

Luke Nittmann

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EXPERIENCE

Independent Projects (2023 - Present)

Building production-grade applications, focusing on AI-native experiences and real-time collaboration:

Ther https://ther-app.vercel.app/

Empathetic AI companion for mental wellness

Built supportive AI therapist system with personalized chat experience and agentic framework
Implemented adaptive suggestion engine with contextual intelligence
Developed secure subscription management with Stripe integration
Created cross-platform experience with Tauri (iOS/macOS native support)

Tech Stack:

- » **Frontend:** Next.js, React, TypeScript, Tailwind, Framer Motion
- » **Backend:** Prisma, PostgreSQL
- » **AI/ML:** Gemini API, Prompt Engineering
- » **Payments:** Stripe Connect, Payments API
- » **Cross-platform:** Tauri
- » **State/Utilities:** Zustand, Zod, SWR

Cards https://cards-xyz.vercel.app/

Personalized job application tracking platform with AI capabilities

Designed multi-provider agentic system with model abstraction for varied AI responses
Built embedding-based job-resume matching system for intelligent recommendations
Generated personalized job application cards from user's links, resume, and web presence
Implemented context-aware prompt engineering for coherent AI responses
Created serverless AI processing pipeline with edge function optimization

Tech Stack:

- » **Frontend:** Next.js, React, TypeScript, Tailwind, Framer Motion, shadcn/ui
- » **Backend:** Prisma, NextAuth
- » **Database:** Neon Database, Vercel KV, pgvector
- » **AI/ML:** OpenRouter, Jina, Vercel AI SDK
- » **State/Utilities:** Zustand, SWR, Zod

Voet https://voet-app.vercel.app/

Football intelligence platform with AI-powered analysis

Architected real-time data aggregation system with multi-source orchestration
Implemented intelligent content analysis with entity recognition using agentic workflows
Built distributed job queue for resilient scheduled data updates
Developed relational schema with rich entity relationships

Tech Stack:

- » **Frontend:** Next.js, TypeScript, Tailwind, Framer Motion, Recharts
- » **Backend:** Prisma, Redis, Upstash, tRPC
- » **Database:** PostgreSQL
- » **AI/ML:** Gemini API, Jina, Vector DB, Embeddings
- » **Data Extraction:** Cheerio, Puppeteer, Playwright
- » **State/Utilities:** SWR, Zustand, MSW, Zod

Squish https://squish-web.vercel.app/

Semantic social network for content sharing and discovery

Developed embedding-based content organization system with semantic search
Built real-time collaborative boards with interactive comments
Created modular, service-based FastAPI backend with monorepo webapp
Implemented fluid animations and interactions for enhanced UX

Tech Stack:

- » **Frontend:** Next.js, TypeScript, Tailwind, Motion, Radix UI, react-spring
- » **Backend:** Python, FastAPI, asyncio, pydantic
- » **Database:** PostgreSQL, pgvector, Neon
- » **Collaboration:** Liveblocks, WebSockets
- » **AI/ML:** VertexAI, OpenAI, CLIP, Vector Embeddings
- » **Infrastructure:** Docker, Railway
- » **Architecture:** Turborepo, NX, Module Federation

Loops https://loops-xyz.vercel.app/

Stem player for your music with intelligent audio processing

React / Next.js web app with 4 independent stem track audio loops
Built AI-powered stem isolation system for vocals, drums, bass, and other
Implemented client-side audio processing engine with Web Audio API
Developed efficient audio file streaming and caching system

Tech Stack:

- » **Frontend:** Next.js, React, TypeScript, Tailwind, Framer Motion
- » **Audio:** Tone.js, Web Audio API, AudioWorklet, WebMIDI, FFmpeg.wasm
- » **Backend:** FastAPI, Python
- » **Storage:** Vercel KV, Vercel Blob Storage
- » **AI/ML:** Spleeter
- » **Infrastructure:** Docker, Railway, AWS Lambda
- » **State:** Zustand, Redux Toolkit, Immer

Sine https://sine-labs.com

MIDI-based beatmaking app for iOS

Built native iOS client with comprehensive MIDI engine and patterns
Developed web-based MIDI/sound pack upload utility
Implemented AI audio manipulation and semantic search with agentic asset organization
Created real-time sync with websocket streaming

Tech Stack:

- » **iOS:** Swift, AVFoundation, AudioKit, CoreAudio, MIDIKit, App Intents
- » **Web:** Next.js, TypeScript
- » **Audio:** Pedalboard, FFmpeg, Soundpipe, AudioUnits, VST3
- » **Database:** PostgreSQL, Core Data
- » **AI/ML:** VertexAI, OpenAI, Audio Embeddings
- » **Cloud:** GCP, Cloud Storage, Cloud Run

Demo materials available at luke-nittmann.vercel.app/projects

Titles, Inc.

Senior Software Engineer (Remote) | May 2024 - November 2024

Led development of cross-platform notification system for web3 image generation platform
Built semantic image search system with Gemini multimodal embeddings and agentic asset organization
Architected full-stack features across iOS, web, and backend systems

Tech Stack:

- » **Frontend:** React, TypeScript, Tailwind CSS, React Three Fiber
- » **Mobile:** Swift, SwiftUI
- » **Backend:** Firebase, Cloud Functions, Firestore
- » **Cloud:** GCP, Cloud Run, Vertex AI

- › **AI/ML:** Gemini API, Multimodal Embeddings, Stable Diffusion, Flux, ComfyUI
- › **Web3:** Ethereum, IPFS, Smart Contracts
- › **DevOps:** CI/CD, Docker

Stems Labs

Senior Software Engineer (Remote) | November 2022 - Present

Led creation and development of Stem Studio, a mobile audio remixing platform
Architected full-stack system for professional audio processing with intelligent agents for effects recommendation
Integrated Python audio models and CoreML for on-device audio processing
Optimized processing costs through AI-powered effects generation
Built integration layer supporting major streaming platforms (Spotify, Apple Music)

- Tech Stack:**
- › **Mobile:** Swift, AVFoundation, CoreAudio, AudioKit, MIDI
 - › **Frontend:** React, WebGL
 - › **Backend:** Python, Golang, FastAPI, GraphQL, Redis
 - › **AI/ML:** OpenAI, Stable Audio, Demucs, Pedalboard, CoreML, PyTorch
 - › **Audio:** VST3, AudioUnits, Ffmpeg, Pedalboard
 - › **Cloud:** AWS, S3, Lambda, EC2, SQS
 - › **Database:** PostgreSQL

Amazon, Inc.

Software Engineer, Address Intelligence (Portland, OR) | June 2019 - December 2021

Promoted to SDE II within 18 months
Architected address management system for delivery route optimization
Improved cross-region performance through stack regionalization
Built self-service permission system automating internal workflows
Maintained high service reliability across multiple regions
Led migration from monolith to microservices architecture

- Tech Stack:**
- › **Frontend:** React Native, TypeScript, Redux, Jest
 - › **Cloud:** AWS, Lambda, DynamoDB, S3, CloudFormation
 - › **Backend:** Java, Python, Node.js, Redis
 - › **Database:** DynamoDB, Aurora PostgreSQL
 - › **DevOps:** CI/CD, Docker, Terraform, CloudWatch
 - › **Architecture:** Microservices, Event-driven, Serverless

AWS Elemental

Software Engineer, AWS MediaConvert (Portland, OR) | January 2018 - June 2019

Optimized video transcoding engine for improved performance
Rewrote Quicktime decoder enhancing metadata parsing accuracy
Developed automated testing framework for validation components
Resolved customer issues through direct support and code changes

- Tech Stack:**
- › **Languages:** C++, Python, Ruby
 - › **Cloud:** AWS, EC2, S3, CloudFront
 - › **Media:** Ffmpeg, H.264/H.265, VP9, AV1
 - › **Infrastructure:** Docker, Jenkins, Terraform
 - › **Performance:** SIMD, Threading, GPU Acceleration
 - › **Testing:** GTest, Pytest, Selenium

EDUCATION

University of Michigan, Ann Arbor

BSc in Computer Science and German Studies (2017)

SKILLS

Programming Languages

Swift (5+ years) Python (7+ years) TypeScript (6+ years)
C/C++ (8+ years) Golang Java Ruby

Frontend

React Next.js SwiftUI TailwindCSS shadcn/ui WebGL Recharts React Native Redux Motion
React Three Fiber Framer Motion Radix UI react-spring

Backend

FastAPI Node.js Java GraphQL Prisma ORM tRPC WebSockets
Firebase Firestore NextAuth Cloud Functions pydantic asyncio

Database

PostgreSQL pgvector Redis Upstash DynamoDB Aurora PostgreSQL
Neon DB Vercel KV Vercel Blob Storage Core Data

Audio / Video

AVFoundation Ffmpeg AudioKit CoreAudio Web Audio API Tone.js Python audio models Soundpipe Stable Audio AudioWorklet
Pedalboard VST3 AudioUnits MIDI MIDIKit Spleeter Demucs WebMIDI H.264/H.265 VP9 AV1

AI/ML

LLMs OpenAI Gemini Claude OpenRouter Vector Embeddings Semantic search Context management Prompt engineering Multimodal Embeddings
VertexAI Jina CoreML PyTorch CLIP Multimodal AI Agentic systems Stable Diffusion Flux ComfyUI Vercel AI SDK

Cloud & Infrastructure

AWS Lambda S3 EC2 SQS CloudFront GCP Cloud Run Firebase Railway Distributed systems Edge computing Event-driven
Cloud Storage Vertex AI Vercel Edge Runtime Edge Functions Serverless architecture CloudFormation CloudWatch Microservices

Data & Testing

Jest GTest Pytest Selenium MSW Cheerio Puppeteer
Playwright

Tools & Practices

Git Vim Docker CI/CD Monitoring Tauri Turborepo Monorepo Threading GPU Acceleration App Intents
Terraform Jenkins Liveblocks Module Federation NX SIMD

State Management

Zustand Redux Toolkit Immer SWR Zod