Momo Gupta

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Detail-oriented Software Engineer with a strong foundation in NLP and a passion for problem-solving

TECHNICAL SKILLS

Programming Languages and Tools

Python, PyTorch, Scikit-learn, NLTK, Pandas, NumPy, HuggingFace, Java, JavaScript, Git, Linux

Relevant Skills

Text summarization, Question answering, Sentiment analysis, Data Cleaning, ML and DL Algorithms, Text Vectorization, Transformers, LLMs, Conversational Agents, Transformers (BERT, BART), GPT, Reinforcement Learning

EDUCATION

University of California, Santa Cruz
Masters in Natural Language Processing — GPA: 3.88 / 4 — Sep 2022 - Mar 2024

Manipal Institute of Technology
Bachelor of Technology in Computer Science and Engineering — GPA: 8.54 / 10 — Jul 2016 - Aug 2020

RELEVANT PROJECTS

Capstone Project (Adobe): Reinventing Prompt-to-Image Generation with Reinforcement Learning (Pytorch)

- Engineered a Reinforcement Learning pipeline leveraging a temperature-controlled language model (Llama 2) to generate aesthetically pleasing images
- Designed a weighted reward system combining Human Preference Score (HPS) and aesthetic scores, optimized through AB testing, to train RL on image prompt pairs on a diverse preference range
- Implemented an Actor-Critic Multilayer Perceptron (MLP) policy model, integrating BERT feature extraction and batch processing for model tuning
- Evaluated the scores of enriched prompts in comparison to the base prompts, and human crafted prompts

CookingMonster: Personalized Recipe Generator with GPT3 Prompting

- Created a recipe generator customized to users' input ingredients with diet preferences and allergy types
- Implemented baselines T5 and trained GPT3 with recipe NLG data by zero-shot, few-shot, and fine-tuning GPT3
- Evaluated using BLEU score, adjusted precision and recall, diversity with n-gram repetition and human evaluation
- Deployed in production with few-shot GPT3, using an application interface developed with React.js

Natural Language Inference (NLI) for Clinical Trial Data (SemEval 2023) (Pytorch)

- Innovated an NLI model aligning breast cancer clinical trial report (CTR) evidence with hypotheses, optimizing personalized care decisions
- Extracted vital evidence, refining relevance via data cleaning and feature weighting, resulting in F1-scores (validation: 0.60, test: 0.51) through adept use of BERTTokenizer, with fine-tuned BERT and deBERTa models, underscoring their clinical support potential

EXPERIENCE

AI Software Engineer
NLP Lab, University of California - Santa Cruz — May 2024 - Present

- Contributing to CruzChat, an AI-powered assistant for UCSC students, under Professor Ian Lane's guidance.
- Implemented API calls and engineered effective prompts for GPT-4, utilizing Retrieval-Augmented Generation (RAG) to provide contextual answers.
- Developed a chromium browser extension for Canvas and an admin interface for teachers using Next.js and Tailwind CSS.
- Collaborating with faculty and students to design and test features, improving user experience.

Software Engineer
Samsung Research — Jan 2020 - Sep 2022

- Developed and maintained the Samsung Internet Browser app in Java, ensuring robust and reliable code.
- Resolved over 200 critical issues, maintaining the browser application to ensure a seamless user experience.
- Refactored codebase to boost performance and implemented essential function, integration and unit tests.
- Developed a KeyBERT-based keyword extraction model to enhance the search functionality of webpages.