XINYI WU

Curriculum Vitae (September 2024)

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EDUCATION

Massachusetts Institute of Technology (MIT) — Cambridge, MA
Institute for Data, Systems and Society (IDSS) — 2020 — Present
Laboratory for Information and Decision Systems (LIDS)
Ph.D. Program in Social & Engineering Systems and Statistics

Washington University in St. Louis — St. Louis, MO
Bachelor of Arts in Mathematics, *Summa Cum Laude* — 2016 — 2020
Second major: Economics

PUBLICATIONS

6. **X. Wu**, A. Ajorlou, Y. Wang, S. Jegelka, A. Jadbabaie, "On the Role of Attention Masks and LayerNorm in Transformers." *To appear in the Proceedings of the 38th Conference on Neural Information Processing Systems (NeurIPS)*, 2024.
5. M. Scholkemper*, **X. Wu***(*equal contribution), A. Jadbabaie, M. T. Schaub, " Residual Connections and Normalization Can Provably Prevent Oversmoothing in GNNs." Preprint.
4. R. Sun, A. Akella, **X. Wu**, R. Kong, J. A. Konstan, "What Are We Optimizing For? A Human-centric Evaluation of Deep Learning-based Recommender Systems." Preprint.
3. **X. Wu**, A. Ajorlou, Z. Wu, A. Jadbabaie, "Demystifying Oversmoothing in Attention-Based Graph Neural Networks." *Proceedings of the 37th Conference on Neural Information Processing Systems (NeurIPS,* ***spotlight****)*, 2023.
   - **Oral** presentation at Learning on Graphs Conference (LOG), 2023.
   - **Oral** presentation at Conference on the Mathematical Theory of Deep Neural Networks (DeepMath), 2023.
2. **X. Wu**, Z. Chen, W. W. Wang, A. Jadbabaie, "A Non-Asymptotic Analysis of Oversmoothing in Graph Neural Networks." *Proceedings of the 11th International Conference on Learning Representations (ICLR)*, 2023.
1. **X. Wu**, A. Sarker, A. Jadbabaie, "Link Partitioning on Simplicial Complexes Using Higher-Order Laplacians." *Proceedings of the 22nd IEEE International Conference on Data Mining (ICDM)*, 2022.

WORK EXPERIENCE

Research Intern at Snap Research — Bellevue, WA

User Modeling and Personalization Team — June 2024 — August 2024

Mentors: Tong Zhao, Yozen Liu, Neil Shah

- Develop efficient graph-based enhancements for recommender systems by leveraging user-item interaction graphs to improve scalability and prediction performance on large-scale datasets.
- Build a code base for benchmarking the proposed method against existing baselines on retrieval and ranking tasks, achieving significant improvements in standard evaluation metrics (recall, NDCG, AUC etc.).
- Manuscript in preparation.

HONORS

- NeurIPS 2023 Top Reviewer 2023
- IEEE ICDM Student Travel Award 2022
- Michael Hammer Fellowship, MIT 2020
- Phi Beta Kappa, Beta of Missouri at Washington University 2020
- Highest Distinction in Mathematics, Washington University in St. Louis 2020
- Distinction in Economics, Washington University in St. Louis 2020
- Ross Middlemiss Prize in Mathematics, Washington University in St. Louis 2020
- Brian Blank Prize in Mathematics, Washington University in St. Louis 2019

PROJECTS

Research Collaboration with Liberty Mutual Group Fall 2022 —

- Analyze network data associated with surety contracts to augment existing risk measures; report data-driven insights to key stakeholders.

TEACHING

Instructor for MIT IDSS Math Camp Summer 2023, 2024
TA for 1.022 Introduction to Network Models (MIT) Fall 2021, Fall 2022, Fall 2023

SERVICE

Reviewer for ICML 2024, IJCAI 2024, ICLR 2024, NeurIPS 2023-2024

SKILLS

Programming

- Python, PyTorch, MATLAB, R, Java, C++, STATA, LaTeX

Languages

- English (fluent), Chinese (native), French (advanced)