

ELIAS BENBOURENANE

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EDUCATION

UNIVERSITY OF PITTSBURGH | *Bachelor of Science in Computer Science*

Aug 2022 - Apr 2026

Coursework: DSA I & II, Web Applications, Assembly, Systems Software, Operating Systems, Formal Methods, Quality Assurance

EXPERIENCE

UNIVERSITY OF PITTSBURGH

Pittsburgh, PA

SOFTWARE ENGINEER | *Department of Biomedical Informatics*

May 2023 - Presently

- Scripted **SAS** and **SQL** programs for internal use in the *PCORnet* database, a national medical network of **hundreds** of hospitals and over **30,000,000** patients yearly, that generate statistical summaries of patient electronic health records.
- Designed a medical informational tool with **React.js** and **FastAPI** for **millions** of *PCORnet* patients to better understand their conditions/medications through charts and tables with powerful querying capabilities.
- Designed a dashboard with **React.js** for care coordinators at *UPMC* hospital to predict prescription errors during cross-center patient transitions with **machine learning** which has been used to retroactively identify **100+** dangerous failure modes in recent transitions.
- Developed a **REST API** for use in medical research to query various **AI** language models in lieu of a shared GPU environment that is optimized with block-wise quantization and request queuing to manage high traffic and concurrent requests.
- Deployed a high-performance **Linux** server for research on large medical datasets packaged with locked-down **Jupyter** and **RStudio** environments in user-isolated and GPU-enabled **Docker** containers.
- Wrote **Bash** scripts to automatically create Jupyter/RStudio **Docker** environments, eliminating **120+ minutes** of manual build time.

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

May 2023 - Sep 2023

- Migrated the *412Connect* project, a service to educate and inform the public about local businesses, to an entirely new stack, handling backend, frontend, and database design in a **Django**, **React.js**, and **SQLite** stack.
- Developed a user analytics and tracking system for *412Connect*, featuring a dashboard, charts, graphs, and search/filtering.
- Introduced new DevOps pipelines, including CI/CD building, testing, and deployment to **AWS** using **GitHub Actions**, eliminating **90+ minutes** of build, test, and deployment time from the daily development workflow of the team.
- Promoted to a consulting role to provide guidance and strategic direction for the project beyond my internship tenure.

SOFTWARE DEVELOPER | *Levy Lab*

Dec 2022 - May 2023

- Refactored **SQL** tables containing **billions** of rows, reducing the database's size by over **40%**, optimizing indexing performance.
- Maintained a *Grafana* fork, involving full-stack development with **Go** and **React.js** to integrate features for **TimescaleDB**.
- Wrote **GitHub Actions** pipelines to automate the building and deployment of Docker images for **AWS EC2** containers, eliminating **15+ minutes** of build and deployment time daily.
- Served as a webmaster, handling DNS management, SSL certificate installation, and web hosting for the lab's websites.

PROJECTS

LIBDRIVE | *Python, Go, JavaScript, React.js, Flask, FastAPI, MongoDB, Docker, GitHub Actions*

- *libDrive* is a media library indexer for Google Drive that scrapes metadata for media files and offers a web UI to interface with them.
- The project has amassed over **100,000** downloads, **hundreds** of forks, and a community of over **300** members.
- A successor to *libDrive* named *Dester* was born from the open-source community's interest, which I was also involved with.
- Served as the sole full-stack developer for *libDrive*, where I designed and implemented the entire stack, using technologies such as **React.js**, **Flask**, and the Google Drive API.
- My contributions to *Dester* focused on the frontend and the migration of the backend from **Python** to **Go**.
- As *Dester's* team leader, I directed project milestones, coordinated development efforts, and onboarded new team members.

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 am currently developing a metroidvania game.
- Built all the studio's web-based programs, including the backend leaderboard systems for many of our games and our portfolio page.

TECHNOLOGIES

- **Languages:** Python, Java, Go, JavaScript, TypeScript, Rust, R, C, MIPS, Godot, HTML, CSS, Bash, PowerShell
- **Frameworks:** Django, Flask, FastAPI, React.js, Vite.js, Vue.js, Next.js, Svelte, Express.js, Node.js, Tauri, Qt
- **DBMS:** SAS, PostgreSQL, TimescaleDB, SQLite, Oracle SQL, MongoDB
- **AI/ML:** PyTorch, TensorFlow, Jupyter, RStudio, Pandas, NumPy
- **DevOps:** AWS, Oracle Cloud, GitHub Actions, Azure Pipelines, Docker, Jest.js, JUnit