Ibrahim Mohamed

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EDUCATION

Ain Shams University   Cairo, Egypt
Bachelor of Computer Science   *June 2026 (Expected)*
- **Concentration:** Computer Systems (Distributed Systems, Cloud Computing, Backend Development).
- **Courses:** Distributed Systems, Operating Systems, Networking, Design Pattern, Data Structures & Algorithms, Computer Architecture, OOP, Database Systems, Artificial Intelligence, Machine Learning, Computer Vision.

EXPERIENCE

Founding Software Engineer   Oct. 2025 – Present
Pirates Company · Cairo, Egypt
- Own core backend services for Ahoy ERP platform using Python, FastAPI, and PostgreSQL.
- Architected e-commerce Orders microservice with independent database integrated with ERP via async messaging.
- Designed PostgreSQL schemas, transactional workflows, and REST APIs with comprehensive test coverage.
- Deploy and operate on AWS (EC2, RDS, S3) with CI/CD via GitHub Actions.

PROJECTS

Flume | Go, TCP, Pub/Sub | [GitHub](#)   Jan. 2026 – Fab. 2026
- Built Kafka-like message broker with append-only log storage, CRC32 integrity, and sparse indexing.
- Implemented custom wire protocol (PRODUCE/FETCH) over TCP with binary serialization.
- Designed multi-partition topics with key-based routing using FNV-1a hashing.

Raft Key-Value Store | Go, gRPC, TCP | [GitHub](#)   Dec. 2025 – Jan. 2026
- Implemented fault-tolerant KV store with Raft consensus: leader election, log matching, and linearizable writes.
- Built log replication across 3-node cluster with crash recovery and network partition handling.
- Added log compaction via snapshots to bound storage growth.

FOS Educational OS | C, x86, QEMU, GDB | [GitHub](#)   Sept. 2025– Oct. 2025
- Implemented kernel memory management: page allocator, kheap, malloc/kfree, and fault handler.
- Built process scheduler and virtual memory subsystem with demand paging.
- Modernized dev tooling: VS Code/QEMU workflow with one-line setup script.

Quizify | Python, AWS Lambda, Terraform, Gemini AI | [GitHub](#) | [Live](#)   Mon. 2024 – Sept. 2025
- Built serverless app generating quiz questions from lecture notes using Gemini AI.
- Deployed on AWS (Lambda, S3, DynamoDB, API Gateway, CloudFront) with Terraform IaC.
- Open-sourced for students with one-command deployment scripts.

Smart Cloud Optimizer | Python, AWS, Prophet, OR-Tools | [GitHub](#)   Sep. 2025– June. 2026
- Built AI module recommending AWS setups for new users via structured prompts to LLMs.
- Implemented ML forecasting (Prophet/SARIMAX) and cost optimization (OR-Tools/PuLP).
- Integrated AWS APIs (Cost Explorer, CloudWatch, Pricing) to analyze usage and cut costs.

TECHNICAL SKILLS

Programming Languages: Python, Go, TypeScript, SQL, Rust, C/C++.
Databases: PostgreSQL, MySQL, Redis, MongoDB, Firebase.
Infrastructure: AWS, Docker, Kubernetes, Terraform, Kafka, Prometheus, Grafana, Linux, Bash, Git, GitHub Actions.
Frameworks: FastAPI, Flask, Gin, NestJS, Next.js, Axum, React, gRPC.
Concepts: System Design, Microservices, Stream Processing, Observability, SRE, CI/CD, Testing, SOLID Principles.
Languages: Arabic (Native), English (Intermediate).

EXTRA-CURRICULAR ACTIVITIES

acmASCIS Student Activity   Dec. 2023 – Jan. 2025
Ain Shams University   *Cairo, Egypt*
- Completed Levels 1-2 in competitive programming: optimization, complexity analysis, algorithms.