

Josh Charpentier

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Education

University of Wisconsin-Madison | Madison, WI
Bachelor of Arts: Computer Science and Philosophy

September 2021 - May 2025
GPA 3.86/4.00

Experience

Skyward Inc.

Remote - Stevens Point, WI

Associate Software Engineer

June 2025 - Present

- Developing Qmlativ, a large-scale school information system used by 2,500+ school districts, delivering feature development, performance improvements, and production bug fixes across student, family, teacher, and administrator experiences
- Leading the modernization of Skyward's mobile application from a legacy Xamarin codebase to a modern React Native implementation, preserving existing functionality for ~900,000 mobile users
- Driving architectural decisions for the React Native app, defining scalable file structures, state management, and data-fetching patterns using Expo, React Query, and Zustand
- Collaborating with teammates through code reviews, pair programming, and onboarding documentation, raising overall code quality and reducing review cycles
- Applying test-driven development during the Xamarin to React Native transition, eliminating interaction paths that previously caused app crashes or required reinstallation and reducing critical-path failures by an estimated 60%
- Designing and implementing custom backend API endpoints to support mobile functionality, including location-based search, secure external link handling via middleware redirects, and SSO authentication flows
- Coordinating with product, UX, and QA in an Agile workflow, participating in sprints, retrospectives, and CI/CD-driven release cycles

Software Engineering Intern

June 2024 - June 2025

- Built a custom UX research consolidation tool that unified scattered participant tracking documents into a single source of truth, reducing coordination overhead for the UX team by an estimated 20%
- Migrated portions of the Qmlativ front-end framework from JavaScript to TypeScript, improving type safety and reducing compile-time errors across modernized modules
- Developed AJAX-driven workflows and optimized SQL Server queries in the desktop Qmlativ application, improving responsiveness for a large, multi-tenant customer base
- Contributed to C# (.NET Framework) backend development, updating REST endpoints and shipping user-requested enhancements across multiple product areas

University of Wisconsin - Madison

Madison, WI

Peer Mentor for COMP SCI 571 - Building User Interfaces

August 2023 - May 2024

- Mentored 150+ undergraduates in JavaScript, React, and React Native, leading one-on-one code reviews and debugging sessions that strengthened their grasp of modern front-end development
- Coached students through heuristic evaluations and usability testing, instilling industry-standard design thinking practices that elevated overall project quality

Recent Projects

Barry the Bench Maker | C++ Terminal RPG

- Architected a full-featured terminal RPG in C++ using an OOP interface hierarchy and design patterns to model an inventory, crafting, and tool-upgrade progression system across a multi-phase story
- Engineered a turn-based combat engine with stat-driven enemy behavior, probability-based loot tables, and real-time mechanics for chopping, crafting, and playtime tracking
- Adopted a data-driven design with JSON-configured balance values and embedded dialogue sequences, decoupling narrative content and tunable parameters from compiled logic

MadCourses | UW-Madison Skill-to-Course Matching Platform

- Implemented a scalable retrieval-augmented generation system using Supabase-hosted PostgreSQL and Vercel Blob storage, managing 10,000+ courses with vector embeddings derived from course descriptions to enable semantic search
- Authored a parameterized SQL function for cosine similarity-based nearest-neighbor search, delivering efficient skill-to-course matching through TypeScript input validation and optimized vector indexing
- Built a serverless REST API with integrated Hugging Face services, generating real-time course embeddings

Skills

Advanced: Agile methodology, AJAX, C#, Code Review, CSS, Expo, Git, HTML, JavaScript, MSSQL, React, React Native, React Query, REST APIs, SQL, Tailwind CSS, Test-Driven Development, TypeScript

Intermediate: AI Agents, C, C++, CI/CD, Claude Code, Claude Skills, Docker, FastAPI, Firebase, Google Cloud, Java, MCP, Next.js, PostgreSQL, Prompt Engineering, Python, Redux, SvelteKit, Unit Testing, Zustand

Fundamental: Cassandra, Express.js, Hadoop, Kafka, Kotlin, Motion, Ollama, Playwright, Postman, Power Automate, Spark, Swift

Passions: chess, exercising, photography, reading, visiting coffee shops, writing