Apala Thakur

Software Engineer - AI Profile

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Dynamic AI and ML enthusiast with strong foundation in natural language processing and data science, honed through rigorous academic projects and internships. Excels at designing and implementing advanced machine learning models, as evidenced by creation of QA system utilizing multimodal context and robust RNN for child mental state detection with high accuracy rates. Possess knack for innovative problem-solving and commitment to enhancing system performance through meticulous research and fine-tuning. Eager to bring forward-thinking approaches and technical expertise to challenging intern role within AI and ML industry.

Areas of Expertise

- Prompt Engineering
- Quantitative Analysis
- Natural Language Processing
- Deep Learning
- Machine Learning
- Programming Interface Development
- Recurrent Neural Networks (RNN)
- Elasticsearch Configuration
- Data Science

Professional Experience

Meta Inc   Sep 2023 — Mar 2024
Intern

Enhance QA accuracy by implementing Multi-modal LLM-driven dense passage retrievers for open-domain QA system. Develop programming interfaces for MultimodalQA to facilitate extraction of queries, contexts, images, and metadata. Design and fine-tune visual and textual context embeddings using contrastive learning with visual BERT and BERT models. Configure Elasticsearch for storage and retrieval of embeddings and perform prompt-engineering for GPT-based answer generation. Evaluate answer accuracy using BLEU scores to ensure reliability of QA system.

- Suggested and executed project idea for QA system accepting multimodal context as part of MS Capstone Project extension, demonstrating initiative and innovation.
- Identified and utilized MultimodalQA dataset for fine-tuning models, showcasing research and analytical skills.
- Designed and fine-tuned multi-modal retrievers for domain adaptation, improving system's accuracy and performance.
- Evaluated generated answers with BLEU scores, ensuring high-quality output and contributing to project's success.

Child Mental State Detection   Jan 2020 — Jun 2020
BS Capstone Project

Developed robust classification network using gated recurrent unit (GRU) layers to accurately predict mental states from EEG wave patterns. Trained RNN model with substantial dataset of EEG samples, ensuring comprehensive understanding of beta, alpha, theta, delta, and gamma wave patterns. Evaluated mental attentional conditions—focused, de-focused, and drowsy—with high precision, achieving final test accuracy. Enhanced network performance through iterative testing and optimization, contributing to advancements in child mental state detection.

- Designed and implemented comprehensive RNN model to classify mental states, achieving 81% accuracy rate.
- Processed and cleaned 16K EEG samples for effective model training and validation.
- Secured 75% f1-score in accurately evaluating attentional conditions, demonstrating model reliability.

Education

Master of Science in Natural Language Processing
University of California

Bachelor of Science in Computer Science
University of California