Mohamed Ahmed Ali

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LINKS

Linkedin, Github, Portfolio

PROFILE

Mechatronics Engineer with extensive experience in Backend Development, Data Analysis, Product Ownership, Testing, and Embedded Software & Robotics. Proven track record in designing and implementing solutions that bridge technical and business requirements. Enthusiast of AI technologies and passionate about game development. Holding a Bachelor's degree in Mechatronics Engineering. Seeking a challenging position to leverage my diverse engineering background in a dynamic and innovative environment.

EMPLOYMENT HISTORY

Apr 2025 — Present

Backend Developer, Spotter
Cairo

- Contributed to the development of a fitness coaching platform that offers personalized advice, progress tracking, and AI-powered chatbot interactions to help users achieve their health goals.
- Ensured clean architecture through modular service design and scalable authentication strategies.

Jan 2024 — Present

NestJs Backend Developer, Arcon Corporation
Cairo

- **Designed and developed scalable RESTful APIs** for large-scale applications, including educational and healthcare platforms.
- **Implemented role-based access control (RBAC)** to manage user permissions securely across different roles.
- **Developed and executed integration tests** to ensure modules interact seamlessly and meet business logic requirements.
- **Integrated Firebase Authentication**, streamlining secure user management.

Sep 2022 — Dec 2023

Product Owner, Arcon Corporation
Cairo

- **Bridged communication between business and development teams**, translating project requirements into actionable tasks.
- **Developed and executed SQL-based data analysis**, providing insights into user behavior and platform performance to drive data-driven decisions.

Sep 2021 — Aug 2022

Embedded Software & Robotics Engineer, Arcon Corporation
Cairo

- **Developed and integrated embedded systems** for **51+ scientific projects**, utilizing Arduino microcontrollers, sensors, and electronic components.
- **Led robotics development and supervised VEX robotics competitions**, mentoring teams and optimizing performance strategies.

EDUCATION

Sep 2016 — Jul 2021

Bachelor of Science Mechatronics Engineering, Faculty of Engineering Ain Shams University
Cairo

Graduated with the degree of Very Good (2.98 GPA)

Graduation Project Grade: A+

SKILLS

NestJS	Experienced	JAVA	Skillful
SQL	Experienced	C, C++	Skillful
TypeScript	Experienced	JavaScript	Skillful
Google Firestore	Experienced	Machine Learning	Experienced
BigQuery	Experienced	Laravel	Expert
Backend APIs	Skillful	Power BI	Expert
UX/UI	Beginner	Postgres	Expert
Python	Experienced	PHP	Expert

Mar 2022 — Present

LMS System

This LMS, built with **NestJS**, **Firebase Authentication**, and **PostgreSQL**, supports role-based access control for admins, teachers, and students, enabling efficient learning management.

Roles and Functionalities

- **Admin**:Manage users (add/edit/delete teachers and students).
- **Teacher**:Create courses and classes, assign students, and manage assignments. Monitor and reset student scores.
- **Student**:Access assigned courses, submit assignments, and participate in experiments.

Technical Highlights

1. **NestJS**: Modular and scalable backend framework.
2. **Firebase Authentication**: Secure, role-based access control.
3. **PostgreSQL**: Manages users, courses, assignments, and relationships.

Link

Sep 2024 — Oct 2024

NestJS Multi-Role Application with MongoDB

Developed a scalable NestJS application with MongoDB, supporting three roles: Admin, Vendor, and Consumer. Key features include:

- **Admin:** Manage users with CRUD operations.
- **Vendor:** Manage products and inventory.
- **Consumer:** User registration, authentication, and cart management.

Highlights:

- **Secure Authentication & Authorization:** JWT-based with role-based access control.
- **RESTful APIs:** Comprehensive endpoints for users, products, and carts.
- **Scalable Architecture:** Modular and extensible design adhering to best practices.

Link

Sep 2024 — Sep 2024

Real-Time Chat Application with NestJS and Vue

Built a real-time chat application with a NestJS backend using WebSockets and a Vue.js frontend. The app enables seamless, interactive communication between multiple users, featuring:

- **Real-Time Messaging:** Instant updates across clients when messages are sent.
- **Typing Indicators:** Shows when a user is typing to enhance interactivity.
- **Scalable Backend:** WebSocket-based communication powered by NestJS for efficient message handling.
- **Responsive Frontend:** Vue.js provides a clean and intuitive interface for conversations.

Link

Sep 2021 — Present

Siminds LabsForHome

A cutting-edge 3D simulation platform for scientific experiments in physics, chemistry, and biology, designed to enhance interactive and accessible STEM education. The system incorporates the Arduino microcontroller, I2C LCD, and a variety of sensors to simulate and visualize real-world experiments.

Key Features:

- **Comprehensive Experiment Library:** Offers over 51 detailed experiments in both Arabic and English, catering to diverse educational needs.
- **Accessibility-Focused Game Modes:** Includes innovative features such as eye-tracking and voice commands to ensure inclusivity for individuals with disabilities.
- **Realistic 3D Models:** High-detail visualizations provide an immersive learning experience, replicating laboratory setups with precision.
- **Interactive Avatars:** Virtual assistants guide students through experiments, offering step-by-step support and feedback.
- **Seamless Hardware Integration:** Real-time synchronization with physical Arduino kits enables users to input and analyze actual experimental data within the simulation.

Link

Jun 2022 — Jun 2022

Unity Hand Tracking

- Implemented real-time hand landmark tracking in Unity for robotic control.
- Enhanced human-robot interaction (HRI) for potential humanoid robot applications.

Link

Sep 2023 — Sep 2023	**Controlling Arduino Using Python Hand Tracking** • Built a system to control robotic actuators using hand-tracking data. • Developed a Python-based gesture recognition system to interface with Arduino-controlled devices. Link
Jul 2018 — Present	**Mega Mania** Developed a complete Java platformer game featuring various levels, power-ups, and enemies. Link
Jan 2021 — Jan 2021	**Flappy Bird Using Machine Learning** • Built a self-playing AI agent using neural networks and genetic algorithms. • Trained the model to optimize decision-making based on reinforcement learning. Link
Nov 2023 — Dec 2023	**DOOM Clone** Programmed a DOOM clone in Python, featuring different weapons, enemies, and levels. Link
Oct 2020 — Jul 2021	**Soft Robotic Glove For Rehabilitation** • Designed a wearable robotic glove using flex sensors and microcontrollers. • Assisted patients with rehabilitation by tracking finger movement and force feedback. • Implemented AI-assisted movementrecognition for improved rehabilitation exercises. Link
May 2022 — May 2022	**Chatbot** Created a Python-based chatbot capable of learning and responding to user queries. Link
Feb 2020 — Jun 2020	**Lotfy The Butler Robot** Designed a mobile robot butler using object detection and GPS technology to assist with luggage carrying during travel. Link

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CERTIFICATIONS	IoT Development Using M.O.T Platform (ITI MaharaTech) Robotics Workshop (iHub) Software Testing (ITI MaharaTech) Gamification in eLearning (ITI MaharaTech) UX Design Fundamentals (ITI MaharaTech)