

# Ahmed Fathy

Software Engineer

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Giza, Egypt

## PROFESSIONAL SUMMARY

Results-driven Computer Engineering student with strong foundation in software development, data structures, and algorithms. Experienced in full-stack development using modern frameworks including React.js, Next.js, Node.js, and Laravel. Proven ability to architect scalable applications and collaborate effectively in team environments. Eager to apply technical skills to challenging software engineering roles.

## EDUCATION

- Cairo University, Faculty of Engineering**

Giza, Egypt

*B.Sc. in Computer Engineering; GPA: 3.6*

2023 – 2027

## EXPERIENCE

- Al Nada Scientific Office**

Cairo, Egypt

- Software Developer (Freelance)**

June 2022 – 2024

- **Full-Stack Development:** Designed and built a custom ERP application using React.js, Express.js, and PostgreSQL to replace legacy spreadsheet-based workflows.
- **Desktop Deployment:** Packaged the web application with Electron for local server deployment, enabling reliable offline operation.
- **Database Design:** Structured relational database with Prisma ORM to manage customer, supplier, and inventory data.

## SOFTWARE ENGINEERING PROJECTS

- Hankers (Social Platform)**

Source Code

- Full-Stack Engineering*

Software Engineering

- **Architecture:** Built scalable social platform using Microservices principles, React.js, and TypeScript.
- **Frontend:** Implemented responsive UI design and asynchronous API integration via AJAX.
- **DevOps:** Established CI/CD pipelines and containerized services using Docker for consistent deployment.

- NexaMart**

Source Code

- E-commerce Solution*

Full-Stack

- **Stack:** Next.js (TypeScript), Redux Toolkit, Laravel 11, and MySQL.
- **Functionality:** Implemented secure authentication (Sanctum), shopping cart logic, real-time order processing, and administrative analytics dashboard.

- Company Manager App – Al Nada Scientific Office**

Source Code

- ERP System with Electron Desktop Deployment*

React & PostgreSQL

- **Tech Stack:** React.js, Redux, Express.js, Prisma, PostgreSQL, Electron for desktop deployment.
- **Business Solution:** Developed ERP application for Al Nada Scientific Office managing customers, suppliers, inventory, and sales records.
- **Deployment:** Packaged application with Electron for local server deployment, enabling offline usage.

- Path Planning Analysis**

Source Code

- Algorithm Benchmarking*

C++

- **Performance:** Benchmarked pathfinding algorithms (A\*, Dijkstra, RRT) analyzing computational complexity and execution time.

- Staged Pipelined Processor (RISC)**

Source Code

- Computer Architecture Implementation*

VHDL

- **Core Architecture:** Engineered **32-bit** RISC processor utilizing classic **5-stage** pipeline (IF, ID, EX, MEM, WB) with **16 general-purpose registers**.
- **Hazard Resolution:** Integrated hazard detection units, data forwarding paths, and pipeline stalling mechanisms to resolve data dependencies and control hazards.
- **Verification:** Validated functional correctness via ModelSim waveform simulations; developed custom Python assembler to generate machine code test vectors.

- **Tactic (Robotics & AI)**
    - *IoT & Computer Vision Integration*
      - **System Integration:** Developed browser-controlled robotics suite integrating AI computer vision with low-latency hardware control.
      - **Firmware:** Programmed ESP32 microcontrollers to handle WebSocket communication for real-time motor control and telemetry.
      - **Backend Processing:** Deployed YOLOv5 and OpenCV on host server to process visual feedback and automate robotic decision-making.
- Source Code  
*Embedded Systems*

## STUDENT ACTIVITIES

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- **IEEE** Cairo
  - *UI/UX Designer - Frontend Team Leader*
    - **Interface Design:** Architected intuitive user interfaces for internal platforms, optimizing user journey and accessibility protocols.
- **Technical Center for Career Development (TCCD)** Cairo
  - *Frontend Developer*
    - **HR Management System:** Engineered internal dashboard enabling HR personnel to monitor events, track attendees, and analyze participation metrics.
    - **Web Maintenance:** Spearheaded development and ongoing optimization of official TCCD web presence.
- **Physics Helping District (PhD)** Cairo
  - *Team Leader*
    - **Mentorship Initiative:** Directed student-led initiative supporting peers in physics and electronics via tutoring and practical workshops, resulting in measurable academic improvement.

## TECHNICAL SKILLS

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- **Programming Languages:** C++ Programming, Python, JavaScript, TypeScript, SQL, PHP, Java, Assembly Language
- **Core Computing Concepts:** Data Structures, Algorithms, Object-Oriented Programming, Design Patterns, Operating Systems, System Architecture
- **Systems Programming:** Unix/Linux Development, Multithreading, Memory Management, Network Socket Programming
- **Backend Development & DevOps:** Node.js Runtime, Express Framework, RESTful APIs, Docker Containers, Git Version Control, CI/CD Pipelines