

FATHY MOHAMED

Software Engineering & Backend Developer

Cairo, Egypt

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OBJECTIVE

A motivated and detail-oriented software engineering graduate, passionate about backend development and problem-solving. Focused on building efficient and scalable systems, and eager to grow and contribute within a professional backend development environment.

EDUCATION

Mansoura University

Bachelor of Computer and Information Sciences – Software Engineering

Oct. 2021 – July 2025

Mansoura, Egypt

TECHNICAL SKILLS

Languages: JavaScript (ES6+), TypeScript, SQL; Familiar: C#, C++

Backend & Architecture: Node.js, Express.js, NestJS; Modular Monolith & Layered Architecture, Clean Architecture, Repository-Service-Controller Pattern, Dependency Injection (DI), SOLID Principles, Design Patterns (Singleton, Repository)

Databases & ORMs: MongoDB, MySQL, Redis, Firebase Realtime Database, Supabase; Mongoose, Sequelize, Prisma

API, Validation & Security: RESTful APIs, DTOs, API Versioning, Filtering, Pagination, Postman, Swagger/OpenAPI, JWT, Role-Based Authorization (RBAC), Zod, express-validator, Rate Limiting

Version Control & Deployment: Git, GitHub, VPS, Railway

Programming Concepts: OOP, Separation of Concerns, DRY, Async Programming, Error Handling

PROJECTS

Ibram AI — Legal AI Platform (Backend) (Freelance Project)

Node.js, Express 5, TypeScript, Supabase (PostgreSQL + pgvector), OpenRouter (GPT-4o), Zod, Pino, Helmet 2026

- Designed a modular Clean Architecture RESTful API with layered service/controller/DTO pattern, covering AI, auth, feedback, payments, plans, and subscriptions modules with strict Zod validation.
- Built a Retrieval-Augmented Generation (RAG) pipeline for legal Q&A: embeddings via OpenRouter, vector search with Supabase pgvector, and GPT-4o completions in multiple modes (DIRECT / ANALYSIS / REFUSE).
- Implemented an LRU in-memory embedding cache to reduce redundant OpenAI API calls, optimizing latency for repeated queries.
- Developed plan-aware JWT authentication and role-based access control middleware; payments module uses a Factory Pattern and is ready for final integration.
- Deployed the backend on a VPS with live endpoints, production-grade middleware (Helmet, CORS, compression, logging), and code quality enforcement via ESLint, Prettier, and Husky.

Express TypeScript API Template – Clean Architecture Backend Boilerplate

Node.js, Express.js, TypeScript, MongoDB, Prisma, Zod, tsyringe, JWT

2025

- Architected a **scalable, production-ready REST API template** following Clean Architecture principles.
- Designed a **database-agnostic repository layer**, allowing seamless replacement of underlying database implementations without impacting services or controllers.
- Built a reusable **BaseRepository abstraction** to standardize CRUD logic across modules.
- Implemented **Dependency Injection (tsyringe)** for loose coupling and maintainability.
- Integrated **Zod validation**, centralized error handling, JWT-ready structure, and i18n (EN/AR).
- Established a **code quality and Git workflow** using ESLint, Prettier, Husky, lint-staged, and enforced **Conventional Commits**.

Ecommerce RESTful API

Node.js, Express.js, MongoDB, Mongoose, Redis, JWT, Stripe

2025

- Developed a modular **E-commerce API** using feature-based architecture.
- Created reusable **Factory Handlers** and a configurable **Rate Limiter Factory**.
- Implemented **JWT authentication** with role-based access control.

- Integrated **Redis caching** for high-traffic product queries.
- Implemented **Stripe checkout with webhook-based order processing**.
- Built core commerce modules: cart, wishlist, coupons, reviews, orders, and multi-address support.

Obstructive Sleep Apnea Monitoring System – Backend API (Graduation Project)

Node.js, Express.js, MySQL, Sequelize, Firebase, Socket.IO, Redis, JWT, Swagger

Oct 2024 – May 2025

- Designed a **real-time backend architecture** for monitoring Obstructive Sleep Apnea (OSA) patients.
- Developed secure **role-based authentication and authorization** using JWT with Redis token blacklisting.
- Engineered **real-time vitals streaming** using Firebase Realtime Database and Socket.IO for instant doctor notifications.
- Integrated AI-driven analysis for automated health reports and treatment recommendations.
- Applied layered architecture (Repository → Service → Controller) with centralized error handling and Swagger API documentation.

LANGUAGES

Arabic	Native
English	Intermediate