Ahmed Fathy

Software Engineer
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Professional Summary

Results-driven Computer Engineer 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. Eager to apply technical skills to challenging software engineering roles.

Experience

- **Al Nada Scientific Office** | *Software Developer (Part-time)* *Cairo, Egypt | 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.
  - **Web Development**: Developed and enhanced company's official website using Next.js, optimized SEO for Google search rankings, and integrated ecommerce features for online product sales.
  - **Desktop Deployment**: Packaged the ERP application with Electron for local server deployment, enabling reliable offline operation.

Student Activities

- **IEEE** | *UI/UX Designer - Frontend Team Leader* *Cairo | Oct 2025 – Present*
  - **Portfolio Platform Development**: Engineered comprehensive web platform featuring workshop and event management systems with admin dashboard for content creation, role-based access control enabling instructors to upload course materials and students to register for workshops and events.

- **Technical Center for Career Development (TCCD)** | *Frontend Developer* *Cairo | June 2025 – Present*
  - **Portfolio Platform Development**: Developed comprehensive platform with event pages, admin dashboard for event creation, role-based access for instructors and students, location management, event galleries, and statistical analysis pages.
  - **HR Management & Judging System**: Built HR system managing team attendance with custom form builder and reviewer functionality similar to Google Forms, alongside event judging system for evaluating and assessing teams applying to events.

- **Physics Helping District (PhD)** | *Team Leader* *Cairo | June 2022 – 2024*
  - **Mentorship**: Led peer tutoring initiative in electronics, achieving measurable academic improvement.

Education

- **Cairo University, Faculty of Engineering** Giza, Egypt
  B.Sc. in Computer Engineering; GPA: 3.6 *2022*

Software Engineering Projects

- **Hankers (Social Platform)** | *Full-Stack Engineering* Source Code | *2025*
  - **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** | *E-commerce Solution, Full-Stack* Source Code | *2025*
  - **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.

- **Image Restoration Pipeline** | *Deep Learning & Computer Vision, Python* Source Code | *2024*
  - **Pipeline**: Constructed end-to-end restoration pipeline: Denoising, Deblurring, and Inpainting.
  - **Algorithms**: Applied Telea (FMM) inpainting and deep learning models to restore damaged historical photographs.

- **Company Manager App – Al Nada Scientific Office** | *ERP System, React & PostgreSQL*Source Code | *2024*
  - **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** | *Algorithm Benchmarking, C++* Source Code | *2024*
  - **Performance**: Benchmarked pathfinding algorithms (A*, Dijkstra, RRT) analyzing computational complexity and execution time.
- **5-Stage Pipelined Processor (RISC)** | *VHDL, QuestaSim, Computer Architecture* Source Code | *2025*
  - **Core Architecture**: Engineered a **32-bit 5-stage pipelined processor** in VHDL, supporting a custom ISA of over 25 instructions.
  - **Hazard Resolution**: Optimized throughput by implementing Hazard Detection and Data Forwarding units to resolve control and data dependencies.
  - **Verification**: Validated functional correctness through rigorous simulation and testbench environments in **QuestaSim**.
- **Tactic (Robotics & AI)** | *Embedded Systems* Source Code | *2024*
  - **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.

Technical Skills

- **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, Laravel, RESTful APIs, Docker Containers, Git Version Control, CI/CD Pipelines