Anushka Tiwari

Email Website LinkedIn Github

Summary

PhD candidate in Computational and Data-Enabled Science with research and engineering experience in machine learning and deep learning, focusing on foundation models, and efficient AI systems. My work involves training and adapting large language and vision-language models for continual adaptation, representation learning, and model compression, such as prompt-efficient fine-tuning and token pruning.

Recent work

Continual Adaptation of Foundation Models (SABER) Designed parameter-efficient update mechanism enabling LLMs to incrementally acquire new capabilities while preserving and refining prior knowledge. New tasks can enhance previously learned representations, allowing the model to improve over time without full retraining.
Scalable LLM Systems (GRID) Developed a scalable method that allows LLMs to incorporate new knowledge over time while controlling memory and computation costs. The approach compresses and reuses previously learnt information, enabling long-term model updates without retraining or system slowdown.
Efficient Multimodal Inference for Vision-Language Models (LLaVA, CLIP) Developing an efficient inference method that dynamically filters visual tokens to lower computation and latency while preserving accuracy, enabling practical deployment of MLLMs in resource-constrained and real-time environments.
Advised by Prof. Kaiyi Ji

Education

The State University of New York at Buffalo — **Aug 2023 – Present**
PhD in Computational and Data-Enabled Sciences, GPA 3.759/4 — *Buffalo, New York, United States*

Indian Institute of Technology Indore — **Aug 2021 – June 2023**
Master of Science in Mathematics , GPA 8.32/10 — *Madhya Pradesh, India*

ARSD, University of Delhi — **Aug 2018 – June 2021**
Bachelor of Science in Mathematics , GPA 9.216/10 — *New Delhi, India*

Publications

- **Turning Back Without Forgetting: Selective Backward Refinement for Parameter-Efficient Continual Learning**
  Anushka Tiwari, *Kaiyi Ji* — *Submitted ICML 2026*
- **Prompt-Based Continual Learning with Task-Agnostic Inference: A Memory-Efficient Approach**
  Anushka Tiwari, *Sayantan Pal, Rohini K. Srihari, Kaiyi Ji* — *Submitted ACL 2026*
- **Heterogeneous Sequel-Aware Graph Neural Networks for Sequential Learning**
  Anushka Tiwari, *Haimonti Dutta, Shahrzad Khanizadeh* — *arXiv*
- **Content-based Art Recommendation Using Multimodal Graph Neural Networks**
  Haimonti Dutta, ***Anushka Tiwari*** — *ICKG 2024*
- **Enhancing imbalance learning: A novel slack-factor fuzzy SVM approach**
  M Tanveer, ***Anushka Tiwari***, *Mushir Akhtar, Chin-Teng Lin* — *IEEE TETCI 2024*

Professional Experience

CHISQUARE LABS — **Kerala, India**
Data Science Intern — *June 2024 – August 2024*

- Developed an AI-driven patient-review prioritization model that analyzed only ∼50% of records yet detected ∼90% of Alzheimer's Disease cases, halving workload and improving efficiency, cost, and outcomes.

Technical Skills

Languages: Python, SQL
Libraries/Frameworks: PyTorch, Transformers, Hugging Face, NLTK, Numpy, Scikit-learn, Matplotlib, Seaborn, Pandas, SpaCy, Deep Graph

Achievements

- **Secured an All-India Rank (AIR) of 258 in the IIT-JAM Mathematics Examination.** IIT JAM.