

# Spencer Cowles

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## EDUCATION

University of California, San Diego

La Jolla, CA

*Bachelor of Science in Mathematics-Computer Science, **Minor** in Economics*

*Sep. 2023 - June 2027*

Relevant Coursework: Linear Algebra, Data Structures and Algorithms, Graph Theory, Systems Programming

## EXPERIENCE

Full Stack Developer Intern

June 2025 – Present

*BusinessRate*

*Phoenix, Arizona*

- Led development of a **full-stack Next.js/React application** to modernize BusinessRate's website into a dynamic, scalable platform with server-side rendering and improved SEO
- Designed and implemented RESTful API endpoints and PostgreSQL queries for location-based business search, ranking algorithms, and autocomplete features, using **Kysely ORM** for type-safe database access
- Collaborated with senior backend engineers to integrate a custom scoring system and optimize performance upon site deployment using **AWS Amplify** and allow clients to see image mockups of their awards
- Drove the end-to-end development of key features from design to deployment, incorporating user and business owner feedback to iterate rapidly and prioritize business-critical components for site-wide deployment

Software Engineering Intern

March 2025 – June 2025

*KlonitAI*

*San Diego, California*

- Developed a production-ready **SQL MCP Server Connector** enabling real-time, secure integration between KlonitAI's LLM-powered tools and external SQL databases via the Model Context Protocol
- Built and validated endpoint test harnesses to simulate edge-case queries, ensuring robust and secure SQL connector responses with comprehensive unit tests, as well as integration tests to validate the connector's functionality
- Worked with a cross-functional team of **4 developers** to create relational databases for customer service and scheduling applications, populating **8+** interlinked tables with realistic sample data to support LLM workflows

Software Engineer

June 2024 – April 2025

*Triton Unmanned Aerial Systems*

*San Diego, California*

- Developed and optimized algorithms in **C++ and Python** for autonomous navigation and to capture aerial images, allowing for the creation of a map while completing mission-critical tasks midflight
- Implemented pathfinding techniques such as **A\*** and **RRT\***, ensuring the drone reached designated targets while maximizing time in the mission to do other tasks such as mapping the terrain or searching for targets
- Conducted unit and integration testing using simulations to ensure reliability under competition constraints

## PROJECTS

Not Red Shirt | *Python, React, MongoDB, LangChain, JavaScript, HTML/CSS*

April 2025

- **Winner of 2 awards at DiamondHacks 2025:** Best Use of MongoDB and Best E-Commerce Innovation
- Engineered a full-stack semantic search engine for e-commerce that processes natural language queries with negations (e.g., "**not red shirt**") to optimize product discovery and enhance the user experience
- Processed **1.4M** Amazon listings and filtered **260K** clothing items; leveraged LangChain to create our vector embeddings and generated **1536**-dimensional vectors to power semantic search from our vector database
- Integrated multi-input search capabilities including **text**, **voice**, and **image** to deliver a multimodal, accessible, reactive frontend with creative visual components and a sleek interface built with React and Tailwind CSS

Personal Website | *JavaScript, HTML, CSS, React*

June 2024 – Present

- Engineered a personal website using React.js and Tailwind CSS to showcase a polished portfolio of **4** projects, emphasizing clean aesthetics and responsive design to better showcase my personal portfolio
- Developed custom React Hooks to streamline state management and facilitate dynamic component rendering, significantly enhancing interactivity and performance, including features like a theme toggle
- Ensured a robust deployment process with proper version control on GitHub, maintaining code quality via continuous integration and automated commit workflows

## SKILLS

**Languages/Frameworks:** Java, Python, C, C++, TypeScript, HTML/CSS, React, Node.js, PostgreSQL, MongoDB  
**Developer Tools/Libraries:** Git, Docker, Postman, Figma, Tailwind, Chakra UI, Framer, Express.js, CMake