

Esam Mohammed Jaafar

Senior Full-Stack Developer | Generative AI

✉ jfr3sam@gmail.com · 📞 +966 552678806 · 📍 Dhahran, Saudi Arabia · 🔄 jfr3sam · 🌐 jfr3sam.com

PROFESSIONAL SUMMARY

Senior Full-Stack Developer specializing in Generative AI systems — from agentic orchestration and RAG pipelines to scalable APIs and production-grade React interfaces. 5+ years building end-to-end AI-powered platforms with **Python, FastAPI, React/TypeScript, and PostgreSQL**. Shipped **7+ deployed AI/ML systems** including multi-agent pipelines (LangGraph), vector search (pgvector, ChromaDB, FAISS), real-time LLM streaming, and tool-routing architectures. Strong foundation in modular architecture, CI/CD, containerized deployment, and secure coding across **30+ production projects**.

TECHNICAL SKILLS

- **AI/ML & GenAI:** LangGraph (multi-agent orchestration), LangChain.js, OpenAI API, Anthropic API, xAI Grok, Vercel AI SDK, RAG pipelines, tool-use routing, SSE token streaming, prompt engineering, SHAP explainability
- **Vector Databases:** pgvector, ChromaDB, FAISS — semantic chunking, multi-provider embeddings (OpenAI, HuggingFace, Gemini)
- **Backend & APIs:** FastAPI, Flask, Django, Node.js/Express, Next.js API Routes, Celery, Redis
- **Frontend:** React 18/19, Next.js 14–16, TypeScript, Vite, Tailwind CSS, Radix UI/shadcn, Zustand, TanStack Query
- **Databases:** PostgreSQL (advanced — RLS, full-text search, tsvector, migrations), Supabase, Drizzle ORM, Prisma, SQLAlchemy
- **ML/DL:** scikit-learn, XGBoost, PyTorch, YOLOv7, SciBERT, sentence-transformers, GridSearchCV
- **DevOps & Testing:** Docker, Terraform (Azure IaC), GitHub Actions CI/CD, Vitest, Playwright, Jest, pytest, Nginx
- **Mobile:** React Native/Expo SDK 52–54, Flutter

PROFESSIONAL EXPERIENCE

AI Engineer

SDAIA-KFUPM Joint Research Center for AI (JRC-AI) | Dhahran Jun 2024 – Present

- Architect and deploy AI-powered research systems: YOLOv7 real-time defect detection with RTMP streaming, 8-phase SciBERT NLP pipeline spanning 8 universities, RAG-powered Q&A platforms, and ML evaluation tooling
- Build model-serving APIs with FastAPI and Flask, distributed task processing pipelines (Celery + Redis), and containerized services with Docker — powering student analytics, industrial prediction, and research intelligence platforms
- Integrate AI/ML models into production web applications: ensemble ML prediction endpoints (XGBoost, scikit-learn), semantic search with vector embeddings, and LLM-powered generation APIs

Full-Stack AI Platform Developer

Etlag | Dhahran Sep 2025 – Present

- Engineer agentic AI code generation platform: xAI Grok agents with tool-routing (fast/reasoning/title model variants) executing code in E2B sandboxes with real-time SSE streaming, nested agent execution, and multi-model routing infrastructure
- Implement 90K-token context management, credit-based AI consumption tracking, and bilingual admin system (2,000+ Arabic translations) with CI/CD pipelines, Drizzle ORM on PostgreSQL, and comprehensive production testing (Vitest, Playwright)

Freelance AI & Full-Stack Developer

Saudi Arabia 2024 – Present

- Build and integrate AI features across 12+ production applications: pgvector recommendation engines with 4-fallback cascade (Gemini embeddings), real-time voice agents (ElevenLabs), LLM content generation APIs, and AI-assisted document parsing
- Deliver scalable full-stack platforms — React/TypeScript frontends, Python/Node.js backends, PostgreSQL databases with 40+ tables, 113 SQL migrations, webhook-driven payments (Stripe, Moyasar), and bilingual Arabic/English interfaces

AGENTIC AI & GENAI PROJECTS

AI No-Code Platform — Agentic Code Generation

Next.js 15 | xAI Grok | E2B Sandboxes | Drizzle ORM | PostgreSQL

- Built multi-agent tool-routing architecture: specialized AI agents (code generation, reasoning, titling) with sandboxed execution environments (E2B), real-time SSE streaming, and nested agent invocation for complex multi-step tasks

Palette AI — Multi-Agent Design System Generator

Next.js 15 | LangGraph | Anthropic/OpenAI/Google | Figma API | Whisper

- Designed 7-node agentic pipeline (Router → Discovery → Designer → Critic → Refiner → Educator → Synthesizer) generating WCAG-compliant design systems with bidirectional Figma sync, voice input, and 60-page PDF exports

aiLab — Multi-Model LLM Evaluation Platform

Next.js 16 | OpenRouter (100+ models) | SSE Streaming | Supabase

- Built platform to stream and compare 10 concurrent LLMs with real-time TTFT/throughput/cost telemetry, evaluation marketplace with expert verification workflows, and GPT-4o-powered CV extraction

Portfolio RAG Assistant — Retrieval-Augmented Generation

Next.js 15 | LangChain.js | ChromaDB | OpenAI text-embedding-3-small

- Implemented end-to-end RAG: YAML knowledge base → query rewriting → semantic vector retrieval → GPT-4o-mini generation → follow-up suggestion pipeline → usage analytics with session tracking

MoniFi — On-Device LLM Finance App

Expo SDK 54 | llama.rn (LFM2-350M GGUF) | Next.js 15 | PostgreSQL | Supabase

- Built on-device LLM inference for Arabic/English SMS transaction parsing with hybrid AI + regex orchestrator, offline-first Turborepo monorepo (React/TypeScript web + mobile), and push notification pipelines on PostgreSQL

ADDITIONAL AI SYSTEMS

PV-Panels — Real-Time Computer Vision

Django | YOLOv7/PyTorch | FFmpeg | RTMP | Docker

- Solar panel defect detection on live RTMP video streams with CUDA/CPU auto-detection, TracedModel optimization, batch inference, and confidence-scored defect tracking

KFUPM MAP — NLP Research Intelligence

Flask | Celery/Redis | SciBERT | sentence-transformers | Scopus API | D3.js

- 8-phase distributed NLP pipeline: extraction → RapidFuzz matching → SciBERT semantic clustering → GPT validation → canonical selection → VOSviewer network visualization — 8 universities, 400+ affiliation filters

EDUCATION

Bachelor of Science in Computer Science

King Fahd University of Petroleum and Minerals (KFUPM), Dhahran — Aug 2018 – Jan 2024

AWARDS

- **Mawhiba Excellence Medal** — Recognized for exceptional leadership and 600+ volunteer hours

LANGUAGES

- **Arabic:** Native | **English:** Professional