Carmelo Santana

PHP Technical Lead • Principal PHP Engineer • WordPress Architect

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About

Senior PHP Engineer and WordPress Systems Architect with 15+ years designing and operating scalable PHP applications. I specialize in containerized and cloud native PHP runtimes, Composer driven architectures, and security focused automation. Recent work includes building Coqui, a PHP 8.4 multi-agent orchestration framework that extends PHP natively into AI workflows while enforcing strict safety, sandboxed environments, and credential management. From classic LAMP stacks to headless and AI augmented systems, I help teams modernize their PHP codebases, raise code quality, and ship reliable software at scale.

Key Competencies

- **PHP Architecture & Domain Modeling** - PHP 8.1–8.5, Strict types, Enums & attributes, Final & readonly classes, Immutability, Composition over inheritance, Domain-driven design mindset, SOLID principles, PSR standards, Error handling with domain exceptions, PHP Fibers for cooperative multitasking
- **Backend Engineering** - RESTful API design, JSON/HTTP services, Authentication & authorization, Input validation & sanitization, Caching strategies (Redis, HTTP cache), Performance profiling & optimization, Database schema design, SQL query optimization
- **WordPress Architecture** - Containerized deployments, Multi-server orchestration, Custom plugin & theme development, Custom post types & taxonomies, Gutenberg blocks, Headless WordPress, WordPress REST API, WordPress VIP, PHP performance optimization
- **Programming** - PHP 8.4+, JavaScript, Python, Bash, SQL, Go, Markdown, HTML, CSS
- **SEO & Experimentation** - A/B testing, Conversion and page speed optimization, Structured data implementation, Session tracking

Technical Toolkit

- **Frameworks & Libraries** - WordPress, Laravel, Symfony components, Next.js, GraphQL, ElasticSearch, Tailwind CSS
- **AI & Agent Orchestration** - LLM tool use patterns, OpenClaw model routing, Ollama integration, OpenAI & Anthropic providers
- **Container & Orchestration** - Docker Compose, Nginx, Apache, MySQL, PostgreSQL, Redis, Load balancing, Dokploy, Traefik Proxy
- **DevOps & Delivery** - Cloudflare, Vercel, AWS, GCP, Terraform, OpenTofu, GitHub Actions, CI/CD pipelines, Automated testing, Monitoring & logging
- **WordPress Ecosystem** - Advanced Custom Fields (ACF), Elementor, WooCommerce, WP Engine, Kinsta, Pantheon, WP-CLI, WP Rocket

Achievements

- Reduced WordPress deliverables time to market by 50% while supporting national telecommunications campaigns for AT&T, Verizon, Xfinity, and Cox Cable. *(Updater, Inc)*
- Successfully spearheaded safer development practices after preventing data loss due to an undisclosed vulnerability in a third party WordPress plugin. *(Updater, Inc)*
- Launched Volkswagen of America's first national Certified Pre Owned vehicle portal featuring over 200 dealerships nationwide. Our WordPress platform successfully managed several million vehicles and visitors within the first year. *(DealerX)*
- Managed 20+ million automotive inventory items annually on a custom WordPress platform, supporting dealerships nationwide with a geo-location radius search API. *(DealerX)*
- Grew an OCR-based data collection platform to 100+ active community users during COVID-19 and successfully transitioned project ownership to a community contributor for continued long-term development. *(RoK Monster)*

Latest Work

Creator & Lead PHP Architect, Coqui – Personal Operating System for AI Work open source *February 2026 - Present*

Designed and built Coqui, a PHP 8.4 personal operating system for AI work — a lightweight, hackable agent runtime with a REPL, persistent memory, background tasks, scheduled automation, versioned artifacts, and a REST API. Available open source at agentcoqui.com and as a commercial product at coquibot.ai.

- Shipped a production-ready multi-model orchestration runtime with automatic failover, agent delegation (coder, researcher, planner, reviewer), and a runtime-extensible toolkit system installable via Composer — cold boot in ~78ms with 10–30MB memory footprint.
- Implemented a 5-layer safety architecture (sandbox, sanitizer, blacklist, approval, audit) and a declarative credential management layer with .env-backed storage and a CredentialGuard wrapper that prevents missing-key failures across all tool calls.
- Established PHP 8.4 coding standards (PER-CS 2.0), final/readonly-by-default design, and a skills system that lets users encode any workflow in plain Markdown — no code required.

Experience

Full-Stack Consultant & AI Systems Architect, Code of Reality, Inc. remote *January 2024 - Present*

Denver, CO

Architecting and developing the full-stack platform for veilbreak.ai, an open scientific research platform exploring cognitive physics at the intersection of consciousness and physical perception. Responsible for the complete Next.js application including custom passwordless authentication, REST API, MCP server integration, partner workflows, admin operations, and AI interfaces for a 500+ member global research community under Code of Reality, Inc.

Next.js | React | Supabase | REST API | MCP Server | Custom Auth | TypeScript | Scientific Platform | AI Interfaces | Full-Stack | Open Science

AI & GPU Systems Consultant, Zoltar Predicts hybrid *January 2026 - Present*

Beacon, NY

Providing AI consultation and specialized GPU/CUDA acceleration for a financial market analysis pipeline. Advising on model integration, batch computation architecture, and hardware-accelerated processing paths including CUDA (NVIDIA) and MLX (Apple Silicon) for large-scale macroeconomic analysis workflows.

AI/ML | CUDA | GPU Computing | MLX | Python | Financial Analysis | Machine Learning | Batch Processing | NumPy | SciPy

WordPress Advisor, BEAHIVE remote *May 2024 - September 2024*

Beacon, NY

WordPress maintenance, bug fixes, and feature enhancements to support a local co-working space focused on personal wellness and community networking.

WordPress | Maintenance | Debugging | Feature Development | Local Business

WordPress & AI Consultant, OneGuide remote *September 2024 - October 2025*

Denver, CO

Increased application availability and reliability with load balanced multi-server redundancy serving 9,000+ users. Launched an AI chatbot integrating thousands of WordPress posts and custom data for natural language search and recommendations. Improved internal processes for customer support team increasing overall productivity and ability to deliver timely solutions.

WordPress Multisite | Load Balancing | AI Chatbot | Vector Database | High Availability | Qdrant | REST API | Gutenberg | Docker

Digital Transformation Consultant, Antique Associates at West Townsend remote *November 2023 - March 2024*

West Townsend, MA

Migrated and modernized a legacy PHP e-commerce website, successfully converting and importing several thousand products into a custom WordPress theme and plugin suite to replicate existing functionality while improving site performance and administrator experience.

WordPress | Data Migration | Legacy Modernization | Performance Optimization | E-commerce

UX & Platform Analyst, Public Equity Group remote *December 2023 - January 2024*

Newburgh, NY

Conducted analysis of a web-based learning platform and provided UI/UX recommendations for a new product launch.

UX Analysis | Platform Review | Product Launch | WordPress

Lead WordPress Engineer, Updater, Inc remote *January 2022 - July 2023*

New York, NY

Led large-scale landing page deployments for major telecommunications clients while mentoring 2 engineers through structured code reviews, paired sessions, and personalized growth planning. Successfully empowered the marketing team with scalable A/B testing solutions directly resulting in improved conversion rates across multiple campaigns for brands such as AT&T, Verizon, Xfinity, Cox Cable, Spectrum and more.

Technical Leadership | Enterprise Deployment | Telecommunications | Team Mentorship | WordPress | Gutenberg | Okta Integration | Docker | CI/CD

Product Developer, T R I M Agency remote *June 2021 - January 2022*

Fort Lauderdale, FL

Led development of a custom React-powered search interface for WordPress, integrating thousands of products across multiple brands via WP REST API.

React | WordPress | REST API | Product Development | E-commerce | Multi-brand Search

Account Manager, Web Development, Interact Marketing on-site *March 2021 - June 2021*

New Windsor, NY

Implemented a custom WordPress patch management system for all client sites, enhancing security and increasing stability via automated updates.

WordPress | Security | Patch Management | Automation | Client Management

Lead Software Engineer, DealerX hybrid *August 2010 - November 2020*

Edgewater, NJ

Engineered and launched the automotive industry's first fully customizable WordPress solution for dealership websites, featuring a geo-location radius search API and managing over 20 million listings annually. Played an integral role in the company's growth and ability to deliver on Volkswagen of America's digital strategy.

WordPress | PHP | MySQL | API Development | Automotive | System Architecture

Certifications

- **Functional Programming for PHP 7 Developers** - Udemy - *December 2020*

References

- **Jenna Weinerman**, VP Marketing - I place a premium on the ability to execute and Carmelo never failed to deliver. He moves projects forward, “crosses his t’s and dots his i’s,” works beautifully with others, and does it all with a positive attitude and a willingness to learn and grow along the way.
- **Jonathan Rouse**, Generalist UX Designer - Carmelo has a record of bringing positivity and transparency to any meeting. His work-ethic and problem solving abilities are on par with any world-class developer you'll find. His ability to bring a design or concept to life is inspiring, and is always researching new ways to work better, faster, and healthier for everyone.