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 **March 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 | *Amazon S3* | *Docker* | *Go* | *PostgreSQL* | *React* | *Redis* **April 2025**

- Built a full-stack image processing platform with a **Go backend** that handles uploads and processing, storing images in **Amazon S3** and managing user data in **PostgreSQL**.
- Created a secure user authentication system with **JWT tokens** and **bcrypt** password encryption, including email verification and password reset features to protect user accounts and their images.
- Set up **Redis** for both caching and as a task queue, allowing image processing to happen in the background so users don't have to wait for operations to complete.
- Packaged everything using **Docker** to make development and deployment straightforward, and deployed the whole stack on **Render** for reliable hosting.

Custom Memory Allocator + Visualizer | *C* | *TailwindCSS* | *TypeScript* **April 2025**

- Developed a custom **memory allocator** to replicate standard functions like **malloc**, **free**, and **realloc**
- Implemented comprehensive **unit tests** and integration tests to verify functionality, memory safety, and edge case handling
- Created an interactive **visualizer** to analyze memory fragmentation and allocation strategies in real time
- Optimized memory performance with advanced **data structures** and algorithms

Study Buddy | *Node.js* | *PostgreSQL* | *Prisma* | *React* | *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, JavaScript, Python, SQL, TypeScript

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

Libraries/Frameworks: AWS, Express, GraphQL, Jest, NodeJS, PostgreSQL, Redis, ReactJS, RESTful APIs

Software Practices: CI/CD, Microservices, TDD, Version Control