Gauri Naik

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Education

University of Southern California, Los Angeles, CA
Master of Science in Computer Science Aug 2024 – Aug 2026
Courses: Deep Learning, Analysis of Algorithms

MIT World Peace University, Pune, India
Bachelor of Technology in Computer Science and Engineering | **GPA:** 3.97/4 July 2019 – July 2023

Technical Skills

Software Development: Data Structures, Algorithms, System Design
Languages: Python, C++, JavaScript, SQL
Frameworks: PyTorch, Deep Graph Library (DGL), HuggingFace, scikit-learn, NLTK, TensorFlow, Keras, Node.js
Tools: MySQL, MongoDB, Git, LaTeX

Experience

LCS2, IIIT-Delhi, NLP Research Engineer, Delhi, India | Advisor: Dr. Md Shad Akhtar Aug 2023 - June 2024

- Curated a novel dataset, **PUMA** and proposed **PLASMA**, a prompt-driven controllable summarization model utilizing an energy-controlled loss function for generating perspective-specific summaries.
- Implemented the PLASMA model using PyTorch and **prefix-tuned Flan-T5** using Huggingface library.
- Achieved significant performance improvement over state-of-the-art baselines, with $\sim$ **1.5**% – **21.8**% increase in summarization quality.
- **Paper accepted at ACL 2024.**

LCS2, IIIT-Delhi, NLP Research Intern, Delhi, India | Advisor: Dr. Md Shad Akhtar July 2022 - Dec 2022

- Developed an empathetic dialogue generation model using **Graph Neural Networks** (GNNs) on mental health data (dataset: Hope), utilizing the **DGL library** to model patient-therapist interactions and enhance contextual understanding in language models like **GPT-2**.
- Integrated **Commonsense Transformer** knowledge into the GNN framework, resulting in a **51%** improvement in empathy within therapist responses over baseline models.
- Implemented the model using **PyTorch** and **Hugging Face** for GPT fine-tuning.

Publications

- **Gauri Naik**, Sharad Chandakacherla, Shweta Yadav, Md. Shad Akhtar. "No perspective, no perception!! Perspective-aware Healthcare Answer Summarization" ACL'24
- **Gauri Naik**, Nandini Narvekar, Dimple Agarwal, Nishita Nandanwar, Himangi Pande. "Eye Disease Prediction using Ensemble Learning and Attention on OCT Scans" FICC'24
- Improving Faithfulness of Summaries using Chain of Thought Reasoning **ACL Rolling Review 2024. (Under Review).**
- Aseem Srivastava, **Gauri Naik**, Md. Shad Akhtar, and Tanmoy Chakraborty. "Sentiment-guided Commonsense-aware Response Generation for Mental Health Counseling" **IEEE Transactions on Affective Computing. (Under Review).**

Projects

Text-to-Image Search Engine (PyTorch, DGL, Huggingface, OpenAI CLIP, Annoy) Github

- Developed a text-to-image search engine utilizing scene graph embeddings and Vision-Language Models for improved retrieval accuracy of 5% for complex mulit-part queries.

Eye Disease Prediction using Ensemble Learning and Attention on OCT Scans (Tensorflow, Keras, OpenCV, Flask) Github

- Developed an end-to-end web application for predicting eye diseases from OCT images using an ensemble of Xception and InceptionV3 networks with self-attention layers, and implemented a U-Net model for precise segmentation of disease abnormalities.

Face Recognition with Genetic Algorithm (Tensorflow, Keras, OpenCV, PIL) Github

- Created a face recognition model to automate attendance management for remote lectures during the COVID-19 pandemic, utilizing OpenCV and PIL to compile a dataset of 3,000 images. Increased model accuracy by employing a Genetic Algorithm to optimize CNN filter sizes, aimed at minimizing cross-entropy loss.

Achievements & Extracurricular

- **Selected by Google Research India** for Research Week with Google in 2023 and 2024.
- **3rd Prize, Evathon 2021** – Hackathon, Ireland
- **Reviewer** for ACL February 2024 cycle.
- Volunteer at International Conference on Natural Language Processing (ICON) 2022, India.