

Nicolas Desjardins

Lead Systems Engineer Turned Applied AI Architect

Eight years owning production web platforms, now building deterministic AI systems: schema-enforced extraction, hybrid retrieval, agent state machines, and LLMOps.

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webman.dev

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Greater Montreal Area, QC, Canada

Local, hybrid, or remote US and Canada

8+	30+	\$90k+	40%+	200k+	56
years in production	properties migrated, zero downtime	licensing eliminated	infrastructure cost cut	lines of TypeScript (NextBlock)	MCP tools for coding agents

CORE STACK

Applied AI

Python FastAPI Pydantic v2 LangGraph
LangChain Anthropic SDK OpenAI SDK
OpenRouter MCP Vercel AI SDK Ollama

Retrieval & data

PostgreSQL pgvector tsvector / BM25
Cohere Rerank Redis Supabase MySQL

Web

Next.js 16 React 19 TypeScript
Tailwind CSS v4 shadcn/ui Laravel
PHP Node.js Tiptap Nx

Infrastructure

Docker Linux cPanel / WHM VPS
Vercel Cloudflare Workers
GitHub Actions Tailscale

LLMOps & testing

Langfuse DeepEval Ragas Pytest
Vitest

LANGUAGES

French, full professional proficiency
English, full professional proficiency

EDUCATION

Computer Science, General Program
Concordia University, Montreal
2016 to 2018

DEC in Computer Science
John Abbott College,
Sainte-Anne-de-Bellevue
2009 to 2012

MILITARY SERVICE

**RCME Weapons Technician, Canadian
Armed Forces**
2013 to 2016, CFB Valcartier, QC

PROFILE

Lead web developer and systems engineer with 8+ years of production ownership across 30+ digital properties, and the creator of NextBlock CMS, an open-source AI-native CMS for Next.js 16 and Supabase (200k+ lines of TypeScript, 8 npm packages, an MCP server with 56 tools). I bring what production AI actually needs: typed schemas, fallbacks that are tested, telemetry, and evaluation gates. Available for Senior Applied AI, AI Solutions, and Forward Deployed Engineer roles.

EXPERIENCE

Creator & Principal Engineer

NextBlock CMS (open source) · Oct 2025 to present · Greater Montreal Area, QC

- Designed and built an AI-native CMS as an Nx monorepo: Next.js 16 Server Components, Supabase Postgres with row-level security, a Tiptap block editor, a commerce module, a CLI, and the release pipeline for 8 npm packages (v0.21.3).
- Shipped Cortex AI: an MCP server over Streamable HTTP with scoped tokens and 56 tools, confirmation-gated mutations, typed Zod tool calling with SSE streaming, OpenRouter routing with free-model fallback, and AES-256-GCM key storage.
- Built a zero-environment-variable deployment: Vercel's Supabase integration provisions the database and forward-only migrations apply during the first build; one command self-hosts the full stack on Docker.
- 100/100 Lighthouse on the production build, 146 Vitest files, 191 CLI releases, and 11.5k downloads in the 30 days to 7 October 2026.

Lead Web Developer & Applied AI Integration

New Roots Herbal Inc. · Nov 2018 to present · Vaudreuil-Dorion, QC

- Rebuilt newrootsherbal.com on Laravel 13 with a custom CMS and e-commerce store written from scratch, a Google Maps store locator, a real-time inventory system, and 18 campaign microsites.
- Deployed an internal multi-model generative AI asset pipeline (Claude, OpenAI Codex, Gemini) that cut catalog asset turnaround from weeks to 40 minutes per SKU, a 10x gain in throughput.
- Consolidated relational databases and deployed hybrid retrieval (lexical plus vector) with strict Pydantic validation, retiring legacy vendors and saving \$90,000+ in licensing.
- Directed infrastructure across 30+ properties with zero-downtime migrations and a 40%+ cloud cost reduction; telemetry and attribution funnels captured \$300,000+ in incremental revenue in one 30-day campaign.

EARLIER EXPERIENCE

Technical Founder

PcSquad · 2012 to 2018 · Les Coteaux, QC

- Founded and ran a regional IT solutions and web infrastructure consultancy: scoping, custom software, deployment, systems administration, networking, and hardware diagnostics for small and mid-sized businesses.
- Owned the financial, legal, and marketing side, including SEO and paid acquisition; resolved hundreds of client IT problems.

Founder

Webman Solutions · 2016 to 2018 · Greater Montreal Area, QC

- Web studio: built client websites and handled their early SEO and SEM.

Webmaster & Technician

Zakiry Productions · 2005 to 2018 · Pincourt, QC

- Website, CRM, and sound systems for an entertainment production house; webmaster and computer technician.

SELECTED PROJECTS

Measured numbers come from saved benchmark records and public registries.

Invoice Extraction Service

Production live, open source

An asynchronous FastAPI microservice that turns messy, unstructured documents into a guaranteed, schema-validated invoice record. Resilience comes from routing across models, not vendors: a free primary model cascades to a second provider on rate limits, timeouts, or schema exceptions, at zero marginal cost.

21 / 21 fully correct, primary model, dated benchmark 10 provider failure classes covered offline

0 network calls permitted in the test suite \$0.00 marginal cost per request on the default chain

Live documentation: nickdesjardins.github.io/Invoice-Extraction-Service

Source: github.com/nickdesjardins/Invoice-Extraction-Service

NextBlock CMS

Flagship product, v0.21.3, AGPL core

The open-source, full-stack AI-native CMS for Next.js 16, Supabase, and Tailwind CSS. Prompt builders hand you code to host and patch. WordPress hands you plugins to babysit. NextBlock turns typed content blocks in PostgreSQL into a website a whole team can run: a Notion-style editor for writers, React Server Components for the public site, and an MCP server so coding agents can build pages over the protocol they already speak.

- Content engine: every block is a JSONB row in PostgreSQL, custom block types are data, pages publish with no rebuild, Live Draft Mode and revisions, EN/FR content, SEO graded as you type.
- Data and security: three roles enforced by a database trigger, RLS kept Supabase Advisor clean, 21 forward-only migrations applied at build time, encrypted bring-your-own-key storage.
- Cortex AI: MCP server listed in the official registry (56 tools), page-aware agent with typed tools, OpenRouter routing with fallback, no token markup.
- Commerce Pro: Stripe and Freemius checkout, multi-currency with rounding modes, scheduled sales, shipping zones, taxes, inventory.

[nextblock.dev](#) GitHub: github.com/nextblock-cms/nextblock npm: www.npmjs.com/package/create-nextblock

SCHEDULED MILESTONE ARCHITECTURES

Part of a 120-day Applied AI plan; figures are design targets, not measurements.

Context-Aware Hybrid Compliance Retrieval Engine	Delivery: Days 31 to 60
A retrieval engine for regulatory documents, SOPs, and product dossiers that answers with paragraph-level citations instead of plausible guesses. Dense and sparse retrieval run in parallel inside PostgreSQL, candidates are fused, then compressed to a handful of high-confidence passages by a cross-encoder.	
Targets: < 800 ms p95 end-to-end latency · 98%+ context faithfulness on the golden set · 50 to 3 candidate compression before generation · 0 ungrounded citations by construction	
Autonomous Multi-Agent Operations Pipeline	Delivery: Days 61 to 90
A cyclic LangGraph workflow that coordinates SQL inventory queries, channel-specific copy synthesis, and regulatory compliance auditing. Validation failures loop back with structured revision notes. High-risk mutations pause for a human before anything leaves the system.	
Targets: 100% of high-risk mutations gated by a human checkpoint · Full state replay from any checkpoint · 2-tier model cascade by task complexity	
Production LLMOps Gateway & Evaluation CI/CD Suite	Delivery: Days 91 to 120
An enterprise reverse proxy in front of every model call. Semantically similar queries resolve from a Redis vector cache in milliseconds, every transaction is traced, and a CI pipeline runs regression evaluations against golden datasets so a bad prompt change never reaches main.	
Targets: < 15 ms cache hit response time · 0.96 cosine threshold for cache resolution · 5% hallucination ceiling that blocks a PR · ~65% inference cost reduction from caching	

PRODUCTION WEB WORK

Employer work is credited to New Roots Herbal Inc.; the rest is independent.

newrootsherbal.com (employer) Laravel 13 · PHP · MySQL · Blade · JavaScript · Google Maps API · Linux VPS	Full platform revamp on Laravel 13: custom CMS and e-commerce store, store locator, inventory system.
18 campaign microsites (employer) Next.js · Laravel	Next.js microsites and Laravel landing pages for product lines and health topics. Subdomains: vitamins, aging, women, digestion, omegas, stress, probiotics, mushrooms, magnesium, immune, oils (.newrootsherbal.com) Own domains: coughandcold.ca, prostateperform.ca Platform pages: newrootsherbal.com/cardiac-health, /vitamin-d, /ukraine, /pain-management, /essential-oils
MusiqueSD (client) Next.js · React	Bilingual marketing site for a Montreal recording studio, DJ and event business, with a quote-request flow.
Ryūgū: Ten Nights to the Dragon Palace Next.js · React	Chapered travel companion for an eleven-day voyage around Japan and Jeju.
Thieves' Cant Translator Next.js · React · v0	D&D 5e rogue's companion: English or French to Thieves' Cant, with dictionary and symbols.
Experiments Next.js · React · Vercel	Civalgo Punch, a real-time worker check-in system; an interactive React Hooks guide.
pcsquad.ca (own business, 2012) HTML · CSS · JavaScript · PHP	The bilingual site of my first company, a computer repair and website shop I owned and ran from 2012 to 2018.

TECHNICAL ARSENAL

195 tools across 12 domains, from the 2012 consultancy years to the current Applied AI work. Full detail with usage context at webman.dev.

Applied AI & LLM orchestration13

- FastAPIPydantic v2LangGraphLangChainTiktoken
- Anthropic SDKOpenAI SDKGoogle GenAI SDKGroq
- OpenRouterOllamaModel Context Protocol
- Vercel AI SDK

Frontier & open models9

- ClaudeChatGPT / GPTGeminiDeepSeekQwen
- PerplexityMistralLlamaNemotron

Retrieval, vectors & data11

- PostgreSQLpgvector (HNSW / IVFFlat)tsvector / BM25
- Cohere RerankChromaDBQdrantRedisMySQL
- phpMyAdminSQLiteMongoDB

Languages21

- PythonTypeScriptPHPJavaScriptSQLHTML5
- CSS3Sass / SCSSBashPowerShellBatchC++C#
- JavaDartVisual BasicXMLJSONYAMLBlade
- Markdown

Frameworks & modern web23

- Next.js (App Router)ReactTailwind CSSshadcn/ui
- SupabaseTiptapLaravelNode.jsNx Monorepo
- Stripe / FreemiusZodThree.js / React Three Fiber
- ViteAngularBootstrapjQueryWordPress
- WooCommerceDrupalSuiteCRMGatsbyScully
- Flutter

Infrastructure & systems31

- DockerDocker ComposeLinuxDebianUbuntu
- WindowsAndroidRed HatCentOSFedora
- cPanel / WHMVPS HostingApacheNginxWAMP / LAMP
- GitHub ActionsVercelCloudflare (Workers, R2)
- RenderDigitalOceanGoogle Cloud PlatformTailscale
- NetlifyGoogle App EngineFirebaseVirtualBox
- Hyper-VVMware Workstation / vSphereWinSCPPuTTY
- FileZilla

LLMOps & evaluation5

- Langfuse TracingDeepEvalRagasPytestVitest

Developer tooling21

- VS CodeGitGitHubGit BashClaude CodeCursor
- OpenAI CodexJulesnpmPostmanChrome DevTools
- LighthouseJiraAsanaNotepad++GitHub Desktop
- Visual StudioAndroid StudioEclipseSublime Text
- Internet Explorer

Design & media19

- FigmaAdobe PhotoshopAdobe Illustrator
- Adobe InDesignAdobe Premiere ProAdobe After Effects
- Adobe AcrobatGIMPBlenderOBS StudioAudacity
- Studio OneMelodyneGoogle FontsAdobe Fonts
- Font AwesomeSketchUpAdobe DreamweaverAdobe Flash

Marketing & analytics11

- Google AnalyticsGoogle Tag Manager
- Google Search ConsoleSEO / SEMGoogle AdsMeta Ads
- Google Maps PlatformGoogle Business Profile
- Google TrendsPayPalGoogle AdSense

Productivity & collaboration15

- Microsoft 365Microsoft ExcelMicrosoft Teams
- Microsoft SharePointMicrosoft VisioMicrosoft Access
- Google WorkspaceGoogle SheetsSlackDiscordZoom
- LibreOfficeOpenOfficeEvernoteSkype

IT support & security16

- MalwarebytesESET NOD32KasperskyNortonMcAfee
- AviraMicrosoft Security EssentialsCCleaner
- AdwCleanerUltimate Boot CDDxDiag
- Chrome Remote DesktopWatchGuardCisco Packet Tracer
- 7-ZipVLC