Ahmed Hany Anwar *Fresh Data Science & AI Engineer*

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in LinkedIn   ▦ HackerRank

Education

Faculty of Engineering, Alexandria University   2018 – 2023
Bachelor of Science (B.Sc.) in Communications and Electronics Engineering
- **CGPA: 3.8** / 4.0
- **Ranked 1st in Department.**

Relevant Computer Science Coursework: Data Structures (A-),
Operating Systems (A), Computer Architecture (B+), Networking (A+)

Graduation Project

Optimal MU-MISO Precoder Design & Power Allocation Using Deep Reinforcement Learning
Project Repository: [**GitHub Link** ⧉]

- Applied **Deep Reinforcement Learning (DRL)** to optimize **precoder selection** and **power allocation** in a **MU-MISO system**, maximizing data rates.
- Implemented a **Deep Deterministic Policy Gradient (DDPG) algorithm** with **two actor and two critic networks** using **TensorFlow** for enhanced stability.
- Benchmarked against **MRT, ZF, and MMSE** precoding techniques, achieving **100% of MRT and ~70% of ZF performance**.
- Enhanced model performance using **skip connections and batch normalization** to improve learning stability.

Projects

Simple-RAG App for Retrieval-Augmented Generation
RAG Project | [**GitHub Link** ⧉]
- Developed a Mini-RAG app using **FastAPI** and **Uvicorn** with an MVC design pattern.
- Integrated **MongoDB** and **Qdrant** in the first version, and upgraded to **PostgreSQL** and **pgvector** in the second version.
- Utilized three LLM providers: **OpenAI**, **Cohere**, and a local **Ollama** model for semantic search and generative answers.

Multivariate Time Series Forecasting for Sales Prediction
Time Series Project | [**GitHub Link** ⧉]
- Developed a **10-day sales forecasting model** predicting **product demand per city** using **LightGBM,** Tackled **irregular sales patterns** with **large gaps of missing days.**
- Achieved a **SMAPE (Symmetric Mean Absolute Percentage Error) of 3.3%**, demonstrating strong forecasting accuracy across all product-city pairs.

Summarization Model for Long Documents
NLP Project | [**GitHub Link** ⧉]
- Developed an abstractive text summarization system using **DistilBART** transformers, **fine-tuned** with **Hugging Face** on a **quarter** of the **CNN/DailyMail** dataset, **improving ROUGE score from 25% to 38%.**

Skills

Programming Languages:
- Python, C, C++, Java, SQL, MATLAB

Machine Learning & Deep Learning:
- NumPy, Pandas, OpenCV, Matplotlib, Seaborn.
- TensorFlow, PyTorch, Scikit-Learn, Hugging Face, LangChain, Keras, XGBoost, LightGBM.
- Hugging Face, spaCy, NLTK.

Operating Systems:
- Linux (Ubuntu).

Courses & Certifications

Machine Learning Specialization
*Stanford University (Coursera) – **95 hours** (**Certificate** ⬀)*

Deep Learning Specialization
*Stanford University (Coursera) – **130 hours** (**Certificate** ⬀)*

Reinforcement Learning Specialization
*University of Alberta (Coursera) – **50 hours** (**Certificate** ⬀)*

Machine Learning Cross-Skilling
*Ministry of Communications and Information Technology – **60 hours** (**Certificate** ⬀)*

Deep Learning for Natural Language Processing
*Udemy (Instructor: Dr. Ahmad ElSallab) – **30 hours** (**Certificate** ⬀)*

Professional Experience

Virginia Tech   Jun 2022 – Sep 2022
Digital Design Engineer Trainee [**Certificate** ⬀] (Online – Due to COVID-19)
- Implemented a **System on a Chip (SoC)** based on a **RISC-V processor**, integrating a **Machine Learning accelerator**.

Crocomarine ROV Technical Team   Jul 2020 – Dec 2021
Image Processing Engineer [GitHub Link ⬀]
- Developed **coral health assessment algorithms** using **Python** and **OpenCV**, detecting coral **growth, damage, bleaching, and recovery** to aid **environmental monitoring**.
- Contributed to achieving third place in the **MATE Middle East Competition, 2021**.

Books

- **Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow (Second Edition)** – *Aurélien Géron*

- **Hands-On Large Language Models (Second Edition)** – *Jay Alammar & Maarten Grootendorst*

- **Reinforcement Learning: An Introduction (Second Edition)** – *Richard S. Sutton & Andrew G. Barto*

- **Grokking Deep Reinforcement Learning** – Miguel Morales