Apala Thakur

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An AI enthusiast with a Master's degree in Natural Language Processing (NLP). Possess strong skills in Python, and machine learning architectures (LLMs, Transformers). Eager to leverage my skills and passion in a full-time/internship role focused on the software development cycle in NLP, ML and AI.

Technical Skills

- Python, PyTorch, NumPy, Pandas
- Deep Neural networks (RNN, CNN), Natural Language Processing(NLP), LLMs

Experience

Intern, Meta Inc.   Sep 2023 - Mar 2024
Enhance QA Accuracy through the implementation of Multi-Modal LLM-driven Dense Passage Retrievers

Project Summary: The goal is to implement an open-domain QA by using domain specific external context spread over text and images. LLM-driven fine-tuned DPR(s) are used to generate query-specific context embeddings and store them on Elasticsearch for retrieval during training and testing.
Contributions:
- Explored several multimodal datasets and finalized on using MultimodalQA (MMQA)
- Developed programing interfaces for MMQA to extract query, contexts, images and metadata.
- Designed and fine tuned the following two DPR(s) using contrastive learning:
    - A visual retriever using a visualBERT and BERT for emitting visual context embeddings
    - A text retriever using two BERTs for emitting textual context embeddings
- Configured Elasticsearch for storing and similarity-based retrieval of text and visual embeddings
- Performed prompt-engineering for generating answers on GPT based on the retrieved context
- Evaluated the generated answers using BLEU score

BS Capstone Project   Jan 2020 - June 2020
Child Mental State Detection through EEG wave pattern analysis
Project Summary: The goal is to predict a mental state across three mental attentional conditions; focused, de-focused, and drowsy, with the aid of a Recurrent neural network (RNN). The network was trained and tested with electroencephalogram (EEG) data. Each reading is a sample of time sequence of beta, alpha, theta, delta and gamma wave patterns for detecting attentional conditions.
- Developed a classification network with GRU layers to predict mental states
- Trained the model with 16000 EEG samples
- Evaluated attentional conditions with a final test accuracy of 81% and a f1-score of 75%

Education

Master of Science in Natural Language Processing (2021-2023)
University of California, Santa Cruz

Bachelor of Science in Computer Science (2017-2021)
University of California, Santa Cruz

Extra Curricular Activities

- Toastmaster (Public Speaking) | Photography | Music