers CIS TA Annual Award Nomination** (2025)
- **Cornell J.G. White Award for Excellence in Writing** (2025)
- **Cornell Arts & Sciences Dean's List** and **Latin honors track** (2022–2026)
- **Norway National Young Researchers' Award**, 2nd (2022)
- **Baltic Sea Philosophy Essay Event**, bronze (2021 and 2022)

Projects

- **Petal**, a cycle-level and area profiler for the Calyx intermediate language for accelerator design developed in the Capra lab.
- **Bril Development Suite**, a set of compiler analysis and optimization passes for the Bril teaching language.
- Software Lead on **Trigger Happy**, a multiplayer last-man-standing mobile card game in C++.
- Software Lead on **Phytopolis**, a platforming and strategic resource management game in Java.

Skills

- **Programming languages:** Rust, OCaml, C, C++, Python, Java, TypeScript, RISC-V assembly.
- **Tools and frameworks:** compilers and hardware design (LLVM, AMD FPGAs and Vivado, Yosys, Calyx), data science (Numpy, Pandas, Matplotlib, D3), web development (Node, React, Next.js, Tailwind), Docker, Git, Unix/Linux.
- **Languages:** fluent Spanish, English; intermediate Italian and French; elementary Norwegian.