Khaled Bahaaeldin Ahmed

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github.com/Khaledbahaaeldin | Military Service: Exempted

Professional Summary

Software Engineer and AIU graduate specializing in production AI systems and robotics integration. Architect containerized, scalable platforms (Mindex IO — 85K+ LOC, 295 endpoints), build ROS-based autonomous navigation stacks (Univ. of Louisville), and mentor the next CS cohort as a Teaching Assistant at AIU. Bridges physical AI hardware and cloud-native infrastructure with Python, C++, and Linux.

Education

Alamein International University — BSc. Computer Science, Software Engineering Sep 2020 – Jun 2025

- **Relevant Courses:** Advanced Software Engineering, System Design & Analysis, Algorithms, Information Systems Security, Data Structures, Web Programming, Machine Learning, Artificial Intelligence.

Professional Experience

Mindex IO — Remote Jan 2025 – Present
Lead Software Engineer

- Lead end-to-end architecture of a production AI platform; own an 85,000+ LOC TypeScript/TSX codebase across an agile team.
- Architected a containerized backend (Docker Compose, 6 services) serving 295 API endpoints across 29 router modules with high availability.
- Designed asynchronous task queues (Celery, Redis) and a dual-DB layer (PostgreSQL, ChromaDB) for intensive AI workloads and real-time state sync.
- Engineered fault-tolerant integrations for third-party APIs and multimodal ingestion, hardened for real-world deployment.

Alamein International University (AIU) — Alexandria, Egypt Jan 2026 – Present
Teaching Assistant (Part-Time) — Faculty of Computer Science & Engineering

- TA for **AIE418 — Selected Topics in AI 2** and **Web Programming**; lead online discussion sessions on LLMs, RAG, agentic architectures, and modern full-stack development.
- Design grading rubrics and standardized assessment workflows; evaluate submissions and deliver structured feedback aligned with AIU's official grade-sheet format.
- Mentor undergraduates through full-stack projects (React, Next.js, REST APIs) via code review and 1:1 guidance, bridging coursework with industry-grade practice.

Virginia Tech University — New Alamein City, Egypt Jan 2023 – May 2023
Intern — Software Development

- Engineered *UniRoom*, a dormitory booking web app for AIU — cut booking processing time by 70% and lifted user satisfaction by 50%.
- Delivered real-time availability, online booking, and payment integration with a 5-person cross-cultural team (Blacksburg ↔ Alamein).

Louisville Automation & Robotics Research Institute (LARRI), Univ. of Louisville — KY, USA Jun 2022 – Sep 2022
Intern — Robotics and Autonomous Systems

- Deployed 4 applications for the TIAGo mobile manipulator, improving autonomous navigation and spatial mapping efficiency by 15%.
- Built 10+ custom ROS nodes (C++, Python) establishing low-latency pipelines between physical sensors and hardware controllers.
- Implemented autonomous path planning (MoveIt!) and real-time 3D environment reconstruction (OctoMap) for safe operation in unpredictable spaces.

Key Projects

LiteraryHub — AI-Powered Arabic Literature Platform | *Graduation Project · Grade: A+* Sep 2024 – Jun 2025

- Co-led a team of 4 as **Application Services Team Lead**; owned audio streaming, author upload pipeline, integration

tests, and QA sign-off across 5 GitHub repos.

- Engineered audiobook streaming (MongoDB GridFS + Node.js) and the end-to-end author pipeline integrating an AI restricted-topics detection model.
- Integrated 5 AI models: SDXL Turbo (covers), JAIS 13B (Arabic restricted-topic detection), T5-Small (summarization, Rouge F1 0.95), MongoDB vector search (plagiarism), gTTS (audiobooks). *Survey (n=12): 92% positive sentiment, 94% recommend.*

Microservices Translation & Summarization Platform | *Cloud-Native* Feb 2024 – Jun 2024

- Architected a cloud-native EN↔AR translation and summarization platform across 7 Docker microservices with dark-mode UI and analytics dashboard.
- Stack: Python, Flask, NLTK, Google Translate API, SuperTokens (auth), MongoDB Atlas.

Emberbyte — Privacy-First Android Data-Usage Monitor | *Open Source (GPL-3.0) · Creator & Maintainer* Oct 2026 – Present

github.com/Khaledbahaaeldin/Emberbyte | emberbyte-site.vercel.app

- Created and maintain a free Android app that measures mobile and Wi-Fi data per app entirely on-device, forecasts when a data plan runs out, and requests no `INTERNET` permission. Kotlin, Jetpack Compose (Material 3 Expressive), Room, Glance widgets; 4-module architecture, 1,000+ automated tests.
- Built the plan engine (billing cycles, per-SIM binding, add-on packs, rollover, run-out forecasts, threshold alerts), AES-256-GCM/Argon2id encrypted backups, CSV/JSON export, 12 themes, home-screen widgets and accessibility support (TalkBack, RTL).
- Set up a GitHub Actions release pipeline: tests and lint on every push, a reproducible-build check (builds twice and compares the APKs), CI signing with build provenance and tag-driven releases; the build also passed F-Droid's own build pipeline.
- Specified and directed AI coding assistants (Gemini, Claude) through written specs, test-first tasks and independent audits. Shipped v1.0 in three weeks; 140+ downloads in the first two weeks via GitHub Releases, Orion Store and Obtainium.

Skills & Technologies

Languages: Python, C++, TypeScript, JavaScript, SQL, Java | **Robotics & Infra:** ROS, MoveIt!, OctoMap, Docker, Linux (Arch, Pop!_OS, Debian), IoT

Backend & AI: FastAPI, Node.js, Express, RAG, LangChain, LangGraph, PyTorch, HuggingFace, Computer Vision (SDXL), NLP | **Frontend:** Next.js, React, Tailwind, REST, WebSockets

Databases: PostgreSQL, MongoDB, Redis, ChromaDB, pgvector | **Spoken:** Arabic (Native), English (Fluent), French (Basic)

Extracurricular Activities

- **Judge, AI Olympiad** (Sep 2022 – Sep 2023) — Evaluated 20+ AI projects with structured technical feedback.
- **Organizer, IEEE Smart Mobility Conference, AIU** (Nov 2023) — Coordinated logistics for 200+ attendees with a 15-volunteer team.
- **HR Member, AIU ECPC** (Mar 2022) — Screened 100+ resumes and conducted 30 candidate interviews.