RICHARD BROWN

Full Stack | AI Engineer | MacOS | Windows | IOS | Cloud | Senior Developer

Marlow UK TEL +44 (0)7751 853337 richard.brown.kns@gmail.com https://knws.co.uk/showcase

PROFESSIONAL PROFILE

Commercially focused Senior Full Stack Developer, Technical Architect and Consultant with over 20 years' experience designing, building, and delivering high-performance software systems across multiple platforms. I specialise in creating scalable, maintainable, and efficient solutions that solve real-world business problems — from full-stack web applications and SaaS platforms to desktop and mobile systems.

Operating as an independent contractor, I specialise in High-Performance Systems, Artificial Intelligence (AI/LLM), and Cloud Architecture. Since the early 2000s, I have managed teams of developers and engineers across hundreds of projects, with ultimate responsibility for team leadership, project delivery, and ensuring work is completed on time and within budget.

I combine deep low-level engineering skills (C++, Go, Python) with modern web expertise (Flask, Next.js, Quart, React, TypeScript). My recent work focuses on building private AI inference infrastructure, autonomous agents, and distributed data processing systems. I am seeking contract opportunities in Backend Development, AI Engineering, or System Architecture where I can leverage my ability to design scalable, secure, and automated solutions.

CORE TECHNICAL SKILLS

Domain	Technologies
AI & Machine Learning	vLLM, LLM Inference, PyTorch, OpenCV, AI Agents (MCP), NLTK/spaCy, RAG Pipelines, Computer Vision.
Cloud & DevOps	AWS, Docker, Kubernetes, Terraform, CI/CD, Linux Administration, Private Cloud Hosting, Apache/Nginx.
Languages	Python (Expert), Go (Golang), JavaScript / TypeScript, C++, VB.NET, SQL, Bash.
Backend & Systems	Flask / Django / Quart, Microservices, Async I/O, WebAssembly (WASM), REST APIs, OAuth2.
Frontend & Web	React, Next.js, Tailwind CSS, HTML5, WebSockets, SVG Data Visualization.
Data & Storage	PostgreSQL, MySQL, Redis, SQLAlchemy, Big Data Indexing, ETL Pipelines.
AI Tools	Codex, Claude, Claude-Code, Gemini, Cursor, LM Studio

TECHNICAL ENGINEERING SHOWCASE PROJECTS – *https://knws.co.uk/showcase*

A selection of advanced engineering projects demonstrating capabilities in AI, High-Performance Computing, and Modern Web Architecture.

AI & Automation Engineering

- AI-Powered Job Automation Platform: A comprehensive system using vLLM and Python to scrape, score, and auto-apply to contracts. Features AI-generated cover letters, geolocation routing (OSRM), and skill matching algorithms.
- vLLM Inference Infrastructure: Deployed a private, high-throughput LLM inference engine using vLLM, enabling real-time semantic analysis and privacy-focused AI processing within internal infrastructure. Innovated unlimited context in RAM feature to free up GPU memory.
- MCP Eyes (AI Agents): Developed a Model Context Protocol (MCP) server acting as a bridge between LLMs and OS automation. Enables AI agents to perform screen inspection (OpenCV) and control desktop environments on macOS/Linux.
- Global News Intelligence Engine: Built a massive-scale aggregation platform ingesting 50,000+ sources daily. Utilizes NLP for automatic categorization and deduplication, served via a Flask interface backed by MYSQL. Years of news stories archived and available in search.

High-Performance & Systems Programming

- Proxy Router (Go): Engineered a high-concurrency proxy aggregation router in Go (Golang). Manages thousands of simultaneous connections with automatic rotation, validation, and protocol translation (SOCKS5/HTTP), deployed via Docker.
- CoSearch (Big Data): Designed a search engine indexing 4+ million UK companies. Achieves sub-100ms query times using Async Python, MySQL 8 FULLTEXT optimization, and custom relevance ranking algorithms.
- ATLAS Hybrid Video Codec (C++): Created a ground-up video codec combining classical signal processing with AI-assisted analysis. Features a modular C++ architecture with VLC and FFmpeg integration. It is a next generation .mp5 high compression codec.

Modern Web & Frontend Architecture

- GitHub Trending Analytics (Next.js): A real-time analytics dashboard built with Next.js, React, and TypeScript. Features a Quart (Async Python) backend for high-speed data ingestion and PostgreSQL for trend analysis. Linked directly to GitHub via API.
- Web Tools Suite (WebAssembly): A privacy-first utility suite running 93+ tools entirely in the browser using WebAssembly (WASM) and FFmpeg, eliminating server-side processing for file conversions and analysis.
- Self-Hosted Infrastructure: Private implementations of Maps (OSRM/Leaflet), Speedtest (SVG/Glassmorphism), and Routing services, demonstrating full-stack capability independent of public APIs.

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PROFESSIONAL EXPERIENCE & KEY CONTRACTS

2020-2025 **Commercial Veterinary SaaS Platform** *(12 month contract extended to 60 months)*
Role: *Senior Full Stack Developer & Technical Architect*
Tech: *Python, Flask, AWS Cloud, REST API, JavaScript, OAuth2, SQL*

Developed a commercial Python/Flask based SaaS application to audit billing data and prevent revenue misbilling in veterinary practices. If a vet entered an incorrect bill in the consulting room, by the time a client had made it to the reception desk to pay, my system would query the invoice, fix any issues and deliver it correctly prices automatically. If the customer wants interaction, it flags the vet as they try to complete the invoice what errors that have made and forces them to fix it and complete a correct bill. The system operated in two modes Audit Mode and Live Integration Mode. The Audit mode could identify misbilling whereas the Live mode would not only identify but could correct in real time. It connected to a popular online Practice Management System (PMS). Deployed on European AWS servers the project was in 27 languages.

- Built app with OAuth2/API + custom token connectivity to cloud based PMS
- Developed embedded JavaScript UI that integrated directly into the PMS interface to guide users during invoice creation
- Delivered intelligent prompts and rule-based automation to highlight mis-charging and improve billing quality
- Created Invoice AutoCorrect feature to auto-add missing items to invoices
- Engineered full-stack functionality including backend rules engine, UI design and real time logic

Result: Reduced lost revenue by >90% and improved billing compliance across multiple practices.

2017-2019 **Machine Learning Project** *(3 month contract extended to 24 months)*
Role: *Developer & Designer*
Tech: *Machine Learning, Windows Server, Hybrid Cloud, SQL*

Built a hybrid Windows client-server system to integrate across multi-site veterinary practices with a remote/cloud-hosted architecture. Managed a team of Developers to complete the project.

- Created a machine learning model to detect likely prescription errors and missing medicines
- Developed a UI for clinical staff to train and refine model predictions
- Integrated with Practice Management Systems to allow real-time prescription auditing
- Added workflow tracking and reporting for regulatory audit compliance

Result: Improved invoice accuracy, substantial time saved on manual reviews, reduced lost revenue

2006-2017 **Numerous Projects**
Role: **Project Manager – Consultant – Developer - Engineer**
Tech: **Core Technical Skills, ERP Sage 50/200, MS Dynamics, Windows & Linux**

Delivered end-to-end software and systems projects as an independent consultant, typically owning requirements, implementation, data migration and handover. Projects involved teams of people which could be on my team or the customers team that had to be managed to achieve goals.

- Complete solution management Projects with software, migrations, infrastructure, hardware & training.
- Scoped, estimated and managed projects end-to-end, translating business requirements into technical tasks and keeping stakeholders informed on progress and risks.
- Delivered hands-on training so client teams could use, support and evolve solutions themselves.
- Implemented and customised ERP solutions, including tailored reports, workflows and data structures.
- Led data migration and transformation projects when clients moved between legacy systems and new platforms, writing scripts and tools to cleanse, map and validate data.
- Worked closely with support teams to deploy, troubleshoot and iterate on the software solutions delivered.
- Developed custom add-on modules, scripts and automation tools to extend off-the-shelf products and remove manual, spreadsheet-based processes.

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PROFESSIONAL EXPERIENCE & KEY CONTRACTS

2002-2006 **Membership System for Farm Park Attractions** (rolling contract)

***Role*:** *Developer & Systems Architect*

Tech: *Barcodes, Live Cameras, Windows Server, WAN, SQL, VB, Zebra Card Printers*

Designed and deployed a full-featured membership and access control system for UK-based family attraction sites, enabling staff to manage member entry, ID verification, and renewals.

- Built Microsoft SQL Server backend system with Access Runtime frontend
- Integrated barcode scanners, webcams and card printers to enable real time photo verification at entry points
- Implemented fraud prevention by linking membership cards to on screen ID photo
- Added modules for signups, renewals, party bookings and direct debit status tracking
- Automated member communication via printed letters for renewals, marketing, failed payments and bookings
- Supplied, installed and maintained all hardware; provided long term support and upgrades

Result: System remained operational and supported for over 15 years, significantly reducing fraud and admin costs.

1993 – 2002 **Numerous Projects**

Role: **Solutions Architect – Developer – Engineer – Support**

- Acted as a solutions architect, putting together complete office solutions (hardware, software, networking and peripherals) tailored to each client.
- Typically used VB & VBA (before .net) to make user interfaces and do automation.
- Built and configured custom desktop PCs and servers, including hardware assembly, OS installation, driver setup and basic network configuration.
- Provided front-line and second-line support, diagnosing hardware and software issues and implementing fixes on-site and remotely.
- Worked in a sales/consultative capacity, gathering requirements, specifying solutions and producing quotes and proposals to fit customer budgets.
- Managed small implementation projects end-to-end, from initial requirements and budgeting through to installation, testing and handover.

EDUCATION & CERTIFICATIONS

Technical Training:

Continuous professional development in Advanced Python Generative AI, LLM's in inference engines, Design, Go, Cyber Security, Sage Accounts Certified (Training & Engineering) Management Certificate (CMI Cert) NVQ4

Early Career: Strong background in Computer Hardware Engineering and VB.NET