

# Kabir Samsi

[kabirsamsi.com](http://kabirsamsi.com) | [kas499@cornell.edu](mailto:kas499@cornell.edu) | [linkedin.com/in/kabir-samsi/](https://linkedin.com/in/kabir-samsi/) | [github.com/KabirSamsi](https://github.com/KabirSamsi)

## EDUCATION

### Cornell University

Ithaca, NY

Bachelor of Arts – Computer Science & Mathematics

August 2022 - May 2026

- **Grad Coursework:** PhD Compilers, PhD Programming Languages Theory, PhD Software Verification (Rocq)
- **UGrad Coursework:** Algorithms, Honors Data Structures & OOP, Machine Learning, Deep Learning, Functional Programming, Systems Programming, Operating Systems, Abstract Algebra, Linear Algebra, Probability Theory
- **Dean's List Recipient, Pursuing CS Honors**

## EXPERIENCE

### Lead Software Developer

August 2023 – Present

Course Management System X (CMSX) @ Cornell University

Ithaca, NY

- Led the engineering team for Cornell COE/CIS's course management system, advised by Andrew C. Myers.
- Core full-stack developer & supervisor of 20+ developers on CMSX's JSP and React frontends.
- Developed a staff model for securely **serializing, importing & exporting course templates** in XML & JSON.
- Developed new features including **student comments, regrades & secure enrollment** for over 100 courses.
- Co-led the designing, engineering and shipping of CMSX's feature for **rubrics-based grading**.

### Researcher (Compiler Design)

June 2024 – Present

Capra Research Group @ Cornell University

Ithaca, NY

- Researched programming language design for **packet scheduling & networking**, advised by Adrian Sampson.
- Developed the Rio **language, compiler & arbiter** for compiling packet scheduling policies to FPGA hardware.
- Led the design, formalization & hardware representations of the PIEO and PIEO Tree data structures.
- Developed a **type system, typechecker** and **formally verified semantics** for the Rio programming language.
- Software engineer for the **Calyx compiler infrastructure** for languages targeting **hardware accelerators**.

### Head Teaching Assistant (CS3110, CS2112, CS5150)

August 2023 – Present

Cornell University Bowers College of Computing & Information Science

Ithaca, NY

- Head TA (4x Outstanding TA Award) for **Honors DS/OOP, Functional Programming & SWE** at Cornell.
- Taught FP (OCaml), OOP (Java), data structures, PL & compiler theory, formal methods & software design.
- Designed labs for 1000+ students; wrote projects & exams; led CS 3110's recitation team; hosted discussion sections.
- Inagurated & hosted both courses' exam recitation programs (150+ students); wrote 300+ review material slides.
- Trained 100+ TAs at CS 3110 over three semesters in lab management and discussion teaching.

### Data Engineer

October 2022 – May 2024

Cornell Lab of Ornithology

Ithaca, NY

- Classified 5000+ images and developed audiovisual bird ID models & data cleaning scripts for the Merlin Project.
- Curated database profiles for 300+ species splits for the EBird packs throughout Eastern & Southeast Asia.

## PROJECTS

### Franz | Rust

March 2024 – Present

- An intermediate language representation and compiler infrastructure for developing music composition languages. Targeted towards compact & modular composition, using text-based music notation and motifs for representation.

### Saberchat (Team Lead) | Node/Express/Angular, React, MongoDB

June 2020 – May 2022

- Led the development of a community platform infrastructure used by schools & student-run organizations. Includes content-sharing systems, an online tutoring center & a streamlined preorder/inventory platform for retail groups.

## TECHNICAL SKILLS

**Languages:** Java, Rust, TypeScript/JavaScript, C++, Python, OCaml, Kotlin, C, Go, Swift, Haskell, HTML/CSS

**Fullstack:** React/Vue, Node/Express/Angular, AJAX, Flask, MongoDB, SQL, Bootstrap, template engines (JSP, EJS)

**Machine Learning:** PyTorch, TensorFlow/Keras, Pandas, MapReduce, ScikitLearn, Hugging Face

**Other Tools:** LLVM, MLIR, Rocq Prover, Verilog, CUDA, LaTeX, Git