Areeb Shafqat

Senior AI Engineer | Healthcare Integration (HL7, FHIR, NPHIES) | Claude Certified Architect

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PROFESSIONAL SUMMARY

Senior AI Engineer with 3+ years building production AI and healthcare interoperability systems in Saudi Arabia. Took the OCN integration engine from proof of concept to live production in **10 Saudi hospitals**, connecting hospital information systems (HIS) to **NPHIES** and the national **Unified Health Record (UHR)** using **HL7 v2** and **FHIR R4**. Designs and ships LLM agents, RAG systems and clinical AI tools (medical coding, claims scrubbing, SOAP notes, clinical decision support) with evaluation sets, red-team testing and OpenTelemetry observability. Claude Certified Architect (Professional). MSc Data Science (Distinction) and BSc Mathematics and Physics, University of Warwick. Member of the Saudi Council of Engineers.

EDUCATION

MSc e-Business Management, Major in Digital and Data Science **Oct 2020 – Nov 2021**
University of Warwick *Coventry, United Kingdom*

- Graduated with **Distinction**; specialised in data science, machine learning and digital business.
- Presented master's thesis at the **OR63 Conference** (Operational Research Society annual conference).

BSc Mathematics and Physics **Oct 2017 – Jul 2020**
University of Warwick *Coventry, United Kingdom*

- Joint honours degree combining pure and applied mathematics with physics; quantitative foundation in linear algebra, probability, statistics, calculus and computational modelling.

PROFESSIONAL EXPERIENCE

Senior AI Engineer, Healthcare Digitization **Oct 2024 – Present**
Ebttikar Technology Company *Riyadh, Saudi Arabia*

- Lead engineer taking the OCN integration engine from proof of concept to production in **10 Saudi hospitals**, connecting each HIS to NPHIES Clinical Services and the Unified Health Record (UHR).
- Worked on-site with hospital IT and clinical teams to turn admission, lab, pharmacy and radiology workflows into integration requirements, and guided each hospital through NPHIES conformance testing to go-live.
- Provided production support under client SLAs, resolving NPHIES rejections, SSO certificate issues and code-mapping errors with Lean (the NPHIES operator).
- Designed and launched healthcare AI products (coding agent, claim scrubber, clinical notes, CDSS) and multi-agent systems for internal operations; see Key Projects.

Software Engineer **Jul 2023 – Oct 2024**
Saudi Arabian Computer Systems (SACS) *Riyadh, Saudi Arabia*

- Designed Power BI dashboards for Saudization tracking, the PMO office and tender management, integrated with Microsoft Dynamics CRM to report KPIs such as milestones completed.
- Delivered technical training for interns and developed the sacs.sa website for the Al-Khobar branch.

Data Science Fellow **Jan 2023 – Apr 2023**
Launchpad.AI *Remote*

- Implemented satellite-image change detection for disaster response with Siamese Networks, achieving **91.3% IoU** on LEVIR-CD with SARAS-Net after correcting defects in the original repository.

KEY PROJECTS

OCN Healthcare Integration Engine - Ebttikar | *C#, ASP.NET Core 8, HL7 v2, FHIR R4, SAML 2.0*

- Built integration flows for HL7 v2 ADT and FHIR R4 lab, radiology, medication (e-prescribe and dispense) and clinical documents, live in 10 hospitals.
- Implemented SAML 2.0 single sign-on from hospital systems to the NPHIES clinical portal.
- Added log search and Excel traffic reports to the OCN dashboard to speed up production troubleshooting.

OCN Mapping Agent - Ebttikar | *Google ADK, FastAPI, Next.js, SQL Server, OpenTelemetry*

- Built an AI agent mapping hospital service lists to LOINC, NICIP, ACHI, ADA and SNOMED CT: saved mappings and search run first, the agent handles unclear rows, and a person confirms every mapping.

- Measured accuracy with an evaluation set and recorded design decisions in ADRs.
- Added red-team tests for hospital data isolation and sign-in, plus OpenTelemetry tracing.

Onasi AI Platform (ai.onasi.care) - Ebttikar | *RAG, FAISS, Whisper, GPT-4o-mini, Python*

- Launched **8 clinical AI modules**, including a RAG chatbot over revenue-cycle and NPHIES coding documents.
- AI claim scrubber validating ICD-10/ACHI codes, sex and age rules, dates and prices on NPHIES claims, with patient de-identification before any LLM call.
- Bilingual (Arabic/English) SOAP note generator with SNOMED CT checks, and a CDSS API for drug-interaction, allergy, pregnancy, paediatric and renal alerts.

Onasi HIS Prototype and Gap Analysis - Ebttikar | *React, TypeScript*

- Built a clickable HIS/EMR prototype with about 50 screens from registration to billing, with a developer view of the HL7 or FHIR message behind each step.
- Benchmarked Ebttikar's HIS against Epic, JCI, CBAHI, NPHIES, PDPL/NCA, SFDA and ZATCA requirements.

Multi-Agent Systems: Insightschat, Alpha-1, ADK Router - Ebttikar | *LangGraph, Google ADK*

- Built Insightschat (LangGraph) for automated data analysis and reports with built-in quality control, and an ADK system with intent-based routing for ticket analytics, inventory and executive reports.
- Architected Alpha-1, a multi-agent recruitment platform defining agent roles, tool access, decision limits and handoffs.

Edge AI Threat Detection and OIP Ticketing Backend - Ebttikar | *YOLOv8/v10/v11, EdgeCortix SAKURA-II, C#, EF Core 9*

- Fine-tuned YOLOv8, v10 and v11 models for real-time threat detection on the SAKURA-II edge AI accelerator.
- Built the OIP ticketing backend for ATM sites with ASP.NET Core 8, EF Core 9 and Clean Architecture.

TECHNICAL SKILLS

AI & LLM Engineering: Claude (Anthropic), OpenAI GPT-4o, Google ADK, LangGraph, LangChain, LlamaIndex, RAG, FAISS, Whisper, multi-agent systems, prompt engineering, LLM evaluation, red-team testing, OpenTelemetry
Machine Learning: Python, PyTorch, TensorFlow, Keras, Scikit-learn, XGBoost, NLP (BERT, Word2Vec), LoRA fine-tuning, Computer Vision (YOLO, Siamese Networks, Image Segmentation)
Healthcare Standards: HL7 v2, FHIR R4, NPHIES, UHR, SAML 2.0, LOINC, SNOMED CT, ICD-10, ACHI, NICIP, ADA; CBAHI, JCI, PDPL, NCA, SFDA, ZATCA
Backend & Web: C#, ASP.NET Core 8, Entity Framework Core 9, Clean Architecture, REST APIs, SignalR, JWT, FastAPI, React, TypeScript, Next.js
Data & Cloud: SQL Server, MySQL, Power BI (DAX, M Query), Microsoft Dynamics CRM, Docker, Git, CI/CD (GitHub Actions), AWS (EC2, S3, RDS), Azure, Prometheus, Grafana

AI RESIDENCIES AND TRAINING

AI Resident **Sep 2024 – Jun 2025**
Apziva *Remote*

- Built an NLP candidate-ranking system (BERT, Word2Vec, LLMs) with RankNet/LambdaRank re-ranking from human feedback and LoRA fine-tuning of DistilGPT2.
- Built a 3-stage bank targeting system: Bernoulli NB (62% recall) cut call volume by **53% (about 1,500 hours)**, XGBoost (69% F2-score) refined targeting, and K-Means/HAC segmented customers.

Data Science and ML Trainee **Mar 2022 – Aug 2022**
AiCore Accelerator *Remote*

- Built a data-collection pipeline (Selenium, Docker) on AWS EC2 with GitHub Actions CI/CD, S3/RDS storage and Prometheus/Grafana monitoring.
- Built a multimodal model (BERT + ResNet-50) with 85% test accuracy, served via FastAPI on Dockerized AWS EC2.

CERTIFICATIONS AND MEMBERSHIPS

- Claude Certified Architect, Professional – Anthropic (Oct 2026) | Claude Certified Developer, Foundations – Anthropic (Sep 2026), 896/1000
- Agentic AI Nanodegree (Udacity) | McKinsey Forward Program (2024) | IBM Machine Learning
- Microsoft Azure AI Fundamentals (AI-900) | Microsoft Power BI Data Analyst (PL-300) | AWS Certified Cloud Practitioner
- Member, Saudi Council of Engineers