

Jeremy Ku-Benjet

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EDUCATION

• Cornell University

Ithaca, NY

Bachelor of Science in Computer Science; GPA: 3.8

Aug 2022 – May 2025

Notable Coursework: Compilers, Programming Languages, Computer Architecture, Distributed Systems, Systems Programming, Functional Programming, Object Oriented Programming and Data Structures, Algorithms, Honors Theoretical Linear Algebra, Game Development

EXPERIENCE

• Zhang Research Group

Ithaca, NY

Student Researcher with Matt Hoffman and Zhiru Zhang

February 2024 – Present

- Investigate and implement LUT optimization via e-graphs using egg.
- Evaluate different sets of rewrites to limit e-graph size explosion.
- Integrate optimization as a new pass in yosys, a open tool for RTL synthesis.

• Cornell Bowers Undergraduate Researcher Experience (BURE)

Ithaca, NY

Student Researcher with Adrian Sampson

June 2024 – August 2024

- Investigate tools to reduce boilerplate in compiler frontends using Rust, egg, and Ninja.
- Develop a novel compiler frontend under the mentorship of professor Adrian Sampson that leverages program synthesis to resolve user CLI requests, which was NP-hard for our use case.
- Extend the Rhai embedded scripting language to be used for configuring the Calyx compiler frontend.

• Course Management System X (CMSX)

Ithaca, NY

Software Engineer

Dec 2023 – Present

- Work with a team of 22 developers and designers on a course management system serving 1000s of students and professors across Cornell University.
- Audit a transaction database system for errors rolling back invalid database queries.
- Engineer rubrics for CMSX using JPA and JSP to make it easier for course staff to grade students.
- Add calendar feature allowing students to download deadlines using ical calendar format.

• Cornell University

Ithaca, NY

Teaching Assistant

Dec 2023 – Present

- Improve assignments, staff office hours, teach sections, and grade, for Cornell's courses on Computer Architecture (ECE 5740), Computer Organization and Systems Programming (CS 3410), Object Oriented Programming and Data Structures (CS 2110), and Computer Game Architecture (CS/INFO 3152).
- Develop and test a tool to run student OS images remotely using ssh and docker.
- Assist students in debugging Verilog processor models and Java and C programs.
- Debug Cornell's extensions to the LibGDX game library.

PROJECTS

Jorg: A general text templating tool taking a TOML configuration file and template files to create a result. Written in Mercury, a functional logic programming language based on Prolog.

Bindings from tomlc99, a C library, to Mercury.

Lox: A TUI for specifying lambda calculus terms and an interpreter to reduce them, written in OCaml.

Seas The Throne: An action-adventure bullet hell game.

Lead programmer of an interdisciplinary team designing and implementing the game.

Grafecs: A multithreaded 3d toy graphics engine, written in Rust.

SKILLS

- **Programming Languages:** Rust, C++, C, Python, Java, OCaml, Mercury (similar to Prolog), Verilog/System Verilog, Assembly (RISC-V and x86-64)
- **Technologies:** MLIR, Git, Unix Shell Scripting, CMake, Make, Ninja, Docker/Podman
- **Human Languages:** English (Native)