

Kabir Samsi

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Software engineer and researcher with a strong background in system & software engineering. Particularly interested in combining programming languages & compiler architecture with algorithm design and software verification to build beautiful systems. Skilled in fullstack development, verifying software, systems programming, research & teaching.

EDUCATION

Cornell University

Ithaca, NY

Bachelor of Arts – Computer Science, Mathematics & Music

Aug. 2022 – Dec. 2025

- **Graduate Coursework:** Software Systems, Compilers, Programming Languages
- **Relevant Undergraduate Coursework:** Algorithms, Data Structures & OOP (Honors), Machine Learning, Functional Programming, Operating Systems, Computational Algebra, Linear Algebra, Probability Theory
- **GPA 3.8/4.0, Dean's List Recipient** (All Semesters), Pursuing CS Honors (PL & SWE Specialization)

WORK EXPERIENCE

Researcher (Programming Language & Compiler Design)

June 2024 – Present

Capra Research Group @ Cornell University

Ithaca, NY

- Researched optimizations for software-defined networking & language design for programmable packet scheduling.
- Developed the Rio compiler & DSL for creating scheduling policies, & algorithms to translate policies to hardware.
- Spearheaded the design, formal verification & hardware representations of the PIEO/PIEO Tree data structures.

Head Teaching Assistant

August 2023 – Present

CS3110 (Data Structures & Functional Programming) @ Cornell University

Ithaca, NY

- Taught functional programming, data structures, interpreter design & formal verification to thousands of students.
- Created & led all pre-exam recitations; designed the course lab material; ran OH/discussions; led all TA meetings.
- Recipient of Cornell's Outstanding Computing & Information Science Teaching Assistant Award.

Software Development Engineer

August 2023 – Present

CMSX @ Cornell University

Ithaca, NY

- Full-stack developer for Cornell CIS's primary course management platform (8K+ users and 100+ courses).
- Optimized the staff grading interface; implemented parsing, verification and new integrations for CSV uploads.
- Reinforced type safety and refactored large portions of the Java codebase; migrated the frontend stack to React.js.

Data Analyst

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 in Indonesia & Taiwan.

PROJECTS

Saberchat (Team Lead) | MEAN Stack

June 2020 – May 2022

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

FindYourBird (Founder & Lead) | MEAN Stack

June 2020 – May 2024

- Founded and built a bird ID, info & observation logging platform used by amateur ornithologists. Includes a search & identification system, information pages on 200+ different species & user-specific target species and locations.

KLaTsL | OCaml

November 2023 – Present

- A functional, typed & interpreted linear algebra-focused DSL introducing an elegant type system and syntax featuring matrix comprehensions & factorizations, typed transformations, dimensional typing and more.

Franz | Rust

March 2024 – Present

- A compiled, domain-specific programming language targeted towards compact and modular musical composition, using a medium of text-based musical notation. Compiles to ChuckK, an audio representation language.

TECHNICAL SKILLS

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

Frameworks: MongoDB, Express, Node, React, NextJS, Ajax, LLVM, Yacc, Coq, Flask, Pandas, TensorFlow, PyTorch

Databases & Systems: MongoDB, SQL/PostgreSQL/MariaDB, Neo4j, Linux, Git, Docker, AWS

Expertise: Full-Stack Development, PL & Compiler Design, Software Verification, Machine Learning, Systems Programming