

JUSTIN W SMITH

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Education

University of Hawai'i at Mānoa

Honolulu, HI

Bachelor of Science in Computer Science

Expected Graduation, Spring 2026

- **GPA:** 3.9/4.0
- **Concentrations:** Software Engineering, Backend Development
- **Related Coursework:** Data Structures & Algorithms, Computer Organization & Programming, Object-Oriented Programming, Software Engineering, Data Networks, Programming Language Theory
- **Dean's List:** Every semester for academic excellence.

Experience

SQLPlus Project

Mar 2025 – Present

- Building a custom **PostgreSQL** extension in **C++** that adds **new SQL operators powered by LLMs** to support natural language condition matching within queries
- Prototyping an **asynchronous C++ query interface** to evaluate performance and enable non-blocking execution outside traditional SQL environments
- Experimenting with **data retrieval strategies** for comparing query inputs against ground-truth datasets to reduce the need for real-time LLM calls
- Collaborating directly with a faculty advisor on research at the intersection of **AI, databases, and language-based query optimization**

Projects

Image Processing Service | Go | PostgreSQL | Amazon S3 | Redis | Docker

April 2025

- Developed a **Go-based backend API** for handling image uploads, metadata storage, and processing. Utilized **Amazon S3** for scalable cloud storage and **PostgreSQL** for structured data persistence.
- Implemented secure **JWT authentication** to manage user access and enable role-based authorization, ensuring that users can only access their own images.
- Used **Redis** to manage an asynchronous task queue for background image processing, significantly improving performance and enabling scalable image handling.
- Containerized the entire application using **Docker** and deployed it on **Render**, ensuring seamless deployment and scaling of the backend API and worker tasks.

Custom Memory Allocator + Visualizer | C | TypeScript | TailwindCSS

April 2025

- Developed a custom **memory allocator** to replicate standard functions like **malloc**, **free**, and **realloc**
- Created an interactive **visualizer** to analyze memory fragmentation and allocation strategies in real time
- Optimized memory performance with advanced **data structures** and algorithms
- Built a user-friendly interface using **TypeScript** and **TailwindCSS** for easy monitoring of memory usage

Study Buddy | React | PostgreSQL | Vercel

December 2024

- Built a full-stack web application to connect students for study sessions with **authentication** and **calendar** features
- Implemented **email verification** and **password reset** for secure user management
- Designed intuitive interfaces for joining or creating study groups and scheduling sessions
- Deployed the app on **Vercel** for fast and efficient hosting

Technical Skills

Languages: C, C++, CSS, Go, HTML5, Java, Python, SQL, Typescript

Developer Tools: Docker, Git, Render, Vercel, Vite

Libraries/Frameworks: AWS, NodeJS, PostgreSQL, Redis, ReactJS, TailwindCSS