MOHAMED HASSAN

Senior Software Engineer | Backend & AI | .NET | Python | LLM Agents (MCP / RAG) | Azure / AWS

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PROFESSIONAL SUMMARY

Senior software engineer with 4+ years building production AI applications and distributed systems in .NET and Python. Pod lead on an AI platform of 10+ microservices, shipping LLM agents, MCP servers, and RAG pipelines (Claude via LiteLLM, Qdrant) and the guardrails around them, such as an actions layer where the LLM proposes and humans approve. Separately built and operated a multi-tenant SaaS on Azure as its sole engineer, load-tested to 2,000 concurrent users. Seeking a remote senior backend role building production LLM systems.

TECHNICAL SKILLS

AI / LLM: Model Context Protocol (MCP), LLM agents, tool calling, orchestration, Retrieval-Augmented Generation (RAG), embeddings, semantic search, Qdrant vector database, LiteLLM model routing, Anthropic Claude, Bedrock, Prompt Engineering
Languages: C#, Python, TypeScript, JavaScript, SQL, HTML, CSS
Backend: .NET 8/10 (ASP.NET Core, Minimal API, MVC), RESTful APIs, Entity Framework Core, Dapper, FastAPI, MediatR, FluentValidation, SignalR, Hangfire, OpenID Connect (OIDC) / SSO, JWT
Architecture: Clean Architecture, Domain-Driven Design (DDD), CQRS, Event-Driven Architecture, Microservices, Distributed Systems, Multi-Tenancy, Application Security (RBAC, ABAC), Design Patterns (Repository, Mediator, Pipeline)
Messaging & Real-Time: RabbitMQ, SignalR / WebSockets, Web Push (VAPID), n8n workflow automation, Webhooks
Cloud — Azure: Container Apps, Container Registry, Key Vault, Azure SQL, Application Insights, Log Analytics, Azure DevOps (Boards, Repos, Pipelines), Service Principals
Cloud — AWS: ECS / Fargate, Lambda, API Gateway, S3, CloudFront, CodeBuild, Cognito, Secrets Manager, KMS, Bedrock, ECR
Databases: SQL Server, Azure SQL, PostgreSQL, MySQL, Qdrant, Redis / HybridCache, schema migrations (Flyway, EF Core)
Frontend: Angular 18, React 19, RxJS, Tailwind CSS, TanStack Query, Transloco (i18n, RTL), PWA
DevOps & Testing: Docker, CI/CD Pipelines, Observability / Monitoring (Application Insights, Sentry), Cloudflare (R2, CDN), k6 Load Testing, Testcontainers, xUnit, Moq, Jasmine, Unit and Integration Testing, SonarQube, Git (GitHub / Azure Repos)
Practices: Team Leadership (Pod Lead), Release Management, Code Review, Mentoring, System Design, Technical Documentation, Agile / Scrum

PROFESSIONAL EXPERIENCE

Senior Software Engineer — FlairsTech (AIMY Platform) March 2025 – Present

AI platform of 10+ microservices for customer support, sales, recruitment, and QA; 1,200+ users onboarded. Joined as Software Engineer; led the pod from July 2026 on a two-month trial, then promoted to Senior Software Engineer.

- **Lead and mentor a pod of 3 engineers** owning AiMY QA and Connect: sprint planning, estimation, stakeholder triage, and code review (**160+ PRs reviewed** since July 2026). The pod delivered **280+ tickets** at ~25 per sprint with a 5% reopen rate.
- **Architected an AI actions layer and Product Insights**: LLM-classified facts, SQL-ranked insights, and human-approved actions on a six-state machine with audit trail and Hangfire undo. The LLM narrates; it never changes state.
- **Built the Ask AiMY analytics chat agent** (FastAPI, Claude via LiteLLM) with full ticket context, interaction-scoped answers, guards against fabricated data, and number parity with the dashboard.
- Developed **MCP (Model Context Protocol) servers** integrating Claude with internal AI agents for knowledge retrieval, sales enrichment, and recruitment workflows.
- **Engineered config-driven knowledge sync** for Freshdesk and TeamSupport (field catalog, mapping, filters), added context-tag reranking in **Qdrant**, and summarized tickets over the 8,000-token embedding limit instead of failing.
- **Unified voice-call persistence across Voice, Connect, and QA**: one post-call path storing transcripts for every call, call recordings via presigned S3 URLs, and race-safe session upserts enforced by unique indexes.
- Designed and implemented a centralized **fine-grained ABAC / RBAC authorization system** serving **1,000+ employees across 6+ applications**, with matching .NET and Python middleware; later migrated access grants to entity keys across 4 services and closed a cross-organization scoping gap.
- **Led the AiMY QA 2.0 release** across 6 repositories (.NET, React, Python) and coordinated platform releases spanning up to **14 repositories** plus **20+ production hotfixes**; authored the team's branching and release workflow.
- Authored a **custom Mediator library** (pipeline behaviors for cross-cutting concerns) to replace MediatR after its 2025 commercial license change, and **WarrenMQ**, a .NET 8 RabbitMQ abstraction on NuGet; both reused across microservices.

- Automated bidirectional CRM integration (Salesforce, Zendesk, Freshdesk, Jira) with **9 production n8n workflows**, unified schema transformation, and loop prevention.
- **Migrated 8+ containerized applications on AWS** across accounts and regions (Cognito, Secrets Manager, KMS, ECS, Bedrock).
- Created **real-time notification infrastructure** (SignalR, .NET, React) and a **candidate job-matching engine** using Qdrant vector similarity with reranking.
- Closed **460+ Jira issues** and merged **590+ pull requests** across **30+ repositories**; authored 21 Confluence pages covering architecture, ADRs, and runbooks.

Senior Full-Stack Engineer (Freelance) — Ansaq November 2025 – October 2026

Ansaq Hospitality, a Riyadh-based B2B SaaS for corporate food service, catering, and hospitality ordering. Sole engineer: architecture, backend, frontend, Azure infrastructure, CI/CD, and production.

- **Architected and shipped a multi-tenant SaaS on .NET 10, Angular 18, and Azure Container Apps**: consolidated a legacy 21-project codebase into 4 Clean Architecture projects (CQRS, DDD, zero circular references), then grew it to **240+ REST endpoints and 260+ MediatR handlers** serving 6 roles, fully bilingual EN/AR with RTL.
- **Raised the concurrent-user ceiling from ~50 to 2,000+ and proved it under load**: removed N+1 queries, moved 65 read handlers to Dapper, and added HybridCache with stampede protection; a 12-scenario k6 suite held **2,000 concurrent users at a flat ~34 ms server p95** on one replica, and control experiments traced the remaining limits to configuration, not code.
- **Implemented per-organization SSO** (OIDC with just-in-time user provisioning), branded sign-in pages and emails for each organization, and refresh tokens with persistent sign-in, on fail-closed defaults: rate limiting, account lockout, Key Vault-rotated JWT keys, and PII masking.
- **Shipped real-time delivery alerts**: SignalR order tracking that resyncs after connection gaps, plus Web Push (VAPID, service worker, installable PWA including iPhone) so delivery staff get new-order and VIP alerts with the app closed; orders route to a building, floor, and room hierarchy with per-room QR ordering.
- **Designed the inventory and recipe engine**: stock health and low-stock thresholds; receiving with batch, expiry, and unit price; adjustments, waste, and count sheets; recipes that deduct stock on every order, unit conversions by kind, and how many orders current stock covers.
- **Hardened tenant isolation and concurrency**: store-level scoping on every inventory, recipe, and unit action; vendor-operated stores serving several organizations behind approval-gated linking; atomic UPDATE…OUTPUT numbering, RowVersion concurrency on orders, and a unique filtered index for one active cart per user.
- **Owned Azure infrastructure end to end**: migrated the platform from a legacy Azure tenant to the new AnsaqTech directory and Azure DevOps organization, with separate production (UAE North) and test environments; build-once Azure Pipelines with Service Principal secrets, manual production approval, and a /health gate; media moved from SQL to Cloudflare R2 (presigned uploads, CDN); ~20% lower cost with scale-to-zero.
- **Grew the Testcontainers SQL Server integration suite from 561 to 1,260+ tests**, with a custom CommandCountInterceptor that fails CI on N+1 regressions; shipped **560+ commits and 135+ pull requests**, and wrote bilingual release notes.

Full-Stack Developer (.NET / Angular) — IT-PILLERS April 2022 – February 2025

Enterprise business applications on .NET and Angular, built in Agile sprints.

- Shipped **15+ features** across full-stack .NET and Angular applications, planning sprints with PMs in Azure Boards.
- **Refactored legacy codebase by removing 2,500+ lines and 8+ files**, improving performance and maintainability without regressions.
- Integrated **Azure Active Directory** for secure authentication and access control across business applications.
- Built a **dynamic templating system** for email, SMS, and notifications, reducing content update effort by **40%**.

KEY PROJECTS

Yaqouti Workflow & Asset Management (.NET, Angular) — CRM system for organizations to manage work through configurable dynamic workflows, integrated with a matching asset-management module.

Scrum Poker Tool (.NET, Angular, SignalR) — Real-time scrum estimation tool using WebSockets for collaborative ticket-point estimation across distributed teams.

EDUCATION

Bachelor of Computer Science 2017 – 2021

New Cairo Academy (NCA), Cairo, Egypt

Languages: Arabic (Native), English (Professional working proficiency)