Mohammad Alameen Abdilaziz

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Work Experience

Inspire for Solutions Development *Cairo, Egypt*

Artificial Intelligence Engineer *November 2023 -*

- Built AI assistants for corporations using IBM technology such as IBM watsonx, watsonx Assistant, and watsonx discovery
- integrated these chatbots with various services such as STT, TTS, and sign language interpreter
- Optimized LLMs to be used with these chatbots

NajahNow Corporation *Cairo, Egypt*

Machine Learning Researcher Intern *August - October 2022*

- Built an Arabic benchmark dataset for mental health classification based on user's social media posts
- Fined tuned NLP models such as AraBERT, MarBERT to classify mental health state based on user's social media posts

Education

Cairo University *Cairo, Egypt*

B.Sc. of Computers and Artificial Intelligence *September 2019 - July 2023*

- GPA: 3.65 (Excellent)
- Ranked 5th student in my department and 1st among international students
- **Key Courses:** Theoretical Foundations of Machine Learning, Generative Adversarial Network, Supervised Learning, Unsupervised Learning, Brain Computer Interface, Intelligent Autonomous Robotics, Reinforcement Learning, Natural Language Processing

Projects

Visual Question Answering

- I developed and trained a BLIP (Bootstrapped Language-Image Pre-training) model for Image-based Question Answering (ImageQA) to assist visually impaired users. The model allows them to ask questions about visual content and receive context-aware responses. We achieved an accuracy of 87% on the validation set, which marked a clear improvement over existing models on the market.

Sign Language Interpreter

- Designed a Graph Convolutional Network (GCN)-based Sign Language Interpreter to translate sign language gestures into text. The system leverages MediaPipe for hand tracking and feature extraction, enabling precise gesture recognition. Preprocessed data using keypoint detection before feeding it into the GCN for real-time, accurate interpretation, supporting communication for individuals with hearing impairments.

Autoencoder for Dimensionality Reduction and Data Reconstruction

- Built an Autoencoder model for unsupervised learning tasks such as dimensionality reduction and data reconstruction. The model compresses input data into a lower-dimensional latent space and accurately reconstructs it, preserving key features. Applied the autoencoder to high-dimensional datasets to reduce noise and improve downstream machine learning tasks, leveraging techniques like convolutional layers to enhance the model's performance.

Sentence Auto Complete Tool

- Designed an LSTM and Word2Vec-based autocomplete system trained on Enron emails dataset, providing interactive sentence completion.

Hand movement classification

- Worked on classifying EEG signals from the BCI Competition IV dataset, focusing on distinguishing between left-hand and right-hand motor imagery tasks. The project involved preprocessing raw EEG data, applying Discrete Fourier Transform (DFT) for spectral analysis, and using band-pass filtering to isolate relevant frequency components. Two models, a Neural Network and a Random Forest Classifier, were trained and evaluated using cross-validation to assess their classification accuracy.

Thermonuclear Supernovas parameters prediction

- Classified thermonuclear supernovae using multi-wavelength data and parameters like vmax, tao, and Φ300. Performed exploratory data analysis to find correlations and trends, using visualization tools such as correlation matrices and parallel plots. The project provided insights into relationships between key parameters, helping improve supernova classification models.

Volunteering

Unify.AI *Remote*

Ivy *June-July 2023*

- Addressed codebase issues by writing comprehensive docstrings and implementing a frontend function.
- Collaborated with developers, incorporated feedback, and successfully merged changes into the project repository.

Skills

Programming Python (TensorFlow, PyTorch, NumPy, Scikit-learn, Pandas, Matplolib, Mediapipe), C/C++, Java, SQL.