

ELIAS BENBOURENANE

Software Engineer / Student • [gh/eliasbenb](https://github.com/eliasbenb) • [in/eliasbenb](https://in.linkedin.com/in/eliasbenb) • elias.eu.org • eliasbenb0@gmail.com • (412) 979-5589 • Pittsburgh, PA 15213

EDUCATION

University of Pittsburgh | Bachelor of Science in Computer Science

Aug 2022 - Apr 2026

Coursework: DSA I, DSA II, SWE, Web Dev, Software QA, Formal Methods, Systems Software, Assembly, OS, Quantum Computing

EXPERIENCE

SOFTWARE ENGINEER | University of Pittsburgh Biomedical Informatics

May 2023 - Presently

- Developed a tool using **React.js**, **SAS**, and **FastAPI** to explore drug-disease relationships in **13M+** *PaTH Network* patient records.
- Designed a **Next.js** app using **LLMs** to parse biomedical knowledge graphs and generate visual/text summaries of drug mechanisms.
- Prototyped a **machine learning** tool for *UPMC* hospital to identify dangerous patient care transitions with **FastAPI** and **React.js**.
- Modernized a decade-old **SQL** data analytics codebase with modular design and incremental processing, reducing runtime by **~30x**.
- Scripted **SLURM** pipelines with multi-node execution for **HPC** data analysis, reducing quarterly workflow compute times by **90%+**.
- Designed a secure, **HIPAA**-compliant **Linux/Docker** infrastructure for **AI compute** workloads, now serving **200+** users.
- Managed, architected, and/or deployed **10+** production servers both on the cloud through **AWS** and on-premises.

FULL STACK DEVELOPER INTERN | Center for Analytical Approaches to Social Innovation

May 2023 - Sep 2023

- Promoted post-internship to a **consulting** role, advising on project direction and engineering decisions.
- Led full-stack migration of project to a **Django** and **React.js** architecture, introducing new features while improving maintainability.
- Developed an analytics dashboard using **Django** and **Chart.js** to analyze user engagement and inform outreach decisions.
- Established CI/CD pipelines using **GitHub Actions**, streamlining and automating build, test, and deployment processes on **AWS**.

SOFTWARE DEVELOPER | Levy Lab

Dec 2022 - May 2023

- Refactored **SQL** tables containing **billions** of rows, reducing database size by over **40%** and improving indexing performance.
- Extended a custom Grafana fork with new **Go** and **React.js** modules for querying high-frequency physics time series data.
- Developed CI/CD pipelines using **AWS**, **Docker**, and **GitHub Actions**, fully automating daily builds and deployments.

PROJECTS

RARAR | Python, CLI

- Open-sourced the first random-access RAR archive reader, enabling partial archive extraction and reducing bandwidth by **99%+**.
- Engineered the implementation with support for **HTTP** workflows, enabling partial archive access in cloud and streaming scenarios.
- RARAR was adopted in the open-source download client *Decypharr* to list and extract RAR archives served with HTTP.

PLEXANIBRIDGE | Python, GraphQL, Docker

- Build a media synchronization service connecting **Plex** and **AniList** for media watch-status tracking, achieving **20,000+** Docker pulls.
- Developed **Python**-based sync engine using **asyncio** for concurrent processing and **GraphQL** for efficient *AniList* API mutations.
- Built and maintain a metadata mapping database aggregating **8** sources, achieving **~97%** accuracy for content ID matching.

CSAW | Python, SQL, Wireshark

- Contributed to organizing CSAW 2023, the largest annual cybersecurity event with **3,000+** participants and **hundreds** of teams.
- Designed **CTF** challenges involving **SQL** injections and **packet sniffing**, which were attempted by **50+** teams and solved by **six**.

LIBDRIVE | Python, Go, Flask, React.js, MongoDB

- Built *libDrive*, an open source media library indexer using **React.js**, **Flask**, and **MongoDB** with native cloud storage integration.
- Led development of *libDrive*'s successor, *Dester*, fostering an open source community of **300+** members and **100,000+** downloads.
- Contributed to *Dester*'s backend migration from **Python** to **Go** and collaborated on frontend development in **React.js**.

NAHAR STUDIOS | Python, Godot, Flask, MongoDB

- Co-founded *Nahar Studios*, a hobbyist game studio comprised of diverse and talented programmers, artists, and musicians.
- Participated in **six** game jams, published to the *Google Play Store*, and are currently in development of a metroidvania game.
- Designed and deployed all studio websites and game backends, including leaderboards and the studio's portfolio page.

SKILLS

- **Languages:** Python, Java, Go, JavaScript, TypeScript, Rust, C, Godot, HTML, CSS, PowerShell, Bash
- **Frameworks:** FastAPI, Django, Flask, React.js, Next.js, Svelte, Express.js, Tauri, PyTorch, Qt, Pytest, Jest.js, JUnit
- **Technologies:** PostgreSQL, SQLite, Oracle SQL, MongoDB, SAS, Jupyter, RStudio, AWS, GitHub Actions, Docker
- **Concepts:** Software Engineering, Web Development, Web Design, Full Stack, Backend, Frontend, Machine Learning, CI/CD, DevOps, SysAdmin, Server Management, Database Management, Game Development, HPC, Agile Methodologies