

Muhammad El Sayed

Software Engineer - Backend

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PROFESSIONAL SUMMARY

Software engineer who reduced database query counts by 92.83% and improved API response times by 65.45% in production. Designed and built a high-throughput log ingestion platform (2.8x baseline performance) using Node.js, Redis Streams, ClickHouse, and C++. Specialized in system design, database optimization, API architecture, and event-driven distributed systems.

PROFESSIONAL EXPERIENCE

Software Engineer (Reserve Officer — Mandatory Military Service) 05/2024 – 04/2026
Egyptian Armed Forces Egypt

- Ensured data consistency across high-volume military records by engineering and optimizing complex PL/SQL stored procedures and SQL queries, handling 100K+ records under strict reliability requirements.

Software Engineer 09/2023 – 05/2024
Sindion Technology Ltd Egypt

- Reduced API response times by 65.45% and eliminated 92.83% of redundant database queries by implementing Django ORM optimizations and PostgreSQL composite indexing on the production application, directly improving the end-user experience for the property management platform.
- Enabled real-time interactive property boundary visualization on Google Maps by architecting a geospatial data pipeline using PostGIS (MultiPolygon geometries) and designing RESTful API endpoints that transform spatial data into GeoJSON format for the frontend mapping layer.
- Created 20+ interactive API specifications with full request/response schemas and authentication flows by establishing a documentation system using OpenAPI (Swagger), Sphinx, and Read the Docs.

Software Engineer Intern 07/2022 – 10/2022
Sindion Technology Ltd Egypt

- Improved codebase maintainability by refactoring legacy Django modules — extracting repetitive logic into reusable utility functions following DRY principles, reducing code duplication across the application layer.
- Eliminated 70% of redundant database queries and measurably improved API response times by identifying and resolving a critical N+1 query bottleneck in Django REST Framework views.

PROJECTS

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

- Achieved 2.8x throughput improvement (6,071 → 17,255 req/s) through multi-stage optimization: Node.js cluster mode for multi-core parallelism, worker threads for CPU-bound validation, and Redis Streams as a durable asynchronous buffer decoupling ingestion from processing.
- Reduced network payload size by 54% and increased parsing throughput by 9.4x by developing a polyglot API layer supporting HTTP/1.1, HTTP/2, and gRPC with Protocol Buffers, routed through NGINX for SSL termination, load balancing, and protocol-based request routing.
- Increased ingestion consumer throughput by 2.7x, reduced peak CPU load by 75%, and cut memory usage by 80% by rewriting the consumer in C++, replacing Node.js workers with native threads.
- Instrumented the full pipeline with OpenTelemetry distributed tracing and Jaeger visualization, providing end-to-end request visibility from API intake through Redis Streams to ClickHouse batch insertion.
- Implemented log archival to AWS S3 with lifecycle policies for cost-optimized long-term storage, and deployed the full system in Docker with GitHub Actions CI/CD.
- Designed with onion architecture (domain → application → infrastructure separation), enabling the C++ consumer rewrite without modifying any business logic, and integrated experimental vector semantic search using OpenAI embeddings for natural language log anomaly detection.

EDUCATION

Alexandria University Egypt
Bachelor of Science in Computer Engineering 09/2018 – 07/2023

TECHNICAL SKILLS

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

Backend & Databases: Fastify, Django/DRF, PostgreSQL, ClickHouse, Redis (Streams), Oracle, gRPC, NGINX

Architecture & Patterns: Event-Driven Architecture, Onion Architecture, REST API Design, Message Queues

Infrastructure & Ops: Docker, AWS (EC2, S3), Git, GitHub Actions (CI/CD), OpenTelemetry, Jaeger, Linux