

SEAN PAUL PAYNE DINWIDDIE

Senior Full Stack Engineer | AI & Automation Architect | Redux.js Expert

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PROFESSIONAL SUMMARY

Principal AI Systems Architect and **Senior Full Stack Engineer** with 20+ years of mastery. Specializing in **fine-tuned SLMs/LLMs**, **autonomous cognitive agents**, and **RAG pipelines**. Fusing **Functional Programming** (Monads, Redux) with pragmatic strategy, I build deterministic systems that dominate the edge of automation.

TECHNICAL SKILLS

AI & Automation: Autonomous Agents, RAG Pipelines, Tensor/Vector DBs (pgvector/Pinecone), LLM Fine-tuning (SmoLLM/Llama), Cognitive Architectures (HFSM/Behavior Trees), Prompt Engineering (CoT/ReAct).

Frontend Engineering: Redux Toolkit (RTK) & RTK Query, React.js, React Native (Expo/Router), TypeScript, Tailwind CSS, Next.js, HTML5/CSS3, shadcn/ui, Radix UI, Framer Motion, Zod, React Query.

Backend & Cloud:Node.js, Express.js, FastAPI, PostgreSQL, SQL, Redis, AWS, RESTful APIs, GraphQL, PHP/Laravel, Docker, Vercel, Supabase, Edge Functions.

Architecture & Tools:Functional Programming (Effect.ts, RxJS), Git/GitHub, CI/CD (GitHub Actions), Jest/Vitest/TDD, Agile/Scrum, Domain-Driven Design (DDD), Monorepo Architecture, Figma.

EXPERIENCE

Forboc (AI Startup) | Lead AI Engineer & System Architect Present

- Generative NPC Architecture:** Architected a local-first "Micro-NPC" neural substrate using fine-tuned SLMs (SmoLLM2-135M) and edge-resident RAG buffers, enabling low-latency, context-aware dialogue with persistent long-term memory.
- Cognitive Combat Agents:** Engineered deterministic combat entities using Hierarchical Finite State Machines (HFSM) and Behavior Trees. These agents replicate organic cognitive thresholds (reaction latency, hit confirmation) through virtual controller interfaces, delivering fair yet cognitively demanding gameplay.
- Automated QA Agents:** Deployed autonomous "Ghost Agents" to rigorously audit procedurally generated environments, verifying playability, connectivity, and engagement metrics prior to biological interface.
- Functional Reactive Systems:** Encoded game logic as pure functional pipelines using Redux Toolkit, decoupling state from behavior to ensure replayable, testable AI decision trees.

Forecast (Crypto Analytics) | Senior AI Engineer Present

- Predictive Time-Series Modeling:** Integrated Facebook Prophet for 180-day trajectory forecasting, implementing dynamic seasonality detection to extract pure signal from high-entropy historical data.
- Signal Detection Algorithms:** Codified momentum-based algorithmic logic to autonomously generate actionable buy/sell signals, creating a hard safety layer that rigorously enforces profitability constraints against market volatility.
- High-Performance Architecture:** Architected a scalable platform using FastAPI and Redis for intelligent caching of computationally expensive forecasts, ensuring sub-millisecond response times for end-users.
- AI Roadmap Implementation:** Developing a multi-modal ensemble system combining LSTM neural networks for pattern recognition with NLP-driven sentiment analysis (FinBERT) to enhance forecast precision beyond technical indicators.

- **AI-Driven Creative Intelligence Platform (SaaS):** Architected a multi-tenant "Creative Intelligence OS" anchored by a vector-based "Client Memory" engine. This system synthesizes fragmented client data into a living, adaptive brand strategy, enabling the mass-generation of hyper-personalized content.
- **Advanced Generative AI Pipeline:** Engineered a sophisticated orchestration layer integrating Gemini API and Deep Market Research. Automates the end-to-end creation of high-conversion ad concepts, sentiment analysis, and production-ready assets, compressing creative lead time by 90%.
- **Modern Full-Stack Architecture:** Built a high-performance, cross-platform ecosystem using Expo Router (React Native Web) and Redux Toolkit. Backend architecture features a Node.js/Express TypeScript API with 70+ endpoints and a multi-tenant Nile PostgreSQL database, ensuring robust scalability.
- **Automated Research Agents:** Activated autonomous reconnaissance agents to perform deep scraping (GMB, Competitor Ads) and psychographic profiling ("ICP Brain Read"), feeding a live intelligence layer that renders analog market research obsolete.
- **Full-Cycle Product Development:** Delivered custom web and mobile applications for diverse clients, owning the entire lifecycle from UI/UX design and motion graphics to full-stack implementation and deployment.
- **Laravel Architecture:** Designed and deployed scalable Laravel APIs and microservices, ensuring robust backend performance for high-traffic applications.
- **Next.js Development:** Built and optimized high-performance Server-Side Rendered (SSR) web applications using Next.js, significantly improving SEO and load times.
- **Eternal War: Shadows of Light** (FPS, PC) - Contributing Developer.

Redding Webmaster | Principal Software Engineer & AI Architect

Apr 2019 – Present

- Integrated Redux Toolkit, reducing frontend overhead by 60% and enforcing unidirectional data flow.
- Re-architected member portal, boosting engagement by 40% and cutting support tickets by 25%.
- Built analytics dashboard enhancing decision-making velocity by 35% and market adaptability.
- Optimized database schemas, slashing query latency by 50% for sub-second responses.
- Engineered RESTful APIs enabling seamless third-party integrations and expanding reach.
- Led developers in Agile adoption, increasing sprint velocity and shipping cadence.
- Applied ML models to distill actionable business intelligence from raw data.
- Accelerated project delivery by 30% through cross-functional collaboration.
- Eliminated critical bottlenecks, enhancing application resilience and speed.

AcmeWerx, Inc | Senior Full Stack Engineer

May 2025 – Aug 2025

- **Enterprise Architecture & Security:** Forged production-grade applications using the proprietary FlexNet framework—a zero-dependency, security-first functional JavaScript platform designed for high-compliance government and Web3 sectors.
- **CryptoVersus:** Engineered an enterprise Web3 platform featuring token-gated social interactions, deep organic SEO architectures, and military-grade security protocols.
- **FlexNet Ecosystem:** Codified the complete technical documentation and starter templates for the proprietary functional programming framework, catalyzing developer adoption and ecosystem standardization.
- **SmallData Infrastructure:** Architected a decentralized asset indexing platform bridging traditional cloud storage (AWS, GCS) with blockchain networks via a hybrid, trustless architecture.

Carport Central | Lead Full-Stack Developer

Nov 2024 – Mar 2025

Spearheaded the modernization of legacy systems, boosting site performance by 70% and enforcing mobile-first responsiveness. This optimization triggered a 20% conversion rate increase, capturing approximately **\$73,500 in additional monthly revenue** through enhanced digital fluidity.

Boon Data Solutions, Inc | Full Stack Engineer

Dec 2018 – Sep 2022

Engineered custom compliance software that automated complex regulatory processes, eliminating 30+ hours of analog documentation artifacts weekly. This systemic efficiency saved **\$10,400/month** in labor costs and prevented an estimated **\$31,200** in monthly compliance penalties.

ENPLAN Environmental and Geospatial Technologies | Full Stack Developer

Oct 2018 – Mar 2019

Deployed custom geospatial visualization engine, amplifying map interaction by 200% • Integrated high-performance Django backend, drastically reducing page load latency • Translated technical architectures into strategic concepts, ensuring project alignment • Resolved data integration conflicts, ensuring seamless flow across systems

Shasta.com | Web Developer

Nov 2017 – Aug 2018

Migrated legacy apps, improving load velocity by 35% • Boosted mobile engagement by 45% via responsive design • Engineered optimized PHP apps for service workflows • Solved cross-browser issues, ensuring uniform UX • Developed dynamic apps using modern frameworks • Built secure, scalable .NET enterprise solutions • Authored WordPress plugins to streamline content

Optimize Worldwide, Inc. | Web Developer

Jul 2016 – Aug 2017

Built high-fidelity web apps, setting new design benchmarks • Led team, enforcing code reviews and architectural standards • Built plugins driving 35% sales growth and 25% faster workflows • Aligned technical execution with business strategy

Veritas Health Systems | Full Stack Developer

Jul 2011 – Oct 2014

Architected tools optimizing member onboarding • Engineered engines increasing sales by 20% • Developed SPAs for complex insurance workflows • Built native iOS and Android apps • Deployed systems reducing administrative friction • Implemented 100% HIPAA compliant practices • Built real-time analytics for decision making • Modernized regulated patient data systems • Automated accounting, reducing errors by 40%

n-Space | Game Developer

May 2008 – Jan 2009

Call of Duty: Modern Warfare: Mobilized (Nintendo DS), **Hannah Montana: The Movie** (Nintendo DS), **Hue Pixel Painter** (Nintendo DS)

Semi Logic Entertainments | Game Developer

May 2005 – Jul 2007

Prism: Guard Shield (Windows), **X-Men** (HyperScan), **Marvel Heroes** (HyperScan), **Spider-Man** (HyperScan), **Ben 10** (HyperScan)

Network Business Machines | Technician and Web Developer

Oct 2002 – May 2005

Engineered and maintained bespoke business applications, diagnosing hardware/software entropy to ensure absolute operational continuity for enterprise clients.

PUBLICATIONS

- **Functional Programming with AI Quickstart Guide:** Authored a 160+ page guide on architecting AI systems with TypeScript and Effect.ts.
- **Functional Programming & TypeScript Curriculum:** Created an 18-module course teaching advanced paradigms like **Category Theory** and **Monads**.
- **Enterprise Architecture Standards:** Established the **FP Maintenance Strategy** for scalable apps using **Redux Toolkit** and immutable patterns.
- **Modern Web Development Education:** Produced content on **Performance** and **State Management**, driving functional paradigm adoption.
- **Software Development Methodology:** Pioneered a **User Stories > BDD > FRP Workflow** to enforce deterministic, user-centric development.

EDUCATION & CERTIFICATIONS

Shasta College

2000 – 2015

Coursework in Computer Science, Fine Arts, and General Education

Autodidact Software Engineer since 1994 (Continuous Professional Evolution).

From the early web to AGI—bridging automation and humanity.