

Islam Asous

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EDUCATION

Hunter College, City University of New York (CUNY)

New York, NY

Bachelor of Arts in Computer Science, Minor in Mathematics

expected Dec 2026

- **Relevant Coursework:** Data Structures & Algorithms, Object-Oriented Programming, Computer Architecture, Computer Theory, Programming Methods, Database Management, Advanced AI & ML Theory Natural Language Processing, Automation Engineering, iOS Development, Web Development, Linear Algebra, Applied Statistics

EXPERIENCE

Project Sisyphus, Clemson University

June 2026 – Present

Software Engineer, REU

Remote

- Developing a browser extension (*WXT, Vue 3, TypeScript, Dexie.js*) to track user authentication behavior across enterprise and crowdsourcing platforms, supporting NSF SaTC 2.0 research (Award #2521037, \$650K) on usable secure authentication.
- Designing and building a real-time broadcast notification system (*Vue 3, Pinia, Supabase Realtime*) enabling admins to push instant announcements to all authenticated dashboard users, with role-based access control via Postgres Row-Level Security.

CUNY Tech Prep

May 2026 – Present

Data Science Fellow

New York, NY

- Selected as 1 of 200 Fellows for the competitive CUNY Tech Prep Data Science track, a year-long program placing top students from across the CUNY system into technical roles.
- Advancing proficiency in Python, machine learning, SQL, and end-to-end data analysis through intensive project-based curriculum.

Hunter College Computer Science Department

Aug 2025 – Present

Undergraduate Teaching Assistant

New York, NY

- Supported 600+ students across Computer Architecture I & II, Computer Theory, and Object-Oriented Programming/Data Structures & Algorithms through weekly review sessions and hosted office hours.
- Co-designed quizzes, midterms, and finals for courses enrolling 150–300+ students; reduced grading turnaround by implementing automated evaluation tools in collaboration with faculty.

PROJECTS

Shell in Rust | *Rust*

- Built a Unix-like command-line shell from scratch in Rust using only the standard library, with no external crates, implementing a REPL loop, command parsing, and process execution via `std::process`.
- Implemented multi-stage command piping (chained `Stdio` between processes, e.g. `ls | grep foo`) and core built-in commands (`cd`, `exit`).

RAG From Scratch, Local RAG Pipeline | *Python, Ollama, Llama 3.2, BGE Embeddings, Streamlit*

- Engineered a retrieval-augmented generation pipeline from first principles, implementing custom embedding storage, cosine similarity search, and prompt construction without relying on frameworks like LangChain.
- Built an in-memory vector database that embeds text chunks via a locally-hosted BGE embedding model, retrieving the top-N semantically relevant chunks per user query.
- Developed a Streamlit chat interface supporting multi-turn conversations and custom document uploads, with real-time indexing progress and an inspectable view of retrieved context for transparency into model grounding.

For the Culture | *React, Vite, Express.js, Google Generative AI, Firebase*

- Co-built and deployed a full-stack multilingual platform with a 4-person team, connecting NYC immigrant communities to real-time food, health, and transit resources across all 5 boroughs in 8 languages.
- Owned the React/Vite frontend architecture, including an interactive map consuming live NYC Open Data REST endpoints with real-time filtering by borough and resource type.

Q69 Real-Time Bus Tracker & SMS Alert System | *Python, MTA BusTime API, Twilio*

- Integrated the MTA BusTime SIRI API to fetch and parse live bus arrival data from nested JSON responses for a specific transit stop.
- Automated end-to-end transit monitoring via a cron-scheduled pipeline that queries live API data, processes arrival times, and dispatches SMS alerts via Twilio's REST API on a set interval — requiring zero manual intervention.

LEADERSHIP

Math Association of Hunter College

Aug 2024 – Aug 2026

President

New York, NY

- Led the club's officer board, planning and running member events and meetings for the Hunter College math community.
- Organized outreach events connecting students with math-degree professionals to discuss career paths and how they applied their degrees in industry roles.

TECHNICAL SKILLS

Programming: C++, Rust, Python3, TypeScript, JavaScript, Swift/SwiftUI, Dart, HTML/CSS, SQL (PostgreSQL)

Frameworks & Tools: React, Node.js, Express.js, Flutter, Firebase, Elasticsearch, Docker, REST APIs, Git/GitHub

Certifications: AWS Skill Builder - Developer, Cloud Operator (SysOps), DevOps (In Progress)