

DAN WALSH

Senior Software Engineer | AI-native - research-first, architect-then-build, verify

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SUMMARY

Senior Software Engineer (9+ years), AI-native in practice: research-first, architect-then-build, verify. Deep React/TypeScript, broad full-stack. My focus is the more scarce part of working with AI - judging whether what it produced can be trusted, and building the loops that catch where it can't. Beyond delivery: architected infrastructure modernisation across 30+ developers and drove adoption of AI-assisted workflows in my engineering org. Full positioning at danwalsh.co/how-i-work.

SKILLS

Frontend (Deep): JavaScript, React, TypeScript, Redux, Next.js, React Native, Tailwind CSS, SCSS, Vite, Component Architecture, Design Systems

Backend & Infrastructure (Broad): Node.js, Python, FastAPI, PostgreSQL, Heroku, Jenkins, Bitrise, Go, Docker, Kubernetes, AWS, GCP, Vercel, Supabase, GraphQL

AI/ML Integration (Developing Depth): LLM API Integration (OpenAI, Anthropic, OpenRouter), Prompt Engineering, AI-Assisted Development, RAG Systems, Automated Testing Generation, AI-Powered Documentation, MCP Protocol, Context Engineering, AI Workflow Orchestration

Development Practices: Agile Methodologies, CI/CD, Testing (Jest, Pact, Cypress, WebdriverIO)

Technical Leadership: Infrastructure Strategy & Planning, Developer Experience (DX), Technical Strategy, Cross-functional Collaboration, Architecture Advocacy, Mentorship & Training

EXPERIENCE

Senior Software Engineer | PensionBee | Remote | Jan 2024 - Present

React, TypeScript, Next.js, React Native, Node.js, Python, Tailwind, Heroku, Bitrise, Postgres, Docker, Cloudflare (Workers, Workflows, D1, KV, cron), Salesforce, Gmail API

- **AI Engineering Innovation Lead:** Pioneered approaches for strategic AI adoption across PensionBee's engineering org, including acting as sole developer in the company's AI Champions group. Built various proof-of-concept pieces: an AI-powered documentation system to maintain business logic specs with minimal manual effort, an AI skills analyser for gaps, and a test case generator with educational documentation. Co-designed the Claude Code pilot programme for engineering, with the aim of establishing usage baselines and coordinating rollout strategy between the VP of AI & Platforms and the CTO. Co-ran an AI-focused hackday that catalysed cross-team adoption and techniques. Established repository-level agent guidance (AGENTS.md/CLAUDE.md, docs-first conventions) as guardrails adopted across the team's agentic tooling.
- **End-to-End Testing Infrastructure:** Introduced first E2E tests to flagship hybrid web/mobile Capacitor application. Designed and implemented containerised test flow using Docker to offset flakiness from legacy endpoints and database dependencies, establishing reliable automated testing where none existed.
- **Withdrawals Journey Architecture:** Led architecture and development of complete customer withdrawals journey rewrite from legacy code to modern React/Next.js, working with 2 mid-level developers. Collaborated cross-functionally with Product, UX, Banking, and Compliance teams. Delivered company-wide presentation on new architecture and patterns.
- **Component Library Development:** Co-created shared React component library replacing fragmented UK/US libraries, showcasing best practices in accessibility, versioning, and React patterns. Automated versioning and publishing processes, lowering barrier to contribution across teams.
- **Infrastructure Modernisation Strategy:** Architected comprehensive Node.js v16→v20 migration strategy for platform serving 30+ developers. Created PoC PR validating upgrade path and identifying complexities (ESM migration, dependency conflicts). Produced detailed technical documentation covering dependency compatibility matrix, risk assessment, and phased rollout planning. Strategy created and validated; execution deprioritised by organisation.
- **Technical Strategy & Architecture Advocacy:** Drove roadmap shaping with management and product, advocating for microfrontend architecture to contain withdrawals domain for integration with new platform. Successfully navigated cross-team stakeholder complexity, securing discovery phase for architectural exploration.
- **Team Development & Cross-Team Support:** Championed team psychological safety, driving recognition of mislevelled team members resulting in progression plans. Acted as senior resource for developers across multiple teams, providing mentorship and technical guidance.

Software Engineering Manager | PensionBee | Remote | Aug 2023 - Jan 2024

- Facilitated cross-team collaboration by organising engineering function-wide hackathon focused on collaboration and teamwork. Led mini-hackathon exploring API integrations and data visualisation. Contributed to salary benchmarking and engineering management strategy.

Senior Software Engineer | PensionBee | Remote | Oct 2022 - Aug 2023

JavaScript, React, React Native, TypeScript, CSS, SCSS, Node.js, Heroku, Bitrise, Postgres, Salesforce

- Led development of key product features including mandatory two-factor authentication and regular drawdown options. Designed and led React, Redux, and React Native training, upskilling team members. Strengthened login security approaches to prevent brute-force attacks and DDoS vulnerabilities. Maintained engineering problem areas report fed back to management and CTO.

Software Engineer II | Puppet | Remote | Apr 2021 - Oct 2022

JavaScript, React, Jest, Webpack, GraphQL, Apollo, npm, Node.js, CSS, SCSS, Git, GitHub, Jenkins, Docker, Kubernetes, GCP, Go, Python

Software Engineer II | Bazaarvoice | Belfast | Mar 2020 - Mar 2021

JavaScript, React, Redux, Redux Saga, Jest, WebdriverIO, Webpack, GraphQL, Apollo, Node.js, CSS, SCSS, Docker

Software Engineer | ShopKeep | Belfast | Jan 2019 - Mar 2020

Junior Software Engineer | ShopKeep | Belfast | Jun 2017 - Dec 2018

JavaScript, React, Jest, Enzyme, Webpack, GraphQL, Apollo, Node.js, CSS, SCSS, Git, AWS, Docker, Python, Flask, Ruby, Rails

PROJECTS

Sceptic - Adversarial Code-Review Agent (proof-of-concept)

TypeScript, Node 24, Vercel edge, Vercel AI SDK, Anthropic API, Zod, Docker

- Multi-agent code-review system: a coordinator plans a review and fans it out to isolated reviewer subagents that each read code, run its tests, and report findings. Every finding must cite a firsthand, falsifying observation (path:line plus a reproduced result) rather than trusting a passing test suite, separating grounded findings from unverifiable claims. Sandboxed execution with a stated read-only guarantee (isolation, tool allow-list, approval backstop, audit log) and a model-graded evals harness with held-out ground truth over a curated set of plausible-but-wrong fixtures. Companion to the "don't take the model's word for it" write-up.

trace-eval - LLM Evaluation Harness (proof-of-concept)

Python 3.11, Anthropic SDK, pytest

- Minimal end-to-end eval harness - loads cases, calls the model, scores, persists results, and emits a Markdown report - capturing a structured, typed execution trace for every result. Designed around two deliberate interface seams: a pluggable scorer function and a trace model built to extend to future agent/tool-call steps. Provider-swappable via a single injected model-call function, keeping the harness fully offline-testable (63 passing tests, no API key required).

Streaming Generative UI - Schema-Validated Streaming (proof-of-concept)

Next.js 16, React 19, TypeScript, Vercel AI SDK, Zod 4, Tailwind CSS v4, Vitest

- Streams an LLM response whose typed tool-calls render progressively on-screen as live artifacts (charts, tables, metrics, prose). A single Zod registry is the source of truth: it derives the model's tool definitions, validates props at runtime, and drives component lookup, so nothing mounts until its props survive the check, with graceful fallbacks for invalid or unknown artifacts. Swappable model adapters (real Anthropic plus an offline stub) and test coverage across schemas, the streaming hook, and components. Companion to the "don't take the model's word for it" write-up.

Signal & Noise - Glitch Art Application

React, Next.js, TypeScript, Tailwind CSS, Python, FastAPI

- Real-time glitch art application featuring 34+ effects across 9 categories with professional layer system (18 blend modes). Canvas API and Web Workers optimisation achieving 60fps rendering.

Momentum MCP Server - Personal Productivity Infrastructure

Go, Fly.io, GitHub API, MCP Protocol, OAuth 2.0

- Production MCP server enabling AI assistants to access personal productivity data (todos, milestones, reading lists, reminders) across any Claude interface. Deployed to Fly.io with bearer token + OAuth authentication, GitHub API-backed storage, and cross-device accessibility. Demonstrates MCP protocol implementation, Go backend development, and AI infrastructure architecture.

Intora Works - Generative Art Platform

Next.js, TypeScript, Paper.js, Tailwind CSS

- Custom geometric art generation application for creating cyberpunk-inspired compositions. Features parametric template architecture, typography systems, and algorithmic background rendering. Demonstrates creative coding, computational geometry, and design-engineering intersection.

Amber Schematic - VS Code Theme

Published: VS Code Marketplace | Open VSX

- Dark mode editor theme with warm amber accents. Published to both marketplaces, demonstrating developer experience focus and design sensibility.

Personal Portfolio & Blog

Next.js, TypeScript, Tailwind CSS, MDX | danwalsh.co

EDUCATION & CERTIFICATIONS

- **AWS Solutions Architect (microcredential)** | FutureLearn / The Open University (2022) - Grade 2 Pass
- **Postgraduate Certificate in Computing** | The Open University (2017) - Pass with Merit

- **B.A. (Hons), Liberal Arts with History** | St. Mary's University College (2010) - 2:1