

Paul Wilson

AI Engineer · Full-stack AI products, built and shipped end to end

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PROFILE

Senior Applied AI Engineer specialising in designing and shipping production-grade LLM systems, using an AI-native development workflow to direct high-velocity, output-driven product delivery against my own architecture, data-model and security decisions. Built and operate a live conversational-avatar platform incorporating multi-provider AI agents, RAG for unstructured data, and low-latency WebRTC/WebSocket streaming, alongside three further independently shipped production systems spanning AI-driven SaaS, e-commerce and real-time multiplayer 3D. A 28-year enterprise IT career — 14 of them owning build automation and release pipelines for complex .NET products — underpins high-reliability AI production engineering.

CORE SKILLS

AI & LLM Systems: Production LLM pipelines, prompting & structured outputs, multi-provider inference & fallbacks (OpenAI, Gemini, Groq, Claude), tool/function calling, RAG (embeddings, token-aware chunking, cosine retrieval, thresholding, grounding), streaming, cancellation, latency optimisation, key security (libsodium).

Speech & Real-Time: Speech-to-text & text-to-speech (Deepgram, Cartesia, Inworld), voice cloning, VAD, transcription quality & failure handling, WebRTC/WebSocket streaming, real-time facial tracking (MediaPipe SDK), authoritative server simulation with client-side prediction and reconciliation (Colyseus).

Engineering: JavaScript (ES6+), Node.js, TypeScript, REST APIs, WebSocket, JSON, OAuth, HTML5/CSS3, WebGL via React Three Fiber.

Full-Stack & SaaS: Next.js (App Router)/React, Supabase (Postgres, Auth, Row-Level Security), Stripe (subscription billing, webhooks), Vercel (deployment, Cron, serverless functions), server actions/API routes, third-party API integration.

Enterprise & DevOps: Azure DevOps (TFS/VSTS), CI/CD pipelines, InstallShield/InstallScript, MSBuild, PowerShell, SQL/T-SQL, IIS, Docker, and VMware/Hyper-V (minimal experience).

AI-Native Workflow: Directing AI coding agents (Claude Code, GitHub, Vercel, Supabase) as the primary build tool on production systems: spec-first feature planning, database schema & Row-Level Security design, security-conscious review (input validation, signed tokens, SSRF-safe webhook handling), and verifying every change against live data before shipping. Expert at LLM-assisted debugging and rapid technical prototyping.

SELECTED PROJECTS

Interactive Avatar

interactiveavatar.co.uk

Live conversational-avatar platform — multi-provider AI agents, real-time voice and video

A production platform pairing a real-time animated avatar with a full conversational AI runtime. Built a multi-provider agent runtime spanning OpenAI, Gemini and Groq with provider-specific message formatting, a complete tool-calling loop (built-in web search, image generation and vision tools plus user-defined external API and internal logic calls), automatic model fallback on provider errors, streaming and non-streaming paths with token accounting, and AbortController-based cancellation over WebRTC/WebSocket with speech-to-text and text-to-speech. Ships an iframe/SDK embed library, a WebRTC facial-tracking SDK, voice cloning, live web-search and site-scraping tools, conversation summaries, lead capture, Google/Calendly integrations, and a published developer API with documentation.

Rival Radar

rivalradar.me

AI-driven competitor-intelligence SaaS — Next.js, Supabase, Stripe, Vercel Cron

A production SaaS that uses AI to find a business's competitors and monitor their pricing, features and messaging for meaningful changes. Directed an AI coding agent end to end against my own architecture, data-model and security decisions: Next.js (TypeScript) on Vercel with Supabase (Postgres, Auth, Row-Level Security), tiered Stripe subscription billing with webhook-driven plan sync, scheduled Vercel Cron scraping, and an AI pipeline (Anthropic Claude) with hallucination-guarded extraction for change summarisation and competitor-feature comparison — grounding every AI claim in real fetched content rather than model recall.

Shard Islands

shardislands.me

Real-time multiplayer 3D flight game in the browser — self-architected netcode

A browser-based multiplayer flight game with no loading screen, no lobby and no downloaded art — the entire world is generated in code. Architected the netcode myself: a pnpm monorepo placing the flight model and terrain function in a

shared package so client prediction and the authoritative 20Hz Colyseus server run identical arithmetic, measured at 0.003cm of drift over 280m of flight. Clients transmit input rather than position, with server reconciliation, input replay and 100ms interpolation of remote players. Next.js/React Three Fiber on Vercel, Colyseus on Fly.io, verified by headless test clients flying scripted geometry to assert timing-dependent multiplayer behaviour that cannot be checked by hand.

Chart Chic

chartchic.uk

Production e-commerce site — Stripe fulfilment, signed-URL delivery, admin CMS

A production e-commerce site selling digital cross-stitch patterns for a small business. Next.js (App Router) on Vercel with Supabase (Postgres, Auth, Row-Level Security, Storage), Stripe Checkout with webhook-driven order fulfilment and signed-URL download gating, an admin CMS for product, category and review management, and a verified-purchaser review system. Identified and fixed a live Row-Level Security bypass in a Postgres view during development, and implemented SEO (structured data, sitemap, dynamic OG images) end to end.

EXPERIENCE

CTO & Applied AI Engineer

March 2020 – Present

Independent — Bubble.io Plugin Business & Client Work (Remote)

Design, build and operate real-time AI products end to end, alongside an independent software business publishing production plugins used by developers worldwide. Run concurrently with full-time employment at Capita until July 2026, and full-time since.

- Built and published 47 commercial JavaScript plugins, including advanced 2D/3D Google Maps, video players/recorders, JSON manipulators, mobile QR scanners, rich text editors (TinyMCE), element animations, toast notifications and encryption utilities. The catalogue spans media, mapping, AI and real-time infrastructure; the most-installed has over 1,100 ratings, and several more sit above 150. Generates recurring monthly revenue. [View published plugin portfolio](#)
- Shipped four live production products end to end — Interactive Avatar, Rival Radar, Shard Islands and Chart Chic — owning architecture, data modelling, security and deployment for each. See Selected Projects above.
- Designed and built a Retrieval-Augmented Generation system end to end: client-side PDF parsing, a custom token-aware chunker with configurable size and overlap, OpenAI embeddings, and cosine-similarity retrieval with threshold filtering and top-K selection across swappable backends (Pinecone vector database and standard database embedding storage), with namespace and per-user scoping.
- Delivered contract front-end work for multiple international clients — app interfaces, custom mapping, advanced video and REST/API integrations — with several engagements arising directly from the published plugin work.

DevOps Software Packager / System Administrator

September 2012 – July 2026

Capita (formerly Clinical Solutions)

Following Capita's acquisition of Clinical Solutions, moved into the development team to own software packaging and continuous build automation — the highest level of technical support for the team's complex .NET applications.

- Owned the company's Azure DevOps environment and led the migration from on-premise TFS (VSTS at the time), managing users, permissions and pipeline design.
- Built and maintained CI/CD build and release pipelines controlling continuous integration across product teams, integrating ServiceNow and Aha! via web/service hooks and REST APIs to strengthen automated lifecycle management.
- Produced software packages (.MSI/.EXE) with InstallShield/InstallScript, MSBuild, VBScript and PowerShell, based on requirements and with in-depth knowledge of MSI technologies.
- Supported virtual servers (VMware, Hyper-V, Azure) and Docker/Azure deployment methods, troubleshooting across Windows, IIS and SQL environments.
- Created and modified build definitions (Visual Studio, XAML, Windows Workflow, MSBuild) and controlled deployments through Microsoft Release Management integrated with TFS.

2nd-Line Support Analyst → 3rd-Line Configuration Consultant

December 2002 – September 2012

Clinical Solutions

Supported 3,000+ clients running the CS Medical call-logging software across NHS walk-in centres, NHS Direct, NHS 24 (Scotland), NHS Direct Wales and international sites in Australia, Spain, Portugal and Norway. Promoted from 2nd-line into a 3rd-line configuration role.

- Provided high-level technical support for a bespoke n-tier .NET application backed by a clustered 100GB SQL Server, resolving incidents within SLA across desktop, hardware, Active Directory, Citrix Presentation Server and Microsoft Exchange.
- Promoted to 3rd-line configuration consultant: client-specific configuration, installations, QA testing and troubleshooting, using T-SQL to analyse and resolve the majority of database issues.

- Wrote and worked with reporting stored procedures feeding Crystal Reports and XSLT reports surfaced through the application, and supported IIS web applications passing XML to third parties via Microsoft Message Queuing.
- Liaised with 3rd-line teams and third parties (BT, Fujitsu, ATOS, Adastra) on escalated incidents, and used VMware servers for deployment assurance and demo systems for potential clients.

Service Support Analyst

March 2001 – December 2002

Surrey County Council — Trading Standards

- Provided 1st-line helpdesk support for 80+ users across PCs and related equipment, handling systems administration, security (passwords/permissions on Windows and a bespoke in-house application) and anti-virus across PCs and servers.
- Performed network troubleshooting and regular backups, configured applications for new implementations, and ran reports extracting data from the 'FLARE' system for business needs, including support for the department's forensics lab.

EARLIER CAREER

Barman — The Cage Wine Bar

August 2000 – March 2001

Served customers, managed the bar independently, and developed strong people and service skills in a fast-paced environment.

Computer Room Operator — Watson Wyatt

March 1998 – August 2000

Ran and verified backups across UNIX, OS/2 and mainframe systems (Legato), ensured file restores met SLAs, and set up conference/AV equipment.

Postal Clerk — Lombard North Central

November 1995 – March 1998

Maintained franking machines and post-room equipment; sorted, packaged and handled collection and delivery of post.

EDUCATION & DEVELOPMENT

Self-taught engineer. Began writing production code inside Capita's development team — JavaScript and PowerShell automation for build, deployment and systems tasks — then built a full software and applied-AI skill set independently, shipping 47 commercial JavaScript plugins used by developers worldwide and four live production products. Formal qualifications are GCSE-level; everything since has been self-directed, and I keep it current as the technology moves.

ADDITIONAL

- Interests: technology and cars.
- References available on request.