Nathnael (Nati) Bekele
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Education

The University of Chicago Chicago, IL
Bachelor of Arts in **Computer Science (Focus: Computer Systems)** 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, HTML/CSS, Bash, SQL.
Libraries & Frameworks:
Python: Flask, Django, Jinja, Cirq, Textual, Qiskit, Pytest, NumPy, Pandas, Multiprocessing, Threading, Asyncio.
JavaScript: React, Socket.IO, Express, D3.
Tools & Environments: Git, Linux, Docker, Vim, VS Code, GDB, Tmux, SQLite, PostgreSQL.
Interests: Backend & Library Development, Computer Systems, Open Source, High Performance Computing, TUI.

Experience

Infleqtion (Quantum Software and Hardware Company) Chicago, IL
Quantum Software Engineering Intern in the Compiler Team June 2024 – Current
Contributed to quantum compiler tooling, including testing infrastructure, code formatting, and website improvements.
- Designed control and measurement conversion between Pytket and Cirq, expanding circuit support in the compiler.
- Implemented job cancellation to cut resource consumption and improve user experience during job submissions.
- Implemented password recovery, email validation, and legacy hash support with Flask to strengthen account security.
- Enhanced non-deterministic algorithms with seeding for reproducibility and debugging, reducing test failures to 0.
- Built Pylint plugins to enforce style consistency and detect typing errors, boosting code quality across the codebase.
- Created custom GitHub Actions to strengthen CI pipelines and automate testing in quantum research projects.

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 for the Wilkinson Microwave Anisotropy Probe satellite cameras.
- Designed cross-process locks to enable safe shared memory access across Python processes, reducing data races to 0.
- Implemented shared memory lookup table, accelerating access from ~20 milliseconds to ~10 microseconds.
- Implemented multithreaded image capture to synchronize 4 cameras, reducing inter-camera delay from ~10s to ~1s.
- Developed UDP image transmission with bz2 compression, reducing network and storage load by ~30%.
- Built a Python Tkinter desktop app to filter and browse images, streamlining debugging and replacing manual review.

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 Box backup app with version control and OAuth to automate large-scale backups.
- Automated faculty publication tracking via Flask web app, saving 5+ hours of weekly manual data entry.
- Developed a Selenium web scraper extracting 300+ faculty award data points, saving 3 days of manual work.
- Cleaned, prepared, and analyzed NIH-Reporter data with Pandas to generate faculty funding reports.

Personal Projects

- **Erys (Python):** Terminal interface for creating, opening, editing, and executing Jupyter notebooks.
  - Customized Jupyter kernel discovery and connection logic.
  - Built an asynchronous consumer/producer architecture for code execution in notebooks.
- **GuessTheWiki (Flask, React)**: Web game for guessing Wikipedia article titles from increasingly relevant hints.
  - Used NLTK to score sentence relevance and generate progressively helpful hints with Python.
  - Developed multiplayer mode using WebSockets for real-time interaction with JavaScript.
- **licensepy (Rust):** CLI tool for Python dependency license checks.
  - Built a fast, cross-platform utility to scan and report licences for Python project dependencies.