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, Probability, Statistics, Modern Applied Algebra, Discrete Math, Theory of Computability, Advanced Data Structures

EXPERIENCE

Software Engineer — June 2024 – Present
Triton Unmanned Aerial Systems — *San Diego, California*
- Developed and optimized path planning algorithms to improve the team's autonomous drone's ability to navigate and capture aerial images, allowing for the creation of a map while finishing the target mission
- 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
- Integrated mapping functionality to stitch **100+** high-resolution images into cohesive maps while in flight

Software Engineer — Feb. 2025 – Present
Triton Consulting Group — *San Diego, California*
- Collaborated on the development of the Triton Consulting Group Application Portal, a full-stack internal platform used to streamline recruitment and manage applications for over **200** candidates per cycle
- Implemented Google OAuth authentication and secure file upload systems using Multer and MongoDB, streamlining user access and enabling the handling of **100+** sessions and documents with improved reliability
- Built responsive React components with Chakra UI and Framer Motion to deliver a polished, accessible frontend optimized for both desktop and mobile users. Created multiple different views for different user roles
- Designed and integrated RESTful API endpoints using Express and Axios, increasing backend efficiency and reducing overall data loading times by **30%** through optimized database queries

Software Engineering Fellow — July 2024 – August 2024
Headstarter — *Virtual*
- Built a pantry food tracker application to monitor inventory levels and minimize food waste using Python and PostgreSQL, reducing inventory mismanagement by over **30%** through data tracking features
- Developed a personal website to showcase my projects and professional experience using HTML, CSS, and JavaScript, achieving a clean and responsive design, suitable for both desktop and mobile users

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++, JavaScript, HTML/CSS, React, Node.js, PostgreSQL, MongoDB
Developer Tools/Libraries: Git, Docker, VS Code, Visual Studio, PyCharm, IntelliJ, pandas, NumPy, Matplotlib