

EDUCATION

The University of Chicago

Bachelor of Arts in Computer Science (Focus: Computer Systems)

Chicago, IL

June 2025

Honors: Odyssey Scholar (2021-25), Winter Tech Showcase Best Overall for GuessTheWiki (2024),

University of Chicago Advanced Scholar (2024), Dean's List (2021-22).

TECHNICAL SKILLS

Programming Languages: Python, C, JavaScript, C++, Rust, Go, HTML/CSS, Bash, SQL.

Frameworks & Libraries: Flask, Django, FastAPI, Jinja, Cirq, Qiskit, Pytest, NumPy, Pandas, Multiprocessing, Threading, Asyncio, React, Socket.IO, Express, D3.

Databases: SQLite, PostgreSQL, MongoDB.

Tools & Platforms: Git, Linux, AWS, Docker, REST API, uv, pip, npm, gdb, perf, Tmux, OAuth, JWT.

Focus Areas: Open Source, Backend & Library Development, Computer Systems, HPC, Operating Systems.

EXPERIENCE

Meyer's Group (Astrophysics Research Group at the University of Chicago)

Chicago, IL

Research Assistant- Computer System Development

September 2024 – Current

Developing sensor and control systems with Python for the balloon-borne cosmic background radiation experiments.

- Developed fcntl-based locks for safe shared memory access across Python processes, achieving 0 data races.
- Implemented a shared memory lookup table for Python's ShareableList, speeding up access from ~ 20 ms to $\sim 10 \mu\text{s}$.
- Engineered safe, multithreaded image capture to synchronize 4 cameras, cutting timing variation from $\sim 10\text{s}$ to $\sim 1\text{s}$.
- Optimized image transmission with UDP + bz2 compression, reducing network and storage load by $\sim 30\%$.
- Built a Tkinter-based desktop app to filter and browse images, eliminating 2+ hrs of debugging per week for researchers.
- Developed a terminal log viewer with file watchers for live log filtering and monitoring, saving ~ 3 hrs of debugging effort.
- Profiled curses-based terminal interface with cProfile to identify and fix memory leaks, reducing CPU usage by 40%.

Infleqtion (Quantum Software and Hardware Company)

Chicago, IL

Quantum Software Engineering Intern → Consultant, Compiler Team

June 2024 – August 2025

Contributed to quantum compiler tooling, including testing infrastructure, code formatting, and website improvements.

- Designed control and measurement conversion between Pytket and Cirq, broadening circuit support in the compiler.
- Introduced user-requested job cancellation, reducing wasted compute and improving submission workflow.
- Enhanced security with Flask password recovery, email validation, and legacy hash support, resolving all account errors.
- Improved non-deterministic ACES algorithm with seeding for reproducibility and debugging, reducing flaking tests to 0.
- Created Pylint plugins to enforce code style and detect typing issues, ensuring type-safe, consistent code across codebase.

University of Chicago Biological Science Division

Chicago, IL

Student Data Analyst and Programmer

November 2023 – June 2025

Automated fiscal and analytical workflows for the department.

- Built a multithreaded Tkinter app with OAuth and version control to automate backups to Box, saving ~ 2 hours weekly.
- Implemented a Flask web app that automated faculty publication tracking, cutting 5+ hours of weekly manual data entry.
- Automated NIH-Reporter data preparation and analysis using Pandas for funding reports, saving ~ 2 weeks per funding cycle.
- Engineered a Selenium web scraper, extracting 300+ faculty award data points to eliminate ~ 3 days of manual work.

PERSONAL PROJECTS

• [Erys](#) (Python, Open Source): Terminal interface for creating, editing, and executing Jupyter notebooks

- Built with custom Jupyter kernel discovery and async consumer/producer architecture.
- Published on PyPI with 4,700+ downloads and 120+ stars on GitHub.

• [GuessTheWiki](#) (Flask, React, Postgres): Multiplayer Wikipedia guessing game.

- Leverages NLTK to score sentence relevance and generate progressive hints.
- Implemented real-time WebSocket multiplayer; deployed online at guessthewiki.com.

• [licensepy](#) (Rust, Open Source): CLI tool for Python dependency license checks and license header formatting.

- Supports multithreaded scanning for large projects.

NATHNAEL (NATI) BEKELE

nathnaelb@uchicago.edu | [GitHub](#) | [LinkedIn](#) | [Portfolio](#)

- o Published on PyPI with 3,300+ downloads and adopted in checks-superstaq by Infleqtion.