Abdel-Rahman Elsayed Ahmed

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EDUCATION

Alexandria University

Bachelor of Engineering in Computer and Communication Engineering

GPA: 3.16 / 4.0

PROJECTS

Interactive Quantum Computer Simulator Application

Graduation Project — Javantum V2 (Supervised by Prof. Ahmed Younes)

- Developed a full-featured Java-based GUI application for interactive quantum circuit simulation and educational visualization.
- Simulated a wide range of quantum gates including Hadamard, Pauli (X, Y, Z), CNOT, Toffoli, and additional advanced gates.
- Designed real-time visualizations of quantum states, including statevectors, probability distributions, and Bloch sphere representations.
- Implemented a suite of core quantum algorithms: Deutsch-Jozsa, Bernstein-Vazirani, Shor's, Simon's, Grover's, Partial Diffusion, QFT, and QPE.
- Designed and integrated a custom Quantum Neural Network (QNN) simulator supporting classification and regression, achieving benchmark performance comparable to industry tools like PennyLane.

Easy-VQE Python Package

github.com/7Abdoman7/easy-vqe - Founder and Lead Developer

- Developed and maintain an open-source Python library simplifying Variational Quantum Eigensolver implementations.
- Created an intuitive interface for quantum chemistry calculations, reducing setup time for researchers.
- Integrated seamlessly with Qiskit and PennyLane frameworks, supporting multiple quantum backends.

Quantum Machine Learning Applications

- Developed Quantum Neural Network (QNN) using PennyLane for MNIST digit classification, achieving 85% accuracy.
- Implemented Quantum Support Vector Machine (QSVM) for IRIS dataset classification with 95% accuracy.
- Compared classical vs. quantum performance metrics, analyzing quantum advantage scenarios.

CERTIFICATIONS AND ACHIEVEMENTS

- QGSS2025 — Quantum Global Summer School 2025 Participant
- WomenInQuantum 2025 — Team project solving CDF Partial Differential Equations using Quantum Algorithms
- QML Workshop - QPoland
- ADEQUATE - Qureca
- QCourse 501-2 - Latvia University
- QNickel - QItaly
- QBronze - QEgypt

LANGUAGES

Arabic: Native | English: Advanced (C1)