



Kareem H. El-Safty

Quantum Machine Learning Research Assistant | AI Team Leader | Qiskit Advocate



Professional Summary

A Focused Research Assistant who's doing a master's degree in Quantum Computing "QML" with a formal education in Communications & Electronics Engineering and an advanced industrial experience in Artificial Intelligence solutions for Computer Vision problems. I'm actively looking for an internship in the Quantum Computing industry.



Work History

2020-04 - Current

Research Assistant

Wigner Research Centre for Physics, Budapest, Hungary

- Quantum Computing (Research, Software)
- Quantum Machine Learning.
- Continuous Variable (CV) for Optimization Problems.
- Built quantum simulator for (CV) systems. Piquasso: <https://github.com/Budapest-Quantum-Computing-Group/piquasso>
- Part-time.

2021-08 - Current

Machine Learning Instructor

Information Technology Institute, Cairo, C

- Used learning assessments to regularly monitor student understanding of class concepts and materials.
- Taught supervised and unsupervised learning algorithms.
- Hourly based.

2021-04 - Current

Co-Founder

QEgypt, Egypt

- Coordination of educational events.
- Responsible for outreach and internal publicity.
- Designing several quantum challenges and content to enrich the content of QWorld open source education material.
- Mentoring new members especially in quantum machine learning.

2019-11 - Current

Researcher, Quantum Computing

Alexandria Quantum Computing Group, Alexandria, Egypt

- Handling the publicity of the group.
- Organized Alexandria Quantum Computing Winter School 2021 (AQCWS21).
- Prepared and Organized the latest Workshop during AQCWS21.
- Conducted several sessions to discuss and explain Qiskit besides planning for building a wider network with other research groups across the globe such as Quantum AI Foundation in Poland and Wigner Research Centre for Physics.
- Co-Moderation of several Quantum meetups such as Hypatia Series and Washington Quantum Computing meetup.

2018-07 - 2021-11

Team Leader, Artificial Intelligence

DevisionX, Cairo, Egypt



Contact

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WWW

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WWW

<https://github.com/kareem1925>



Skills

Machine learning, Deep Learning



Teaching



Quantum Machine Learning



TensorFlow, Scikit-Learn, OpenCV, PyTorch



Qiskit, StrawberryFields, PennyLane, Cirq



Computer Vision and Machine Vision systems



AutoML pipelines



Google Cloud Platform, AWS for ML solutions



Certifications

2021-02
Certified Machine Learning Engineer "AWS"

2018-04
Deep Learning Specialization on Coursera

2019-03
Quantum mechanics for scientists and engineers 1 & 2 from Stanford Online

- Design, train, and optimize Deep Neural Networks with a view to implementing on embedded DSP platforms.
- Implement and integrate algorithms into the overall solution.
- Facial Recognition systems, Arabic OCR Systems. I was working for Digified at that moment internally.
- Auto AI tools such as Tuba.
- Leading the machine learning Interns program.



Education

2021-09 -
2022-09

Master of Science: Quantum Computing Technologies

Universidad Politécnica De Madrid - Madrid, Spain

- I was admitted to the online master program after careful evaluation.
- I have been granted a **scholarship** to cover the expenses.
- My thesis is about Quantum Machine Learning

2020-09 -
2022-09

Master of Science: Computer Engineering

Faculty of Engineering, Suez Canal University - Ismailia, Egypt

Bachelor of Science: Electrical, Electronics And Communications Engineering

Faculty of Engineering, Suez Canal Univeristy - Ismailia, Egypt

Graduation Project:

- Humanoid Robot with traditional machine learning for voice recognition and object detection. (OpenCV, Scikit-Learn, Raspberry Pi).

2012-09 -
2017-07



Publications

- Continuous-variable stochastic gradient descent methods applied for photonic quantum neural networks. poster presented at The Bristol Quantum Information Technologies Workshop (BQIT 21), April 2021, Bristol, UK.
- Classical and quantum regression analysis for the optoelectronic performance of NTCDA/p-Si UV photodiode. <https://doi.org/10.1016/j.ijleo.2021.167793>
- Stochastic gradient descent technique applied to qaoa, poster presented at Quantum Computing Theory in Practice (QCTIP), April 2020, Cambridge, UK.
- Quantum optimization for the graph coloring problem with space-efficient embedding. <https://doi.org/10.1109/QCE49297.2020.00018>
- Secure Direct Communication Using GHZ Like State "submitted"
- Benchmarking Continuous Variable Quantum Kernels "under review"



Volunteering

- New Journal of Physics - IOPscience "reviewer"
- Python for ML and AI - Geekle "Program Committee Member"
- Quantum Computing Thematic Track in conjunction with the International Conference on Computational Science. "Program Committee Member"
- Community Teacher Assistant at edX (TA at The Quantum World(HarvardX - Chem160)
- SN Computer Science, journal, Springer Nature "Reviewer"

2020-04
Quantum Optics 1 & 2

2018-09
Mastering Quantum Mechanics 8.05
MIT on edX

2018-03
Quantum Information Science part 1
& 2 MIT

2019-02
Quantum Cryptography DelftX

2019-04
Quantum Machine Learning
TorontoX

2018-10
AI Nanodegree, Udacity



Accomplishments

- Awarded a scholarship for Udacity AI Nanodegree.
- Awarded a scholarship for a TTT training to become an instructor at EPITA.
- Won 3rd place for best research project in QIntern21, Qworld.
- Have led a successful workshop during Alexandria Quantum Computing Winter School 2021.
- Awarded a scholarship for my online master's degree in Quantum Computing.
- <https://www.credly.com/users/kareem-elsafty>



Languages

English "IELTS: 7.0"



Arabic "Native"



Online Activities

- Writing QML tutorials using Qiskit as part of being an Advocate
- Co-Moderating #Hypatia_AQC online series for Quantum Computing.
- Co-Moderating Washington Quantum Computing online meetups.
- Mentoring in Quantum Computing Hackathons by IBMQ.
- I have participated in several online talks. You can find them under the name Kareem H. El-Safty