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Education

Egypt Japan University of Science and Technology

Bachelor of Science in Computer Science Engineering (3.62 CGPA) Egypt, Alexandria
• **Relevant Coursework:** Data Structures, Discrete Math, Computer Organization, Advanced Programming, Algorithms, Software Engineering, Computer Networks, Embedded Systems.

Publications

Multi-Parent Knowledge Distillation for Synthetic & Real Data (Nov 2024 – Present) | *In Progress*
• Re-implementing and extending the DM-KD framework by incorporating a multi-parent model—one teacher trained on synthetic data and another on real data—to investigate the benefits of cross-testing between domains.
• Developing 3 student models: 2 distilled individually from each teacher, and one from combined teacher ensemble.
• Exploring adaptive teacher weighting and loss function refinements to enhance model generalization and robustness.

Experience

Digital Egypt Pioneers Initiative - MCIT May 2024 – November 2024
Data Engineering Intern Hybrid
• Managed a data pipeline on Azure Synapse Analytics, utilizing SQL & Spark pools.
• Selected as the team leader by the instructors from a group of 20 interns.
• Contributed to Customer Feedback Analysis project:
 * Executed scripts for data cleaning, modification, and integration for a dataset with 1000000+ records.
 * Set up a relational database to store and analyze 1000000+ records customer feedback data.
 * Performed sentiment analysis using Scikit-learn and Keras, achieving 98% accuracy.
 * Utilized MLflow to track and manage 4 model versions, improving accuracy from 85% to 98%.

Projects

Wello - Online Multi-Usage Wallet | *Next.js, Django, React, MySQL, Postman*
• Implemented a secure multi-usage wallet system, integrating online wallets, credit/debit cards, and phone wallets into a unified dashboard for managing transactions.
• Designed a scalable backend architecture using Django MVC.
• Constructed robust transaction tracking, secure user authentication using JWT and 2FA to ensure security.
• Optimized API endpoints, achieving a 99% reduction in response time and from 10 seconds to 50 ms.

E-JUST RAG-based Chatbot | *NLP, LangChain, Ollama, Qwen2.5:7b, BGE-M3, Chroma*
• Developed and deployed a local RAG chatbot for my college admissions using LangChain.
• Leveraged an open-source LLM locally via Ollama and a local embedding model to generate semantic embeddings from admission documents.
• Implemented a scalable vector database using Chroma, enabling fast and context-aware document retrieval.

Language Model Based on Anglo-American Poems | *NLP, Python, PyTorch*
• Designed a transformer-based language model to generate text from 60000 lines of Anglo-American poems.
• Optimized a custom training and evaluation loop, utilizing multi-head attention in the transformer architecture.

MRI to CT Translation in Brain Tumor Imaging: Comparative Review of GAN Models | *Academic Course Project*
• Reviewed GAN models (Pix2Pix, CycleGAN, Attention-GAN) for MRI-to-CT translation in brain tumor imaging.
• Evaluated performance using metrics such as PSNR, SSIM, MAE, and HU difference maps.

Technical Skills

Languages: Python, C, C++, R, JavaScript, TypeScript, SQL
Tools: RAG, Ollama, Feature Engineering, Model Training & Evaluation, Data Modeling, Database Design, Git, NLP
Frameworks: Pandas, NumPy, TensorFlow, PyTorch, Linux, OpenCV, Azure, MLflow, Tailwind, Django, NextJS, YOLO