

Eoin Forrest

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London / Newcastle · open to relocation · UK & Irish citizen (no visa sponsorship required)

First-class Computer Science graduate from Newcastle University seeking a graduate software engineering role. Comfortable across the stack but happiest building backend, systems, and applied-AI software — from local retrieval-augmented AI assistants and real-time control systems to passive network-sensing tools. I care about clean, well-documented code and about things working end-to-end.

EDUCATION

BSc (Hons) Computer Science — First-Class Honours

Newcastle University · Sep 2023 – Jun 2026 · accredited by BCS, The Chartered Institute for IT

Final-year modules: Distributed Systems (76), Cryptography (80), System & Network Security (79), Computer Vision & AI (68), Major Project & Dissertation (66).

Selected earlier modules: Algorithm Design & Analysis (86), Security Programming (77), Software Systems Design & Implementation (79), Software Engineering Team Project (73), Computer Systems Design & Architectures (96).

Dissertation — From Latent Concept Vectors to Anatomy-Conditioned Dense Readouts: an applied machine-learning research project in deep-learning interpretability and computer vision, extracting human-interpretable concepts from a neural network and using them to condition dense, anatomy-aware predictions.

Access to Higher Education Diploma: Computing

Kingston College · Sep 2022 – Jul 2023 · 30 units at Distinction, 15 units at Merit

TECHNICAL SKILLS

Languages: Python, Java, C, C++, C#, Go, Lua, JavaScript/TypeScript, SQL, Bash

Backend & systems: REST APIs, distributed systems, concurrency/multithreading, SQLite, MySQL/MariaDB, Flask, FastAPI, Electron

AI / ML: retrieval-augmented generation (RAG), the Model Context Protocol (MCP), local LLM inference (Ollama), vector search, computer vision, deep-learning interpretability

Web: React, Next.js, HTML, CSS, Tailwind

Tools & practices: Git, Linux, testing, technical documentation; networking (Wireshark, Cisco Packet Tracer) and security fundamentals (cryptography, network security)

PROJECTS

Hal — local RAG AI assistant

Python, Ollama, MCP, NumPy

A privacy-preserving retrieval-augmented assistant that answers strictly from a personal knowledge base and runs entirely offline. Built from first principles: heading-aware chunking, a NumPy vector store with cosine similarity, and incremental re-indexing keyed on content hashes. Exposes its search as an MCP server with path-traversal guards. Spawned two specialised tools: hambot, an AI archivist that catalogued a real 594-source corpus into ~18,000 cross-links with zero broken links using a VRAM-aware 7B-vision / 30B-text pipeline on a single GPU; and hal-voice, a hands-free voice interface (wake word → Whisper STT → synthesised speech).

Probe Request Sniffer — passive Wi-Fi device counting

Python, scapy/pyshark, 802.11

A passive 802.11 sniffer that sees through MAC randomisation by fingerprinting each frame's information elements, so one physical device maps to one identity. Pluggable capture backends behind a clean abstraction, a thread-safe sliding-window tracker with lazy expiry, and an ergonomic CLI.

LIDAR Autonomous Navigation

Lua, A*, control theory, linear algebra

A real-time autopilot that sweeps a laser to build a live obstacle map, plans with a tick-sliced A* search, and follows the route with pure-pursuit steering and Catmull-Rom smoothing — all inside a hard 4096-character microcontroller limit that forced genuine optimisation. Uses 3D rotation matrices for attitude compensation and an O(1) hash-set spatial map.

Hatch — AI desktop companion

Electron, React, TypeScript, SQLite, FastAPI

An ~10k-line Electron desktop pet with a deterministic simulation engine, a ~30 Hz desktop-presence system using transparent overlay windows, event-sourced SQLite persistence with versioned migrations, and an optional supervised Python AI sidecar behind a typed IPC boundary.

More projects — including an autonomous recovery drone and a Canvas API archiver — at eoinforrest.me and github.com/NotEoin.

WORK EXPERIENCE

Bartender

The Old George Inn · Nov 2024 – May 2025

Delivered fast, high-quality service to 400+ customers per shift during peak periods, coordinating with a team of five.

Bartender / Supervisor

Bar Malden · May 2024 – Sep 2024

Trained new staff, delegated tasks, and upheld safety and licensing standards. Handled cashing-up, weekly banking, inventory, audits, and cellar operations including stock, shipments, and contractor coordination.

ADDITIONAL

Community: Volunteered with Cancer Research UK and at a community coffee bar.

Interests: Active in university societies — computing & technology, skateboarding, running, fellwalking, and cold-water swimming.

References available on request.