AHMED NABIL ATWA

AI Research Engineer

Alexandria, Egypt

+20 111 042 0702 **dr.ahmedna.ai@gmail.com**

LINKS

Kaggle, GitHub, Stack Overflow, LinkedIn, Dr. Ahmed Studies Discord Server

PROFILE

I am a Researcher Engineer/AI Engineer who worked on several production projects. My strong point and projects' specification are in NLP (Starting from text classification, Seq-to-Seq, Transformers, R/G, until prompting with GPT-3). I have worked on a Knowledge graph, Generative QA, LFQA, Metaphor, emotion/text classification, time series, human detection, NER, Feature Extraction, AI intelligence Search, bulk text embedding, paraphrasing, summarization, chatbots, and more... Also, I am a Certified Professional Machine learning Engineer from Google Cloud & Certified Data Scientist from IBM – working for bringing the industrial experience of the best two companies in AI. These certificates help me have a vision and better decisions in building and orchestrating ML systems.

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EMPLOYMENT HISTORY

Teacher Assistant, Arab Academy for Science, Technology & Maritime Transport

Sep 2022 — Present

Alexandria, Egypt

Educating Information Systems & Artificial Intelligence Curriculum.

Data Scientist | AL Research Engineer, Upwork/Fiverr

Jul 2021 — Present

Remote

- Most of my projects went to production are based on GPT-3. Some of the examples; 1. Article Generator. 2. Bulk Article Generator. 3. Text Summarization. 4. Virtual Fiction characters simulation. 5. Product Descriptive modelling. 6. Chatbots; (I. Philosophical Chatbot. II. Descriptive User-bot algorithms (DUB). III. Recommendation DUB. IV. Memorization DUB. V. Human raise DUB Retriever.) 7. Recommendation letters. 8. Blogging and SEO generator. 9. Advertisment Generator.
- I also worked on stock market trading datasets, building deep forecast prediction models for it, and also have experience with tickers and their Technical Indicators.
- In terms of computer vision, I have worked on image classification, image detection, and Object detection using PyTorch/TF.
- In terms of Statistical modelling, I have worked on several supervised/ unsupervised learning projects (such as classification, and clustering).
- My main goal in any project is to understand the business requirements and then throw the problems/barriers that face this business after a deep analysis of the business and observing the information to present them in front of the stakeholders.

Business Development Manager, Beauty On-Demand

Mar 2018 — May 2021

Cairo, Egypt

- I have monitored the products supplied to our vendors Souq.com, Jumia.com, and noon.com.
- We worked on creating a database for the company to facilitate the product creation.
- The system succeeded in over 1-year.
- Strategized and implemented new ways to maintain resume and project information on over 1,000 entries.
- We have worked on more than +9,000 products using Excel, excel-VBA, Excel Formulas, and Photoshop for high-quality products pictures.
- We also invented a Wix-code script using JavaScript to help the company applying its products' images as hyperlinks for more bulking facilitation.

- I was responsible for supplying more than 5,574 digital products to our vendors. (accurate Information about each product within its images) in a short period (The system we worked on helped us, and saved thousands of pounds spent on each digital bulk images which they were being created by a third-party).

Business Info. System (Remote), Sephora-Toi
Oct 2016 — Feb 2018
Cairo, Egpt

- I've Created +2,000 Digital Products.

EDUCATION

Arab Academy for Science, Technology & Maritime Transport
Sep 2015 — Jul 2019
Alexandria
Bachelor's Degree

Bachelor's Degree in Information Systems & Computer Science

Graduated with Excellent with honours.

Arab Academy for Science, Technology & Maritime Transport
Oct 2022 — Present
Alexandria
Master of Science

Master of Science in Enhanced Information Systems with applying AI.

SKILLS

Python	***Expert***	Tensorflow/Keras	***Expert***
Pandas	***Expert***	wandb/matplotlib/seaborn	***Expert***
Numpy	***Expert***	Gym	***Experienced***
Pytorch	***Expert***	SQL	***Skillful***

COURSES

Google Professional Machine Learning Engineer
Sep 2021 — Jan 2022
Google Cloud

IBM Python Data Science
Sep 2020 — May 2021
edX IBM

EMC Academic Associate, Data Science and Big Data Analytics
Sep 2018 — Jan 2019
EMC Education Services

INTERNSHIPS

Data Scientist Intern (Remote), iSmileTechnologies
Aug 2021 — Jan 2022
Chicago, U.S.

Built an automated time-series ML system for stock movements and integrated earning forecasting.

WHAT I AM PROUD OF IN RESEARCH & PROJECTS

A. Deep Statistical Modelling

I. *Contrastive Learning with Time-series*

- Conducted time series contrastive modelling to identify different characteristics of the datasets.

II. *Forecasting Stock market Movements*

- *Building production deep learning statistical time-series forecaster to forecast the top 10 tickers on the Nasdaq market using TF API on Google Cloud.*

B. Reinforcement Learning

I. ***Apply DQN/DDQN– an approximate Q-learning algorithm with replay memory and the target network.***

- Building a Reinforcement Learning Algorithm capable of solving one of the famous Atari games called Breakout using Deep Q-learning, or DQN, adding an extra sausage algorithm called Dueling Deep Q-learning. - It is an offline algorithm relay on previous transitions done by the agent stored in the replay buffer. The idea of the algorithm is the capability of reading some image buffers and trying to imitate the same movements learning from the mistakes that were happening at every step.
- *Reference(s)*:
    - Mnih, Volodymyr, et al. "Playing atari with deep reinforcement learning." arXiv preprint arXiv:1312.5602 (2013).

II. ***Behavioural Agents with Intrinsic Curiosity Module algorithm.***

- Instead of rewarding consistent episodic rewards to the agents, and controlling them with random constants coefficients, why not provide them with the capability to explore and exploit based on sparse intrinsic reward with the extrinsic reward? - The approach is to give the agent the capability of deciding by itself based on intrinsic reward for each action taken and state approach.
- *Reference(s)*:
    - Osband, Ian, et al. "Behaviour suite for reinforcement learning." arXiv preprint arXiv:1908.03568 (2019).
    - Pathak, Deepak, et al. "Curiosity-driven exploration by self-supervised prediction." International conference on machine learning. PMLR, 2017.
    - Burda, Yuri, et al. "Exploration by random network distillation." arXiv preprint arXiv:1810.12894 (2018).

III. ***Applying the Asynchronous Advantage-Actor Critic (A3C) algorithm on a batch of Atari 2600 environments running in parallel.***

- Working with value function to have the required state, or focus with optimal policy to have the optimal action? - A fuzzy problem is preferred by AI Scientists, especially me! So choosing to have a new formula capable of selecting an action that is higher than the average given actions. With that – you escaped one of the naive problems using a random coefficient – not just that – also you will be capable of taking the difference between the chosen action value and also the approximate value function based on the selected action.
- I implemented the paper by adding some extra sausage; First, I used gradient approximations to calculate the loss of the policy and not the differences to make sure I added into my accounts the uncertainty of approximated actions by the network. Second, I followed the Nature DQN instead of Targeted DQN to value the algorithm on base DQN.
- *Reference(s)*:
    - Mnih, Volodymyr, et al. "Human-level control through deep reinforcement learning." nature 518.7540 (2015): 529-533.
    - Mnih, Volodymyr, et al. "Asynchronous methods for deep reinforcement learning." International conference on machine learning. PMLR, 2016.

C. Computer Vision:

I. ***From photorealistic to Artistic***

- I was working with a research team trying to develop guided diffusion models to take it to another level of texture and coherency. Therefore we worked on developing the research paper for Imagen and trying to overcome the problems faced open with Dall-E; such as the lack of text embedding, the image's scaling, and texturing reproducibility.
- We trained the model on 250k LAION-Dataset out of 2B samples of text-image model based on 2 U-nets for testing purposes using x3 3090 Ti for 6 hours as Alpha phase 01, and on x10 A40 GPUs for 24 hours as Alpha phase 02 and we still on the progress.

- *Reference(s)*:
    - Nichol, Alex, et al. "Glide: Towards photorealistic image generation and editing with text-guided diffusion models." arXiv preprint arXiv:2112.10741 (2021).
    - Nichol, Alexander Quinn, and Prafulla Dhariwal. "Improved denoising diffusion probabilistic models." International Conference on Machine Learning. PMLR, 2021.
    - Ramesh, Aditya, et al. "Hierarchical text-conditional image generation with clip latents." arXiv preprint arXiv:2204.06125 (2022).
    - Saharia, Chitwan, et al. "Photorealistic Text-to-Image Diffusion Models with Deep Language Understanding." arXiv preprint arXiv:2205.11487 (2022).

✤ D. Natural Language Processing:

I. *The Assistant King (Chatbot Imitates famous writer and starts human-to-human conversation) using GPT-3*:

- An interactive assistant for writing is one of the essential references any writer is willing to have to find a new idea. Usually, writers search on the internet, read other articles, or watch an event to have an idea of what they can write about to attract their readers.
    - *Repos*: https://github.com/Deepprakash222/DeepGpt3Learning

II. *(Contributor on) Haystack*:

- Haystack is an open-source NLP framework that leverages pre-trained Transformer models. It enables developers to quickly implement production-ready semantic search, question answering, summarization and document ranking for a wide range of NLP applications.
- Responsible for debugging and updating the out-source notebooks, besides building a custom pipeline for the repository.
- Built Stand-out production image for Movie reviews that incubates four languages transformers and zero-classification sentiment analysis piped in one architecture. - Designed to tackle a process of 1k requests in approx 21 seconds using CPU, and approx 4 seconds using GPU.
    - *Main Repos*: https://github.com/deepset-ai/haystack
    - *Movie Reviews Repos*: https://github.com/AI-Ahmed/movie-reviewer