

CHARLES PFAFF

Frontend / Design Engineer (AI-First)

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PROFESSIONAL SUMMARY

Creative, AI-first Frontend / Design Engineer who works in small, cross-functional teams to turn conceptual ideas into polished, seamless user experiences. I've partnered with Fortune 500 companies including Capital One and Coca-Cola on projects ranging from large-scale marketing platforms to AI-driven prototypes. I bridge design vision and technical execution, transforming early concepts into modular, production-ready interfaces. With a background in marketing leadership and digital strategy, I bring a product-minded approach to engineering—focused on performance, usability, and business impact.

SKILLS

- **Languages:**
- TypeScript, JavaScript
- **Frontend Engineering:**
- React, Next.js, Component Architecture, Design Systems, Storybook, GSAP
- Styling & UI Systems:
- Tailwind CSS, Styled Components, CSS Modules
- State & Data Management:
- Zustand, React Query
- **Backend & APIs:**
- Node.js, RESTful APIs
- **AI & LLM Integration:**
- OpenAI API
- Anthropic API
- LangChain, Retrieval-Augmented Generation (RAG)
- Supabase (database + vector usage)
- Prompt Architecture, Structured Output
- Validation (Zod), Conversation Memory Handling
- **Cloud & DevOps:**
- Docker, CI/CD pipelines, Vercel
- **Testing:**
- Jest, Playwright
- **Design & Collaboration:**
- Figma, Adobe Creative Suite
- Performance Optimization: Core Web Vitals optimization, render optimization strategies, memoization patterns

EXPERIENCE

AKQA Technologist, Washington, DC | 2022–2025

Collaborated in small, cross-functional teams (typically 1–3 engineers) to deliver large-scale marketing platforms, interactive brand experiences, and experimental AI-driven prototypes for Fortune 500 clients including Capital One and Coca-Cola.

- Owned end-to-end development of 120+ production-ready React components, translating complex designs into modular, reusable UI across large-scale client platforms.
- Achieved a 100% Vercel Speed Report score (Core Web Vitals benchmark) through image optimization and targeted React memoization to reduce unnecessary re-renders and improve load performance.
- Took initiative to create PR review guidelines to improve consistency and efficiency across code bases.
- Led technology scoping during weekly sprint planning to assess difficulty of tickets and ensure that sprints were accomplished on time.
- Represented technology in client demos and technical discussions, clearly communicating implementation tradeoffs.
- Became the preferred technologist to work on challenging conceptual projects by speaking

both design and engineering languages.

- Prototyped AI-powered interactive experiences, translating experimental concepts into working demos.
- Prototyped an AI interface to quickly retrieve data from ever growing technical documentation.

PROJECTS

AI-Interface

Independent | 2025

- Designed and built a hybrid conversational + research interface exploring AI-assisted documentation retrieval patterns.
- Built with React, TypeScript, Supabase, and custom backend services.
- Implemented RAG workflows using manual embedding generation for semantic search.
- Integrated OpenAI and Anthropic models for comparative evaluation.
- Designed reusable prompt templates and structured output validation using Zod schemas.
- Implemented multi-turn conversation memory handling.
- Focused on response reliability, clarity, and user control in AI-driven workflows.

Model Context Protocol (MCP) CMS & Voice Interface (Experimental)

Independent | 2025

- Architected a lightweight backend CMS layer and experimental AI voice interface for structured document ingestion and conversational retrieval.
- Developed backend services simulating document ingestion and retrieval workflows.
- Explored modular architecture patterns for AI-powered internal tooling.
- Prototyped voice-driven interaction patterns for conversational knowledge access.

VR Language Learning Prototype (Duolingo Concept)

Student work | 2021-2022

- Designed and built a virtual reality prototype reimagining language learning as an immersive spatial experience.
- Conceptualized interaction design and experiential flow.
- Built interactive prototype demonstrating spatial UI, gamification mechanics, and immersive feedback systems.
- Explored how immersive environments could increase engagement and retention in language acquisition.

EARLY CAREER EXPERIENCE

Fresh Start Realty — Marketing Manager

2018–2019

- Led marketing strategy and digital presence for a residential real estate firm while managing a team of six sales professionals.
- Managed and coached a team of six agents, supporting lead generation and sales initiatives.

- Built and maintained company marketing websites using Squarespace, ensuring consistent branding and optimized lead capture.
- Oversaw marketing operations and coordinated investor communications and stakeholder relationships.

Rostov's Coffee & Tea – Marketing Manager

2017–2018

- Led digital initiatives and operational improvements for a regional specialty coffee company.
- Project managed development of a custom tab-tracking application that reduced customer wait times and saved approximately \$1k per month in operational costs.
- Managed external vendors and developers throughout the application lifecycle.
- Digitized checkout and tab management workflows to improve in-store efficiency and customer experience.

EDUCATION

VCU Brandcenter

MBA, Experience Design Richmond, VA

May 2022

Virginia Commonwealth University BS, Marketing

Richmond, VA

May 2017