Kabir Samsi

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Software engineer, researcher & innovator experienced in large-scale software engineering, compilers, full-stack development, machine learning & programming language design. Passionate about software, research, teaching & building great teams.

EDUCATION

Cornell University — Ithaca, NY
Bachelor of Arts – Computer Science, Mathematics & Music — *Expected 2026*
- **Graduate Coursework**: Compilers, Programming Languages, Software Systems
- **UGrad Coursework:** Algorithms, Honors Data Structures & OOP, Machine Learning, Functional Programming, Systems Programming, Artificial Intelligence, Databases, Abstract Algebra, Linear Algebra, Probability Theory
- **GPA 3.75/4.00, Dean's List** (All Semesters), **CS Honors Track**

EXPERIENCE

Co-Founder & CTO — May 2025 – Present
Cove — *New York City, NY*
- Technical co-founder with Hrishabh Ayush. Leading software development, analytics & artificial intelligence.
- Software for investing in event-driven insurance markets. Currently building tools for flight insurance investments.
- Researching & building high-performance prediction models for high-frequency event-driven insurance trading.

Lead Undergraduate Researcher — 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 onto 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.
- Coauthoring a publication on formalisms, semantics & hardware abstractions in programmable packet scheduling.

Head Teaching Assistant — August 2023 – Present
CS3110 & CS2112 @ Cornell University — *Ithaca, NY*
- Head TA for Cornell's core courses in Honors Data Structures/OOP & Data Structures/Functional Programming.
- Taught functional programming, OOP, data structures, PL, verification & software design to 1000+ students.
- Designed labs; wrote projects & exams; managed CS 3110's recitation team & hosted weekly discussion sections.
- Inagurated both courses' exam recitation programs; hosted recitations; created 300+ slides of review material.
- Trained 100+ TAs at CS 3110 over three semesters in lab management and discussion teaching.
- Four-time recipient of Cornell's Outstanding Computing & Information Science Teaching Assistant Award.

Core Software Engineer — August 2023 – Present
Course Management System X (CMSX) @ Cornell University — *Ithaca, NY*
- Core full-stack developer for Cornell COE/CIS's main course management system, advised by Andrew C. Myers.
- Team expert and supervisor of 20+ developers on CMSX's JSP and React frontends.
- Developed a staff-side model for securely serializing, importing & exporting course templates in XML & JSON.
- Developed student commenting, optimized regrading & secure enrollment functionality for over 100 courses.
- Developed parsing, verification and new integrations for staff-side, grading-related CSV uploads.

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) | *MongoDB, Express.js, Node.js* — 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.

TECHNICAL SKILLS

Languages: Java, Rust, TypeScript, C++, Python, OCaml, C, JavaScript, Go, Solidity, Haskell, Ruby, HTML/CSS
Fullstack: React, Node, Express, Angular, Vue, Ajax, Flask, MongoDB, SQL/AWS, template engines (JSP, EJS)
Machine Learing: PyTorch, TensorFlow, Numpy, Pandas, Keras, Matplotlib
Other Tools: LLVM, Rocq Prover, LaTeX, Nginx, Parsers (Yacc, JavaCC, Lalrpop)