Saleh Ahmed

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Education

Cairo University — Cairo, Egypt

Bachelor of Engineering (B.Eng.), Computer Engineering — GPA: 3.8 — *Sep 2022 – June 2027*

- Related coursework: OOP, Data Structures, Algorithms, Databases, Software Engineering, Operating Systems, Computer Architecture, Image Processing, Neural Networks.

Experience

Open Source Contributor — Feb 2026 – April 2026

neutralinojs — *Remote*

- **PR-402:** Fixed a critical bug in the CLI that silently corrupted user-configured timeout values.
- **PR-468:** Authored missing docs for the `--embed-resources` build flag enabling single-file binary distribution.

Front-End Engineering Intern — July 2025 – Sep 2025

Siemens EDA — *Cairo, Egypt*

- Migrated a legacy **Python Qt/C++** desktop tool to a modern **Electron** + **React (TypeScript)** application
- Translated professional **Figma designs** into **responsive**, **pixel-perfect** React components
- Implemented an **integrated terminal component** supporting **TCL, Python**, and **Bash** execution
- Architected secure **Main/Renderer** process communication via **Electron IPC** and **preload scripts**, enabling the React frontend to invoke **native OS APIs** including file system access via **Node.js fs & path** modules
- Managed application-wide state using **Redux Toolkit**, organizing complex **cross-cutting concerns** into a **modular slice architecture** consumed throughout the application

Mobile Application Development Intern — Feb 2025 – May 2025

Nice Deer — *Cairo, Egypt*

- Developed **high-performance iOS and Android apps** using **React Native** and **Expo**, translating **UI/UX designs** into polished, **native-like interfaces**
- Implemented secure **authentication** supporting **Face ID** and standard login, utilizing **Expo Secure Storage** for robust **access and refresh token** management

Projects

X-Inspired Social App | *React Native, Expo, TypeScript, React Query, Zustand, Socket.io*

- Led a 5-member team building a social app using **Domain-Driven Design** and **Container-Presentation Pattern**
- Achieved **instant UI feedback** through **optimistic updates** and precise server-state synchronization
- Built a Notifications System with real-time in-app events via **Socket.io** and **Expo push notifications**
- Established **CI/CD pipelines** via **GitHub Actions** for automated **EAS** builds and **code quality** checks
- Maintained **90%+ code coverage** by writing comprehensive **unit tests** using **Jest** and **React Testing Library**

Audio DSP Controller App | *React Native, TypeScript, Kotlin, Native Modules, USB HID* | *Freelance*

- Built a **React Native** application to fine-tune connected headphone audio via **real-time control** of external **DAC/Amp hardware**, featuring **parametric EQ configuration** and **live frequency-response visualization**
- Designed a **custom Native Module API** bridging **TypeScript** business logic and **Kotlin** USB HID implementation, applying **interface design principles** to create a clear, type-safe boundary between two **language runtimes**

Search Engine | *Java, Multithreading, Jsoup, CrawlerCommons, JDBC, SQLite*

- Developed a scalable, **multi-threaded** web crawler in **Java** capable of processing **6,000+** web pages per minute
- Established **concurrency** control with **atomic** counters, **locks**, and **thread-safe** collections for parallel crawling
- Designed **SQLite** database, enabling crawler recovery and structured data for **indexing/ranking pipelines**
- Optimized database **performance** using **batch** inserts, achieving **80%** faster write speeds than single-row inserts

3D Horror Survival Game | *C++, OpenGL, GLSL, CMake*

- Built a first-person horror game entirely in **C++** around a custom **Entity-Component-System** design pattern
- Implemented a 5-state **FSM-driven** enemy AI with line-of-sight **raycasting** and **A* grid pathfinding**
- Built a **rendering engine** with **PBR lighting**, **shadow mapping**, and **skeletal animation** using **GLSL shaders**

Machine Fault Recognition System | *Python, PyTorch, Librosa, NumPy, Kaggle*

- Classified industrial machine audio into **6** fault/normal states across **56K+** recordings, achieving **90.4% accuracy**
- Engineered **3-channel Log-Mel + delta + delta-delta** spectrograms for **CNN-based** fault recognition
- Built **leakage-free** stratified splits with 50-file temporal gaps to prevent session-correlation leakage
- Mitigated **5:1 class imbalance** via **WeightedRandomSampler** and **Focal Loss** ($\gamma = 2$) for hard-example emphasis

OS Simulator | *C, Linux, Scheduling Algorithms, Memory Management, IPC*

- Developed a **CPU scheduler** in **C** implementing **3** core algorithms: **HPF**, **SRTN**, and **RR**.
- Designed **multi-process** architecture of **4** interconnected components using **message queues** and **shared memory**.
- Built a process control block **(PCB)** tracking process states, execution time, waiting time, and turnaround time.
- Architected buddy memory allocator managing 1024-byte memory with dynamic allocation for 256-byte processes.

CRM Mobile App | *Kotlin, XML, Retrofit, OkHttp, JWT, Node.js/Express*

- Built the app using **Kotlin** and **XML** with **MVVM architecture**, ensuring a maintainable and scalable codebase.
- Developed 15+ **REST API** endpoints using Node.js and integrated them into the app using Retrofit and OKHttp.
- Implemented authentication with **JWT** tokens and **SharedPreferences**, featuring role-based **user permissions**.

Technical Skills

Languages: JavaScript (ES6+), TypeScript, HTML, CSS, Java, Kotlin, C/C++, Python, Bash, SQL
Frameworks: React, Electron, React Native, Expo, Express.js
Libraries: Material UI, Tailwind CSS, Framer Motion, Redux, Zustand, Tanstack Query, Jest, React Testing Library
Tools & Workflow: Git/GitHub, Linux, Docker, CI/CD (GitHub Actions), Postman, Figma, Jira
Databases: SQLite, PostgreSQL, MongoDB

Achievements

- Solved **400+** problems using **C++** on various online judges like: LeetCode, Codeforces, and HackerRank.
- Participated in the **ICPC Egyptian Collegiate Programming Contest**.
- Achieved top **1%** ranking in the first year of college.