# Hammad Ahmad

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## TECHNICAL SKILLS

**Machine Learning, NLP & LLMs** : PyTorch, scikit-learn, XGBoost, sentence-transformers, fastembed (ONNX), pgvector, semantic search, Retrieval-Augmented Generation (RAG), cross-encoder re-ranking, RAGAS, Anthropic Claude API, Ollama

**Engineering & Data** : Python, TypeScript, SQL, PL/pgSQL, FastAPI, asyncio, Flask, REST APIs, PostgreSQL full-text search, Supabase, Neo4j, Next.js, React, pandas, NumPy

**Infrastructure & Quality** : AWS (App Runner, Amplify, CloudFront), Oracle Cloud, Docker, Git, Linux, CI build gates, pytest, Playwright, Sentry

## EXPERIENCE

**Jobzyl** | **jobzyl.com** May 2026 - Present

*Founder & Sole Engineer* Bradford, UK

- Build and operate a live, public job search aggregator end to end: 29 provider integrations and 6 applicant tracking systems, a 3.4M row Postgres index across 26 countries, FastAPI backend, Next.js frontend and AWS deploy pipeline.
- Shipped semantic CV-to-posting matching in production: 384-dimension multilingual sentence embeddings over pgvector against the full corpus, gated so a posting naming no recognised skill reports as too thin to score rather than a confident 0%.
- Built the LLM layer on Anthropic Claude (CV scoring, cover letter, interview prep), with prompt-injection defences on every call, per-user quotas and documented fail-open behaviour.
- Trained a pay regression model against the shipped salary benchmark as baseline, split by employer group to prevent leakage: MAE 27,420 to 24,001, MdAPE 18.9% to 16.4%. Reported per country and seniority, and held back from deployment.
- Rebuilt search ranking as a weighted Postgres full-text function with a title-relevance layer, after measuring that 27.4% of returned results had none of the user's query terms in the job title.
- Hardened the platform: Fernet field encryption of CV text, row-level security across 23 tables, GDPR export and deletion, behind 1,950 automated tests and 11 CI build gates.

**Outlyst** Oct 2025 - Mar 2026

*AI / Machine Learning Engineer (fixed-term contract)* Leeds, UK (Remote)

- Built and deployed an AI voice-agent system for outbound calling (Retell AI, FastAPI): dialogue-flow logic, automated call flows and lead-qualification rules, handling 2,100+ calls and cutting manual calling workload by roughly 50%.
- Reduced average call latency 54%, 2.4s to 1.1s, by profiling async I/O and restructuring connection pooling.
- Built **VoiceFlow** (GitHub), a FastAPI service running Whisper large-v3 in-process over the 2,100+ call recordings, threading each export to keep blocking downloads and torch inference off the asyncio event loop.

**University of Bradford** Jan 2025 - Sep 2025

*Research Assistant* | *Graph-Augmented LLM Engineering* Bradford, UK

- Built **FinLaw-UK** (code + benchmark), a graph-augmented RAG system for UK financial regulation: hybrid BM25 and BGE-small retrieval fused by RRF, cross-encoder re-ranking, 2-hop Neo4j traversal, and a verifier resolving every citation against the graph. Mistral 7B via Ollama, fully local.
- Found two reported metrics were regex shape-checks, not correctness measures: the scorer awarded a flat 0.85 to any citation-shaped string, and 103 of 110 rows carried that constant. Published the correction and the true graph-verified rate, 3 in 110, which drove the citation normaliser, re-ranker and refusal gate.

**COMSATS University Islamabad** Jul 2023 - Jul 2024

*Research Intern, Data Science* Islamabad, Pakistan

- Benchmarked 11 classifiers for diabetes risk on a 253,680-record CDC BRFSS dataset (14% positive class), with resampling confined to training folds; deployed the best model as a public screening app (React, Flask): DiabetesSense.

## EDUCATION

**University of Bradford** Sep 2024 - Sep 2025

*MSc, Applied Artificial Intelligence and Data Analytics (Merit)* Bradford, UK

**COMSATS University Islamabad** Sep 2020 - Jul 2024

*BS, Bioinformatics* Islamabad, Pakistan

## PUBLICATIONS

**Ahmad, H.**, Khan, M.U., & Azam, M. (2024). Comparative Analysis of Machine Learning Methods for Enhancing Sleep Efficiency and Prediction. *ICSMAI 2024* (Springer). DOI: 10.1007/978-3-031-66854-8_1