Isa Alsafwah

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EDUCATION

Boston University   Boston, MA
Bachelor of Arts in Computer Science   *GPA: 3.70, Dean's list, Sep. 2022 – May 2025*
Rhodes College   Memphis, TN
Bachelor of Science in Computer Science   *GPA: 3.86, Aug. 2021 – May 2022 (Transferred)*

EXPERIENCE

Full-Stack Developer Intern   May 2024-May 2025
Platform Governance Research Lab, BU
- Designed and developed a Human vs. Human marketplace on the Empirica platform, incorporating multi-user games to simulate warranted markets for producers and consumers.
- Rearchitected backend logic to support multiple products per producer, replacing single-product assumptions; overhauled data models and implemented an interactive slider for dynamic product configuration.
- Translated collaboratively designed Figma designs into a responsive frontend using React and TailwindCSS, aligning UI behavior with user research and design goals.

PROJECTS

Multi-threaded Image Processing Server | *C, POSIX Threads, Concurrency*   Fall 2024
- Engineered a multithreaded C server that handles image transformations (rotate, blur, sharpen, edge detection) in FIFO order over TCP/IP.
- Ensured request handling, rejecting incoming operations when the queue reached capacity, to prevent server overload.
- Utilized POSIX threads and semaphores for synchronization, enabling concurrency control, robust queue management, and safe resource sharing.
- Implemented configurable worker threads, queue-size limits, and detailed per-request timestamp logging for enhanced scalability and performance.

Latent Semantic Analysis (LSA) Search Engine | *Python, Flask, scikit-learn, NLP*   Spring 2025
- Built a real-time semantic search engine over 18,000+ documents using TF-IDF vectorization and Latent Semantic Analysis.
- Reduced term-document matrix dimensionality by 90% using Truncated SVD, improving query processing speed by 40%.
- Implemented cosine similarity ranking to retrieve top 5 most semantically relevant results for each user query.
- Integrated Flask backend with HTML/JS frontend for responsive user interaction and real-time result delivery under 200ms latency.
- Enabled continuous data ingestion and retraining for scalable semantic search across expanding corpora.

Nutrisistant | *Javascript, Express, NodeJS, MongoDB*   Backend Developer, Dec 2023
- Designed and implemented a RESTful API for a nutritional assistance application using Express and NodeJS.
- Implemented integration with external APIs (CalorieNinjas and Spoonacular) for dynamic data fetching and processing.
- Implemented functionality for storing and retrieving user search history using MongoDB, enhancing user experience by personalizing content delivery.
- Ensured efficient data exchange between backend and frontend, optimizing application performance and user interaction.

TECHNICAL SKILLS

Programming: Python, Java, C, Bash, JavaScript, Assembly, HTML/CSS
Developer Tools: React, TailwindCSS, ExpressJS, NodeJS, EJS, MongoDB, Bootstrap, Bulma, Railway, Git/Github, NumPy, Figma, Empirica
Relevant Coursework: Software Engineering, Full Stack Development, Algorithms, Databases, Design of Programming Languages, Embedded Systems, Information Security

Languages: English, Arabic, Spanish