

Abhilash Shankarampeta

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Education

- Sept 2024 – **University of California, San Diego** La Jolla, CA
Present Masters of Science in Data Science GPA – 4.0/4.0
- Jul 2018 – **Indian Institute of Technology, Guwahati** Guwahati, India
May 2022 Bachelors in Electronics and Communication Engineering GPA – 3.92/4.0
Minor in Mathematics

Experience

- Nov 2024 – **UC San Diego, Student Researcher** La Jolla, CA.
Present *Prof. Hao Zhang's AI Lab*
- **LLM Reasoning Enhancement:** Developing methods to enhance reasoning capabilities in language models through sparse autoencoders (SAEs), focusing on efficient model compression while preserving complex reasoning abilities.
 - **Self-Refining LLMs:** Implementing iterative self-critique and rewriting mechanisms in LLMs, enabling models to autonomously refine the outputs for improved coherence and accuracy in response generation.
- Jun 2022 – **Meesho, Data/Applied Scientist II** Bengaluru, India.
Sept 2024 *Search Ranking & Relevance Pod*
- **Search Ranking:** Created a deep learning ranking system for e-commerce recommendations using DCNV2 and MMOE, achieving greater diversity and relevance compared to tree-based rankers.
 - **Search Retrieval:** Boosted tail-end orders by **20%** through a product retrieval system using two-tower architecture and hard negative mining for query and multimodal product representation learning.
 - **Inference Server:** Built a model inference service with Nvidia Triton server and TensorRT to scale GPU-based models in production, serving **130M+** monthly users with **sub-40ms** latency.
 - **Cold-Start Recommendations:** Drove **12%** higher conversion for new products by using a two-tower model with contrastive learning that learns representations from click sequences and item metadata.
 - **Query Correction:** Developed a misspelling correction system combining a ruled-based system and mBERT fine-tuned on synthetic spelling errors. Improved conversion on long-tail queries by **3%**.
- May 2021 – **University of Utah, Research Intern** Remote, US.
Jun 2023 *Natural Language Processing Group*
- **Numerical Reasoning and LLMs:** Created a hierarchical taxonomy and prompting framework to evaluate GPT-3.5, PaLM, and FLAN-T5's numerical reasoning capabilities on tabular data.
 - **Natural Language Inference:** Enhanced LMs' reasoning on tabular data and robustness to adversarial perturbations through masked language modeling to bridge the gap between knowledge and reasoning.
- May 2021 – **ZS Associates, Data Science Intern** Bengaluru, India.
Jul 2021 *Advanced Data Science Team*
- **Document Understanding:** Built an NLP tool using BERT-based sequence labeling and T5 for abstractive summarization to analyze drug trial audit reports, reducing the analysis time from **2-3 weeks to minutes** with **94%** accuracy.

Publications

C = Conference — * implies equal contribution.

- C.4 **TRANSIENTTABLES: Evaluating LLMs' Reasoning on Temporally Evolving Semi-structured Tables** Underreview ACL ARR
Shankarampeta, A.* , Mahajan, H.* , Kataria, T., Roth, D. and Gupta, V.
- C.3 **Exploring the Numerical Reasoning Capabilities of Language Models: A Comprehensive Analysis on Tabular Data** EMNLP 2023
Akhtar, M.* , Shankarampeta, A.* , Gupta, V., Patil, A., Cocarascu, O. and Simperl, E. [\[Code\]](#)

- C.2 [Enhancing Tabular Reasoning with Pattern Exploiting Training](#) AAACL 2022
[\[Website\]](#)
Shankarampeta, A.*, Gupta, V.*, and Zhang, S.
 Short version at SUKI workshop, NAACL 2022.
- C.1 [Few-Shot Class Incremental Learning with Generative Feature Replay](#) ICPRAM 2021
[\[Code\]](#)
Shankarampeta, A. and Yamauchi, K.

Skills

Languages Python, C++, C, SQL
 Frameworks PyTorch, Spark, Dask, SynapseML
 Misc Git, Docker, Kafka, Redis, Dragonfly DB, MLFlow, Jenkins, Postman, GCP, AWS, Databricks

Coursework

UCSD Causal Inference, Text Mining, Data Ethics.
 IIT Guwahati Machine Learning, Natural Language Processing, Probability, Statistics, Data Structures & Algorithms, Computer Vision, Signal Processing, Reinforcement Learning, Control Systems.

Awards & Recognitions

- 2021 **Samsung Fellowship Award**: Awarded research grant for innovative undergraduate thesis work on Audio Driven Facial Re-enactment.
- 2021 **Gold Medal, Inter-IIT Tech Meet**: Led winning solution on Automatic Sentiment and Headline Generation task, competing against 21 premier IITs.
- 2017 **Indian National Chemistry Olympiad**: Selected among top 1% of national participants.
- 2017 **Kishore Vaigyanik Protsahan Yojana (KVPY) scholarship**: Secured prestigious research scholarship (top 2%) from India's Department of Science and Technology

Service

Reviewer ICLR (2022-Present), NeurIPS (2022-Present), ACL ARR (2024-Present).

2023 – 2024 **Volunteer, U&I**.
 Teaching English and Life Skills for primary school underprivileged children in Bangalore, India.

2020 – 2021 **NLP Head, IITG.ai**.
 Organized group discussions, workshops, and hackathons for the growth of the NLP/AI community in IIT Guwahati.

Selected Projects

- Jun 2021 - **Audio Driven Facial Re-enactment**.
- May 2022
- Engineered a deep generative model that synthesizes photo-realistic talking faces by controlling 68 facial landmarks through audio features, achieving real-time performance at **30 FPS**.
 - Implemented personalized phoneme-to-keypoint mapping using LSTM and attention mechanisms to achieve precise control over head-pose, lip-sync, and gaze movements with **95%** landmark accuracy.
 - Received **Samsung Research Fellowship** grant to develop this novel facial animation system as undergraduate thesis.
- Mar 2021 - **Automated Headline Generation and Sentiment Recognition for Hinglish Text**.
- Apr 2021
- Developed a multilingual pipeline using mT5 and XLM-RoBERTa for headline generation and aspect-based sentiment analysis, achieving **0.42 ROUGE-L** score on Hinglish articles and **89%** F1-score on sentiment tasks.
 - Engineered a character-level transformer with byte-pair encoding to handle code-mixed text (Hinglish), making the model language-agnostic and reducing OOV tokens by **68%**.
 - Won **Gold Medal** at Inter-IIT Tech Meet 2021 among 21 competing IITs for best-performing solution in both headline generation and sentiment analysis tasks. [\[Slides\]](#)[\[Code\]](#)