

Muhammad El Sayed

Software Engineer - Backend

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PROFESSIONAL SUMMARY

Software Engineer with a strong foundation in system design and high-performance data processing. Proven track record in optimizing database throughput and architecting scalable APIs using Python and Node.js. Focused on solving complex engineering challenges through iterative optimization, evidenced by advanced work in log ingestion systems, polyglot architectures, and geospatial data pipelines.

PROFESSIONAL EXPERIENCE

Software Engineer (Reserve Officer)

05/2024 – Present

Egyptian Armed Forces

Egypt

- Engineer complex PL/SQL stored procedures and optimize heavy SQL queries within an Oracle Database environment to ensure data consistency for high-volume records.
- Maintain proficiency in modern backend stacks (Node.js, C++) by architecting high-performance open-source systems during off-duty hours.

Software Engineer

09/2023 – 05/2024

Sindion Technology Ltd

Egypt

- Optimized database queries through strategic use of Django ORM methods and PostgreSQL indexing, cutting query count by 92.83% and improving API response times by 65.45%, decreasing average latency
- Architected a geospatial data pipeline using PostGIS for storing and querying MultiPolygon geometries, designing RESTful API endpoints to transform PostGIS spatial data into GeoJSON format for real-time visualization on Google Maps, enabling interactive property boundary mapping.
- Established technical documentation system using OpenAPI (Swagger), Sphinx, and Read the Docs, creating 20+ interactive API specifications with request/response schemas and authentication flows.

Software Engineer Intern

07/2022 – 10/2022

Sindion Technology Ltd

Egypt

- Refactored legacy Django codebase to improve maintainability, extracting repetitive logic into reusable functions and adhering to DRY principles and PEP 8 conventions.
- Resolved critical N+1 query performance bottleneck in Django REST Framework views by implementing ORM optimization techniques, eliminating 70% of redundant database queries and improving response times

PROJECTS

High-Throughput Log Ingestion | *Node.js, C++, ClickHouse, Redis, Docker, gRPC, Jest* | [GitHub](#) 10/2025 – 01/2026

- Engineered a high-throughput log ingestion system, achieving 2.8x performance improvement over baseline through iterative optimization using Node.js cluster mode and Redis streams.
- Implemented onion architecture with strict domain-application-infrastructure separation, and developed polyglot API layer with HTTP/1.1, HTTP/2, and gRPC using Protocol Buffers to reduce payload size by 54% and increase parsing throughput by 9.4x.
- Built an event-driven data pipeline using Redis streams for asynchronous batch processing and ClickHouse.
- Integrated experimental vector semantic search using OpenAI embeddings and ClickHouse cosine similarity queries for natural language anomaly detection
- Develop high-performance C++ component to replace Node.js workers, increasing throughput by 2.7x while reducing peak CPU load by 75% and memory footprint by 80% through efficient memory management

Social Network API | *Django, Django REST Framework, PostgreSQL, Redis, Docker* | [GitHub](#) 11/2025 – 01/2026

- Architected modular backend across 6 specialized Django apps with 20+ API endpoints handling user management, content CRUD operations, and social graph relationships with JWT-based authentication.
- Designed PostgreSQL database schema leveraging JSONB fields for flexible post metadata storage, optimizing queries through Django ORM with `select_related` and `prefetch_related` techniques.
- Containerized application using Docker, configured SSL certificates for secure HTTPS communication

EDUCATION

Alexandria University

Bachelor of Science in Computer Engineering

Alexandria, Egypt

09/2018 – 07/2023

TECHNICAL SKILLS

Languages: JavaScript (Node.js), Python, SQL, PL/SQL, C/C++, Java

Frameworks & Databases: Fastify, Express.js, Django, ClickHouse, PostgreSQL, MySQL, MongoDB, Redis

Tools & Infrastructure: Docker, Git, Linux, Protocol Buffers, OpenAPI, gRPC, Unit Testing