

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 - Jun 2027

Relevant Coursework: Linear Algebra, Data Structures and Algorithms, Graph Theory, Systems Programming, Optimization in Data Science, Machine Learning Algorithms, Theory of Computation, Machine Learning in Physics

EXPERIENCE

Full Stack Developer Intern

Jun 2025 – Present

BusinessRate

Phoenix, Arizona

- Led development of a **full-stack Next.js/React application** to modernize BusinessRate's website with improved SEO to drive customer engagement, achieving a **30%** increase in organic traffic within 3 weeks of launch.
- Designed **RESTful API** endpoints and PostgreSQL queries using Kysely ORM, indexing **28,000,000+** businesses for fully type-safe search from our own ranking algorithm, using backend web development best practices.
- Optimized performance using **AWS Amplify** (Amazon Web Services), decreasing page load times by up to **80%** by leveraging server-side rendering, code-splitting, and image optimization techniques for a seamless user experience.

Software Engineering Intern

Mar 2025 – Jun 2025

KlonitAI

San Diego, California

- Engineered a production-ready **SQL Connector** for the Model Context Protocol (MCP) in a team of 4, leveraging GitHub for version control and collaborative development, enabling seamless LLM access to live PostgreSQL data.
- Developed endpoint test harnesses to simulate edge-case queries and conducted extensive unit/integration tests, achieving **100%** test coverage and minimizing critical failures in production.
- Utilized **Python, Node.js** and **PostgreSQL** to integrate KlonitAI's LLM platform with external databases, reducing query latency by **45%** and enabling access to **25,000+** records across relational schemas.

Software Team Member

Jun 2024 – Apr 2025

Triton Unmanned Aerial Systems

San Diego, California

- Enhanced mission performance by **30%** by integrating midflight mapping logic, allowing the drone to process terrain data while navigating, coding in **C++** and **Python** to develop maintainable, well-documented code.
- Implemented advanced pathfinding strategies including **A*** and **RRT***, enabling adaptive obstacle avoidance and multi-target routing, which improved target acquisition accuracy by **25%** during simulation testing.
- Designed and executed simulation-based unit and integration tests using custom test harnesses, reducing flight system bugs by **12%** and increasing codebase reliability under time-constrained competition scenarios.

PROJECTS

barraCUA | *JavaScript, Python, Chrome Extensions (MV3), Gemini API, Deepgram, Playwright*

Jan 2026

- Winner at SB Hacks 2026** for building an AI-powered, **agent-driven accessibility tool** that understands on-screen content and **takes actions on behalf of users**, enabling conversational web navigation.
- Developed a **multimodal Chrome extension** that can visually interpret webpages, answer contextual questions, and perform browser actions using **Google Gemini** for screen understanding and agentic decision-making.
- Engineered a real-time voice and automation pipeline using **Deepgram** (STT/TTS) and a **Python + Playwright** backend over WebSockets, enabling low-latency interaction and autonomous control of authenticated user sessions.

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

Apr 2025

- Winner of 2 awards at DiamondHacks 2025:** Best Use of MongoDB and Best E-Commerce Innovation
- Constructed a full-stack semantic search engine for e-commerce that processes natural language queries with negations (e.g., "not red shirt"), decreasing no results found from search by **60%**.
- 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 text, voice, and image input support into the frontend, improving accessibility and increasing user task completion rate by **40%** in user testing sessions by allowing users to search in their preferred modality.

SKILLS

Languages/Frameworks: Go, Java, Python, C++, TypeScript/JavaScript, HTML/CSS, React, Node.js, PostgreSQL

Other Skills: Agile, RESTful API, Kubernetes, AWS (Amplify, S3, Lambda), Web Development, Unit Testing, Git