Xinyang Liu

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Research

My primary research goal is to solve practical problems through advanced Generative AI systems capable of understanding, generating and reasoning with high-dimensional data across diverse modalities. With this goal in mind, I am currently working on **Generative Modeling**, including its theoretical exploration and various applications in data generation and multi/cross-modal learning

Specifically, I am also interested in or working in the following subjects:

- **Diffusion Models**
- **Alignment of Large Foundation Models (LLMs, VLMs)**
- **Generative Modeling in robot learning, planning and AI4Science.**
- Statistical learning and inference
- Graph representation learning.
- Any interesting machine learning theory that can apply to solving practical problems.

Education

Xidian University — Xi'an, China
M.S., Department of Electronic Engineering — Sep 2021 - Jul 2024
Advisor: Bo Chen

Xidian University — Xi'an, China
B.S., Department of Electronic Engineering — Sep 2017 - Jul 2021

Experience

Purdue University
Research Intern, RZ-Lab, Department of Computer Science — May 2024 - present
Advisor: Ruqi Zhang

The University of Texas at Austin
Research Intern — Oct 2023 - present
Advisor: Mingyuan Zhou

Publications (* denotes equal contribution)

Preprint

[1] **Xinyang Liu***, Hengrong Du*, WeiDeng, Ruqi Zhang
Optimal Stochastic Trace Estimation in Generative Modeling
Under review. **(2024)**

[2] **Xinyang Liu***, Yilin He*, Bo Chen and Mingyuan Zhou
Advancing Graph Generation through Beta Diffusion
ArXiv 2406.09357 **(2024)**

[3] Xinyue Hu, Zhibin Duan, **Xinyang Liu**, Yuxin Li, Bo Chen, Mingyuan Zhou
Disentangled Generative Graph Representation Learning
ArXiv 2408.13471 **(2024)**

[4] Chaojie Wang*, **Xinyang Liu***, Dongsheng Wang, Hao Zhang, Bo Chen, Mingyuan Zhou
Scalable Weibull Graph Attention Autoencoder for Modeling Document Relational Networks
ArXiv 2410.09696 **(2024)**

Conference and Journal Publications

[5] **Xinyang Liu***, Dongsheng Wang*, Bowei, Fang, Miaoge Li, Zhibin Duan, Yishi Xu, Bo Chen and Mingyuan Zhou
Patch-Prompt Aligned Bayesian Prompt Tuning for Vision-Language Models
Proceedings of the 40th Conference on Uncertainty in Artificial Intelligence, **(UAI 2024)**

[6] Yishi Xu, Jianqiao Sun, Yudi Su, **Xinyang Liu**, Zhibin Duan, Bo Chen and Mingyuan Zhou
Context-guided Embedding Adaptation for Effective Topic Modeling in Low-Resource Regimes
Thirty-seventh Conference on Neural Information Processing Systems, **(NeurIPS 2023)**

[7] Dongsheng Wang, Miaoge Li, **Xinyang Liu**, MingSheng Xu, Bo Chen and Hanwang Zhang
Tuning Multi-mode Token-level Prompt Alignment across Modalities
Thirty-seventh Conference on Neural Information Processing Systems, **(NeurIPS 2023)**

[8] Miaoge Li*, Dongsheng Wang*, **Xinyang Liu**, Zequn Zeng, Ruiying Lu, Bo Chen and Mingyuan Zhou
PatchCT: Aligning Patch Set and Label Set with Conditional Transport for Multi-Label Image Classification
The IEEE/CVF International Conference on Computer Vision, **(ICCV 2023)**

[9] Zhibin Duan*, **Xinyang Liu***, Yudi Su, Yishi Xu, Bo Chen and Mingyuan Zhou
Bayesian Progressive Deep Topic Model with Knowledge Informed Textual Data Coarsening Process
In the 40th International Conference on Machine Learning, **(ICML 2023)**

Open Source Project

- **PyDPM** (core contributor)
  A python library focuses on constructing **D**eep **P**robabilistic **M**odels **(DPMs)** Sep 2022 - Feb 2024

Awards and Honors

- **Bronze Medal**, The 2019 ICPC Asia-East Continent Final, Xi'an 2019
- **Bronze Medal**, The 2019 ICPC Asia Regional Contest, Yinchuan Site 2019
- **Silver Medal**, The 2019 ICPC China Shaanxi Provincial Programming Contest 2019
- **1st Prize (9/325)**, The 17th Programming Contest of Xidian University 2019
- **Scientific and Technological Progress Scholarship**, Xidian University 2018

Professional Services

- **Conference Reviewer:** NeurIPS (2024), ICML (2024), CVPR (2024), ICLR (2025), AISTATS (2025)