

Katie O'Connor

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SUMMARY

Senior software engineer and design-systems architect. 11+ years at Discovery Education on products reaching 45M students and 4.5M educators across 100 countries, architecting three successive generations of the company's component library. Now building AI-native applications end-to-end, from local vector-search retrieval systems to full 3D game architecture, pairing deep design-systems and accessibility expertise with daily AI-assisted engineering.

SKILLS

AI ENGINEERING	Prompt Engineering, Spec-Driven Development, LLM Cost/Model Strategy, Prompt Caching, RAG, Vector Databases, Anthropic Claude API, Claude Design
FRONTEND & ARCHITECTURE	Vue 3, Nuxt, TypeScript, Design Systems, Component Architecture, Theming Architecture, Tailwind CSS, Vite, Accessibility (WCAG 2.2, ARIA)
BACKEND & INFRASTRUCTURE	Python, FastAPI, ChromaDB, Node.js, Docker
OTHER	User Experience Patterns, Cross-Team Technical Leadership, Figma, Git, GitHub, VS Code, Cloudflare

EXPERIENCE

Senior Software Engineer Discovery Education · Chicago, IL	2015–2026
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DESIGN SYSTEMS

- Architected nebula-nuxt, a themed component system letting teams replace legacy UI incrementally while migrating to Nuxt, separating visual-language changes from component rebuilds; selected over competing proposals as the quarter's committed deliverable.
- Led the migration audit and stakeholder roadmap for 46 legacy component replacements; personally built 25 of the 26 components delivered in the new system and released nebula-nuxt for platform-layer consumption.
- Founding team for Comet (2016), build team for its successor Nebula (2020), and owner and primary contributor for nebula-nuxt (2026); managed 124 components and utilities across Nebula and nebula-nuxt simultaneously, consumed by every product in Discovery Education's app ecosystem.
- Built the nebula-nuxt doc site with searchable documentation (Nuxt Content) and a theme editor that switches themes and customizes them down to semantic tokens and font choice.
- Architected and shipped MegaMenu for a Back-to-School product deliverable in 3 days, then delivered a refactored production version in another 3; detects at runtime when to collapse into a linked drill-down list rather than relying on fixed breakpoints.
- Developed custom Claude skills to support migration: a planning skill that determines the right build approach (themed primitive, wrapped primitive, or fully custom component) for each legacy component, and a release-automation skill.

PRODUCT ENGINEERING

- Contributed as a product engineer to 12+ product teams across the app ecosystem, including Techbook, Search, Assessments, Admin Tools, and User Onboarding; architected layouts, interfaces, and components across varied product domains.
- Embedded with the AI team for a quarter; built the frontend for a human-in-the-loop dashboard for reviewing and approving AI-generated metadata, completing the partial design and presenting it to real users for feedback.

- Specified the data shape for the API feeding the dashboard view and the POST contract for saving reviews, documenting both for the engineer who built the API.
- Integrated nebula-nuxt into the platform layer with ten production components, including Global Nav, Page Shell, and Modal; validated theming through a live-switcher playground.
- Designed production-ready interfaces directly in code with Claude and existing design-system components when designs were incomplete or unavailable, bridging design and engineering to keep product work moving.
- Advised engineers on theming architecture, component placement, and accessibility best practices; redirected in-progress work into the shared library.
- Served as accessibility subject matter expert, performing audits, bug fixes, and code review to enforce accessible implementation across products and shared components.

AI-ASSISTED ENGINEERING

- Automated end-to-end component delivery (build, doc page, and release) through spec-driven development and skill-based automation; \$3.05 in AI spend per component, replacing roughly a day or two of hands-on engineering.
- Developed model-selection and prompt-caching strategies that reduced daily AI spend by roughly two-thirds, from \$40–\$50 to \$10–\$20, while preserving output quality; shared the cost-efficiency approach across the team.
- Co-hosted the company's AI Office Hours, and designed and presented a cost-efficient stacked-PR strategy there, structuring PRs in advance to reduce rebasing.

PROJECTS

Main Character: AI Personal Knowledge & Retrieval System

Python, FastAPI, ChromaDB, Anthropic Claude API

- Architected an AI-powered journal application using local embeddings, an entity graph, multi-level summaries, and semantic retrieval over personal journal entries.
- Built the retrieval pipeline to ground LLM responses in the user's actual journal history rather than generic model knowledge.

GPS3 (Guinea Pig Simulator 3)

Vue 3 (Composition API), TypeScript, Pinia, Three.js, Vite

- Solo-developed virtual pet care simulator managing 10 interconnected wellness needs across 2D game view and interactive 3D habitat.
- Designed game's visual language in Claude Design, then converted into a standalone token-based design system and ported back into the game as the single source of styling truth.

EARLIER EXPERIENCE

Front-end & Production Roles

Chicago, IL

Sears Holdings Corporation, Razorfish, AlphaZeta Interactive, Elevation, Hewitt Associates, Bankers Life and Casualty, iPort Media, WGN-TV.

EDUCATION

BA, Interactive Art and Media

Columbia College Chicago