Kabir Samsi

kabirsamsi.com | samsikabir@gmail.com | linkedin.com/in/kabir-samsi/ | github.com/KabirSamsi

Software engineer & student researcher with strong passions for system & software engineering, with particular interests in intersecting compiler & programming language design with machine learning to build elegant software. Skilled in SWE, systems programming, PL & ML research, full-stack development, data engineering, team leadership & 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 a compiler & language for scheduling policy design, and algorithms to translate policies onto 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 programming language to represent music, Franz introduces features including rhythm comprehensions, recursive scales & motivic pattern matching. Compiles to ChucK, an audio production and 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: Software Engineering, PL/Compilers, Research, ML, Fullstack Development, Systems Programming