Xuyuan Liu

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Research Interests

My research focuses on **the science of Language Models**, especially on understanding their behavior during both training and inference through methods including **latent space analysis**. I aim to **understand how LLMs work** and use that understanding to develop technical methods that improve their performance.

Education

- **Dartmouth College** *Sept. 2023 - Present*
  PhD in Computer Science Hanover, NH
  ○ Advisors: Prof. Yujun Yan and Prof. Yaoqing Yang

- **Nankai University** *Sept. 2019- June 2023*
  Bachelor of Science, Computer Science Tianjin, China
  ○ Thesis:*Few-shot Knowledge Retrieval Framework in multi-turn Dialogue System*

Publications & Preprints
* Equal Contribution; S=In Submission, CP=Conference Proceedings

[CP.3] **Xuyuan Liu**, Lei Hsiung, Yaoqing Yang, Yujun Yan. **Spectral Insights into Data-Oblivious Critical Layers in Large Language Models**. In *Findings of the Association for Computational Linguistics: ACL 2025*
🔖 LLM Training Behavior 🔖 Representation Learning

[CP.2] **Xuyuan Liu**, Yinghao Cai, Qihui Yang, and Yujun Yan. **Exploring Consistency in Graph Representations: from Graph Kernels to Graph Neural Networks**. In *Proceedings of the Thirty-Eighth Annual Conference on Neural Information Processing Systems* (**NeurIPS**), 2024.
🔖 Representation Learning 🔖 Graph Learning

[CP.1] Zichen Liu, **Xuyuan Liu**, Yanlong Wen, Guoqing Zhao, Fen Xia, and Xiaojie Yuan. **TreeMAN: Tree- enhanced multimodal attention network for ICD coding**. In *Proceedings of the 29th International Conference on Computational Linguistics* (**COLING**), 2022. Oral
🔖 Multi-Modality Learning

Internship

- **NEC Laboratories America** *June. 2025 - Sep. 2025*
  Research Intern Princeton, NJ
  Work on LLM's knowledge Personalization

Honors, Awards, and Grants

○ **Guarini Travel Grant (2024).** Guarini School of Graduate and Advanced Studies, Dartmouth College
○ **Dartmouth Fellowship (2023).** Guarini School of Graduate and Advanced Studies, Dartmouth College
○ **Academic Excellence Scholarship.** Nankai University (7/130)
○ **Scientific Research Innovation Scholarship.** Nankai University (3/130)

Teaching Experiences

Deep Learning, Head TA (Spring2024); Machine Learning & Statistical Data Analysis, Head TA (Fall2024);

Professional Services

○ **Reviewers:** (Conf.) ICLR2025, NeurIPS 2024-2025, ICML2025,

Skills

○ **Programming Languages:** C, C++, Python, Java, SQL, Shell Scripting
○ **ML/LLM Frameworks and Tools:** PyTorch, vLLM, HuggingFace, PyTorch FSDP, Langchain
○ **Tools:** Git, LaTeX