Michael Sipes

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Education

University of Southern California
M.S. in Computer Science 2025 - 2026
B.S. in Computer Science 2021 - 2025
Relevant Coursework: Artificial Intelligence, Machine Learning, Operating Systems, Internetworking, Database Systems, Web Technologies, Software Engineering, Computer Systems, Analysis of Algorithms, Data Structures
Languages: C++, C, Python, Java, JavaScript, TypeScript, HTML, CSS, SQL, Bash, Markdown, LaTeX, Assembly
Frameworks / Technologies: React, Next.js, OpenAI API, Vercel AI SDK, Supabase, Zustand, Tailwind CSS, shadcn/ui, PyTorch, RESTful APIs, Docker, Git, Vercel, Vite, npm, HTTPie

Experience

RingCentral
AI Software Engineering Intern June 2024 - August 2024
- Built a retrieval-augmented generation system to detect and consolidate duplicate content across a knowledge base of 2,000+ articles.
- Conducted interviews with article writers, understood their workflow challenges, and defined technical requirements for the solution.
- Implemented the solution by generating semantic embeddings with OpenAI and storing them in Supabase (pgvector extension) to enable similarity search.

Academic Projects

DrawTunes Live Demo | GitHub
- Built AI-powered music discovery platform where users draw artwork to receive personalized song recommendations using React, TypeScript, and Supabase edge functions.
- Implemented complex state management migration from React Context to Zustand, reducing unnecessary re-renders and optimizing performance across interconnected components.
- Implemented modular serverless architecture processing image uploads through OpenAI Vision API and iTunes API integration for real-time music recommendation delivery.

Layers Live Demo | GitHub
- Built AI-powered skiing outfit recommendation app as UI/UX research project exploring fundamental questions about the future of software interfaces and AI-first vs. traditional UI development approaches.
- Implemented weather and clothing data management using Next.js, TypeScript, Supabase, Google Maps API, Visual Crossing Weather API, and Vercel AI SDK with mobile-responsive design.
- Experimented with dual interface architecture where both traditional UI and AI chat perform identical operations, exploring whether future software should prioritize AI-first interfaces or hybrid AI-traditional integration.

Mjsipes Photography Live Demo | GitHub
- Built personal photography portfolio using Next.js and Supabase Storage to match Squarespace display quality while adding AI-generated artistic reinterpretations of 300 personal photographs.
- Implemented dynamic page routing and metadata database architecture designed for experimental workflows, tracking relationships between original photos and AI style variations.
- Implemented automated image processing pipeline using Node.js scripts and OpenAI Images API to generate 1,800 style-transfer variations across 6 artistic styles.

Tennis Probability Model Live Demo | GitHub
- Built tennis match simulator using recursive probability algorithms in Python to analyze win probabilities across different match formats and player skill levels.
- Implemented dynamic probability calculations tracking game state transitions, serving advantages, and point importance scoring throughout match progression.
- Implemented statistical analysis framework demonstrating that point importance varies dramatically based on match context, with late-game points having exponentially higher impact on match outcomes.

Honors

Sydney Harmon Academy for Polymathic Study Fellow 2025, Effective Altruism Fellow 2022