

Elias Benbourenane

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EDUCATION

University of Pittsburgh

Bachelor of Science in Computer Science, Minor in Physics

• Coursework: DS & Algorithms II, Software Engineering, Web Dev, Software QA, Operating Systems, Quantum Computing

Pittsburgh, PA

Aug. 2022 – Apr. 2026

EXPERIENCE

Software Engineer

University of Pittsburgh Biomedical Informatics

May 2023 – Present

Pittsburgh, PA

- Led architecture and drove key technical decisions across **9+** projects, often as the lead or sole developer
- Architected a secure, *HIPAA*-compliant *Linux/Docker* infrastructure for **AI** compute workloads, now serving **200+** users
- Developed a tool with *React*, *SAS*, and *FastAPI* to explore drug-disease relationships in **13M+** *PaTH Network* patient records
- Built a Next.js app using **LLMs** to parse biomedical knowledge graphs and generate visual/text summaries of drug mechanisms
- Modernized a decade-old **SQL** analytics codebase with modular design and incremental processing, reducing runtime by **~30x**
- Prototyped a **ML** tool for *UPMC* hospital to identify dangerous patient care transitions with *FastAPI* and *React*
- Scripted multi-node *SLURM* pipelines for **HPC** data analysis, reducing quarterly workflow compute times by **90%+**
- Contributed to a *PyTorch* **ML** framework for training predictive models on temporal data through a *Svelte* web interface

Full Stack Developer Intern

Center for Analytical Approaches to Social Innovation

May 2023 – Sep. 2023

Pittsburgh, PA

- Promoted post-internship to a consulting role, advising on direction and key engineering decisions for multiple projects
- Led full-stack migration of project to a *Django* and *React* stack, introducing new features while improving maintainability
- Developed an analytics dashboard using *Django* and *Chart.js* to analyze user engagement and inform outreach decisions
- Implemented a secure user authentication and authorization system with *OAuth 2.0 integration* to manage access
- Established CI/CD pipelines with *GitHub Actions*, streamlining and automating build, test, and deployment processes on *AWS*

Software Developer

Levy Lab

Dec. 2022 – May 2023

Pittsburgh, PA

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

PROJECTS

PlexAnibridge | Python, GraphQL, Docker

2025

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

RARAR | Python, CLI

2025

- Open-sourced the first random-access RAR archive reader, enabling partial archive extraction and **99%+** bandwidth reduction
- Engineered support for HTTP workflows, enabling efficient partial archive access in cloud and streaming scenarios

CSAW | Python, SQL, Wireshark

2023

- 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, MongoDB

2021

- Built *libDrive*, an open source media library indexer using *React*, *Flask*, and *MongoDB* with native cloud storage integration
- Led development of *libDrive*'s successor, *Dester*, fostering an open source community of 300+ members and **100K+** downloads

MagnetMagnet | Python, Qt

2020

- Built a cross-platform GUI program to aggregate 5 torrent trackers, offering a consolidated interface to search or scrape them
- Attracted **1,000+** downloads and over 60 GitHub stars for the program's UI and ability to cut user search times

TECHNICAL SKILLS

Languages: Python, Java, Go, JavaScript, TypeScript, Rust, C, C++, Godot, HTML, CSS, PowerShell, Bash

Frameworks: FastAPI, Django, Flask, React, Next.js, Svelte, Express.js, PyTorch, Qt, Pytest, Jest.js, JUnit, PyTorch

Technologies: PostgreSQL, SQLite, Oracle SQL, MongoDB, GraphQL, SAS, Jupyter, RStudio, AWS, Docker

Concepts: Software Engineering, Web Development, Full Stack, Machine Learning, CI/CD, DevOps, SysAdmin, Server Management, Server Infrastructure, Database Management, HPC, Distributed Systems, Agile Methodologies