

# Mohamed Hossam

Software Engineer

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## Summary

Backend Developer specializing in Python with production experience building secure, scalable web systems using Django and FastAPI. Delivered a course platform serving 10,000+ students with session-based access control and a stateless OCR microservice designed for high-throughput workloads. Expert in Service Layer Architecture, PostgreSQL schema design, Docker-based deployments, and RESTful API development. Actively seeking a junior or internship role where I can contribute immediately.

## Technical Skills

**Backend & Architecture:** Django, Django REST Framework, FastAPI, Service Layer Architecture, System Design, RESTful APIs, Asynchronous Programming.

**Security & Auth:** JWT/OAuth2, Session-based Auth, RBAC, CSRF/XSS Mitigation, Signed URLs (Cloudinary), Resource Hardening.

**Databases:** PostgreSQL, MySQL, Redis, Schema Design.

**DevOps & Tools:** Docker (Multi-stage builds), Nginx, Gunicorn, Uvicorn, Linux CLI, Git, Postman, CI/CD.

**Languages:** Python (Expert), JavaScript (ES6+), C++ (Expert), SQL.

## Education

**Nahda University, Beni Suef**

*Expected 2028*

B.Sc. in Computer Science — **GPA: 3.23/4.0**

## Experience

**Coach, Mentor & Problem Setter**

*2025 – Present*

*ICPC Nahda University Community*

- Mentored and coached 623+ community members in competitive programming fundamentals, covering algorithms, data structures, problem-solving strategies, and ICPC-style contest preparation.
- Designed and delivered structured training sessions that measurably improved participants' analytical thinking and competitive ranking across Codeforces, LeetCode, and regional contests.
- Authored original competitive programming problems for internal training contests and practice sheets, ensuring problems aligned with ICPC difficulty standards.
- Conducted one-on-one debugging sessions, editorial walkthroughs, and contest debriefs to accelerate individual growth and problem-solving fluency.
- Played a key role in building a strong technical culture within the university's competitive programming community, contributing to its growth and visibility.

## Technical Projects

**CourseHub – Scalable Course Platform** — Django, PostgreSQL, HTMX, Cloudinary

*2025 – Present*

- Designed and developed a production-ready course platform capable of serving 10,000+ students with secure, session-based access control.
- Integrated Cloudinary CDN for scalable media delivery, including private video streaming with signed URLs, adaptive bitrate streaming, and automatic image optimization (WebP/AVIF).
- Built a layered backend architecture (Views, Service Layer, ORM) to isolate business logic and improve maintainability.
- Implemented passwordless email authentication using UUID-based verification tokens and OTP with expiration handling.
- Designed a normalized PostgreSQL schema with indexed lookup fields to optimize concurrent access.
- Containerized the application using Docker and deployed with Gunicorn behind Nginx.

**FastAPI OCR Microservice** — FastAPI, Tesseract, Docker, Pydantic v2

*2026 – Present*

- Engineered a high-performance, stateless OCR microservice using non-blocking I/O for maximum throughput.
- Implemented resource hardening including a 10MB file size limit and 30-second request timeout.
- Developed structured JSON logging and health/readiness probes for production observability.
- Architected a containerized stack using Docker Compose and Nginx, ensuring horizontal scalability and environment parity.

## Clinic Management System (CMS) — Django, PostgreSQL

2025 – Present

- Engineered a comprehensive web-based dental practice management system for handling patients, visits, payments, and medical records in a unified workflow.
- Implemented secure Role-Based Access Control (RBAC) using Django authentication to restrict access to sensitive healthcare data.
- Designed a normalized relational PostgreSQL schema supporting patients, visits, payments, and X-ray records with optimized data relationships.
- Built end-to-end patient lifecycle management including registration, visit scheduling, treatment documentation, and payment tracking.
- Developed automated outstanding balance calculations and real-time payment status updates to improve financial transparency.
- Integrated secure medical image handling with organized X-ray uploads, visit linking, and protected media storage.

## Achievements & Certifications

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- **Certification:** ALX Professional Foundations.
- **Certification:** ALX Ventures Freelance Academy.
- **Certification:** ICPC ECPC Qualifications – Honorable Mention.
- Ranked 20th in Constructor Open Cup 2026 – annual international programming competition organized by Constructor University and JetBrains Foundation.
- Solved 1,400+ algorithmic problems across Codeforces, LeetCode, and VJudge.
- Achieved Expert rating on Codeforces.

## Additional Information

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**Languages:** Arabic (Native), English (Fluent – B2).