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 location-based search based off our own ranking algorithm.
- Optimized performance using **AWS Amplify**, 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

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.

Personal Website | *JavaScript, HTML, CSS, React, Vercel* — Jun 2024 – Present
- Built and deployed a personal portfolio using **React.js**, **Next.js**, and **Tailwind CSS**, showcasing 4+ technical projects and driving over **100 unique visits** through organic discovery and direct outreach since launch.
- Implemented custom **React Hooks** for theme toggling, dynamic component rendering, and form state management, improving code modularity and frontend reuse by over **40%**.
- Enhanced discoverability through comprehensive SEO strategies and semantic HTML structuring, improving search visibility and driving a **25%** increase in site traffic within 2 months using the Vercel platform.

SKILLS

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