

Yinan Huang

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Education

Georgia Institute of Technology, USA , Ph.D. in Machine Learning	Sept 2023 – 2027 (Expected)
• Advisor: Pan Li	
Duke University, USA , M.S. in Electrical and Computer Engineering	Sept 2020 - May 2023
• GPA: 4.0/4.0	
Sun Yat-sen University, China , B.S. in Physics	Sept 2016 - May 2020
• GPA: 4.3/5.0, Rank: 1/83	

Research Interests

Geometric Deep Learning: graph neural networks, equivariant neural networks, AI for science

Generative Models: diffusion model/flow matching

Trustworthy AI: privacy-preserving deep learning

Research Experience

Research Assistant , Georgia Institute of Technology	Sept 2023 –
• Developed stable and expressive positional encodings for undirected and directed graphs (ICLR 2024, ICLR 2025)	
• Developed a differentially private training algorithm for relational learning with rigorous entity-level privacy guarantees (NeurIPS 2025)	
• Developing efficient diffusion and flow-matching models for online forecasting, tracking, and control (ongoing)	
Research Intern , Peking University	Feb 2022 – Sept 2022
• Revealed fundamental limitations of subgraph neural networks in capturing graph substructures, and developed an efficient node labeling method to enhance their expressive power (ICLR 2023)	
Research Intern , Beijing Institute for General Artificial Intelligence	Sept 2021 – Feb 2022
• Developed E(3)-equivariant generative models that incorporate molecular geometry for drug discovery (ICML 2022, Oral)	

Publications

- [1] Differentially Private Relational Learning with Entity-level Privacy Guarantees
*Yinan Huang**, Haoteng Yin*, Eli Chien, Rongzhe Wei, Pan Li
Advances in Neural Information Processing Systems (NeurIPS), 2025.
- [2] GenAI Copyright Evidence with Operational Meaning
Eli Chien, Amit Saha, *Yinan Huang*, Pan Li
ICML Workshop on Reliable and Responsible Foundation Models, 2025
- [3] What Are Good Positional Encodings for Directed Graphs?
Yinan Huang, Haoyu Wang, Pan Li
International Conference on Learning Representations (ICLR), 2025.
- [4] On the Stability of Expressive Positional Encodings for Graphs
*Yinan Huang**, William Lu*, Joshua Robinson, Yu Yang, Muhan Zhang, Stefanie Jegelka, Pan Li
International Conference on Learning Representations (ICLR), 2024.

- [5] Is Distance Matrix Enough for Geometric Deep Learning?
Zian Li, Xiyuan Wang, **Yinan Huang**, Muhan Zhang
Advances in Neural Information Processing Systems (NeurIPS), 2023.
- [6] Boosting the Cycle Counting Power of Graph Neural Networks with ℓ^2 -GNNs
Yinan Huang, Xingang Peng, Jianzhu Ma, Muhan Zhang
International Conference on Learning Representations (ICLR), 2023.
- [7] 3DLinker: An $E(3)$ Equivariant Variational Autoencoder for Molecular Linker Design
Yinan Huang, Xingang Peng, Jianzhu Ma, Muhan Zhang
International Conference on Machine Learning (ICML), 2022 (Oral).

Preprints

- [1] Powers of Magnetic Graph Matrix: Fourier Spectrum, Walk Compression, and Applications
Yinan Huang, David F Gleich, Pan Li
<https://arxiv.org/abs/2506.07343>
- [2] What Can We Learn from State Space Models for Machine Learning on Graphs?
Yinan Huang*, Siqi Miao*, Pan Li
<https://arxiv.org/abs/2406.05815>
- [3] A Benchmark on Directed Graph Representation Learning in Hardware Designs
Haoyu Wang, **Yinan Huang**, Nan Wu, Pan Li
<https://arxiv.org/abs/2410.06460>

Honors and Awards

- Travel Award for ICLR 2025
- Georgia Tech ECE Fellowship 2023
- China National Scholarship 2017

Professional Service

- Reviewer for International Conference on Machine Learning (ICML) 2023-2025
- Reviewer for International Conference on Learning Representations (ICLR) 2024-2025
- Reviewer for Advances in Neural Information Processing Systems (NeurIPS) 2023-2026
- Program Committee for Association for the Advancement of Artificial Intelligence (AAAI) 2026
- Reviewer for Association for Computing Machinery's Special Interest Group on Knowledge Discovery and Data Mining (KDD) 2026
- Teaching Assistant: ECE 3077 Introduction to Probability and Statistics, ECE 6250 Advanced Digital Signal Processing

Skills

- Programming languages and frameworks: Python, Pytorch, Pytorch Geometric, Matlab, C