

James Clarke

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Profile

Software engineer focused on LLM agents, automation pipelines, and the backend and infrastructure work that keeps them running in production. Four years owning DevOps and automation for a live estate agency platform, plus recent client work building LLM booking agents and Blender-to-Unreal pipeline tooling. Mostly Python, with serious Rust on the side. Happiest when the problem is genuinely hard, and stubborn about seeing it through, from design to deployment to the debugging after. Committed free-software advocate (free as in freedom): upstream contributions, personal projects under open licences, and a fully self-hosted stack instead of rented SaaS.

Skills

Languages: Python (5+ years), Rust (2+ years), TypeScript, JavaScript, SQL

AI & LLM: Anthropic/OpenAI/Gemini APIs, MCP, LangChain/LangGraph, RAG pipelines, fine-tuning (LoRA/QLoRA with Unsloth and Axolotl), PyTorch, JAX/Flax, Hugging Face Transformers, local inference (Ollama, LocalAI), ComfyUI/Stable Diffusion

Web & desktop: FastAPI, Django, Flask, Node.js/Express, Deno, Fresh, Astro, HTMX, React, Leptos, Tauri, Tailwind CSS

Infrastructure & DevOps: Docker, Linux server administration, CI/CD (GitHub Actions), n8n, monitoring and logging, GCP, Azure

Data: PostgreSQL, Redis, SQLite, vector stores (ChromaDB, FAISS), Pandas, NumPy

Professional Experience

Freelance | Python Developer, 3D Pipeline Automation

Jul 2026

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- Wrote standalone Blender 5.1 Python (bpy) scripts that convert Daz Genesis 8/8.1 and Genesis 9 characters to the Unreal Engine 5.8 MetaHuman bind pose, automating a rig conversion normally done by hand.
 - Built the matrix-based retargeting underneath: per-joint rotation offsets, coordinate-space conversion, twist-bone roll distribution, left/right mirroring, and joint orientations matched 1:1 to Epic's reference skeleton, then baked in as a new rest pose without breaking hierarchy or skinning.
 - Kept the mesh intact through conversion with shape-key (JCM) stripping, material sanitization, vertex-weight recalculation, and injection of missing MetaHuman bones (spine_05, IK targets) with automatic weight transfer.

- Final FBX passed the UE 5.8 Mesh-to-MetaHuman solver and played native MetaHuman animations. Three milestones delivered in 8 days, closed with a 5-star client review.

VivusHub | Software Engineer (Consultant)

Sep 2025 - Dec 2025

- Built a Python LLM agent with tool calling that handled travel and venue bookings end to end: it read client requirements (dates, budget, party size, location, preferences) and ran the full booking workflow in place of a manual process.
- Integrated third-party booking platforms, venue management systems and REST APIs for live availability, pricing and reservation data.

David Clarke Estate Agents | DevOps Engineer

Jan 2022 - Dec 2025

Owned DevOps, QA automation and platform reliability for a live estate agency platform. Tech: Python, Docker, Linux, PostgreSQL, CI/CD, monitoring and logging.

- Built a Rightmove lead-ingestion and CRM automation pipeline (n8n, GPT-4o-mini, Knack CRM, nodemailer) that classified incoming property leads and sent follow-up emails without anyone touching them.
- Wrote Python automation frameworks for regression testing, deployment validation and reliability checks across production and staging.
- Set up CI/CD with automated quality gates and rollback-safe deployments to cut release failures, plus monitoring and alerting that surfaced incidents sooner and sped up response.
- Handled production debugging and root-cause analysis (application behaviour, slow database queries, deployment workflows) and turned the recurring fixes into shared internal tooling.

Python Software Engineer | Contract (embedded multimedia client)

Apr 2023 - May 2023

- Wrote Python hardware-interface modules around the Adafruit MCP2221A for USB/GPIO device control in a multimedia platform.
- Built event-driven automation reacting to network and hardware state changes in real time, driving LED and device behaviour, with fallback logic so it stayed predictable when hardware or connectivity misbehaved.
- Delivered a working prototype that ran in a real embedded multimedia environment, after chasing down a run of USB communication bugs.

Selected Projects & Open Source

- **RustPython** (contributor): built a fuzzing and differential-testing toolkit that runs RustPython against CPython to surface interpreter divergences and crashes.
- **Rustsqlite**: a from-scratch SQLite reimplementation in Rust, released under Apache 2.0.

- **Transformer from scratch (JAX/Flax):** implemented and trained a transformer end to end on a single RTX 5090 to understand the architecture from first principles.
- **Self-hosted infrastructure:** run a full production stack (Nextcloud, Forgejo, Vaultwarden, SearXNG, Jellyfin, Postfix/Dovecot mail) with Docker on Linux behind jamesdavidclarke.com (site built with Fresh on Deno), covering deployment, upgrades and day-to-day operations.
- **Luanti mod developer:** published open-source mods on ContentDB covering server admin tooling, governance features and developer APIs; ran two public game servers.

Education

University of Kent | MSc Advanced Computer Science (starting September 2026)

Canterbury Christ Church University | BSc Computer Science, Upper Second-Class Honours (2:1), 2024. Specialised in machine learning and software development.

Canterbury Academy | Double A-Level Computer Science and BTEC ICT, 2019