Yu Wang

CONTACT INFORMATION

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Lab Website: https://kindlab-fly.github.io/
Twitter: https://twitter.com/YuWVandy
Google Scholar: https://scholar.google.com/citations?user=XPCmiz4AAAAJ

BIO

Yu Wang is an Assistant Professor in the Department of Computer Science at the University of Oregon. Before that, he received his Ph.D. in the Computer Science Department at Vanderbilt University under the supervision of Dr. Tyler Derr.

Yu conducts research in the areas of data mining and machine learning, with emphasis on network analysis, machine learning on graphs, and data-centric and multi-purpose-driven AI for social goodness with applications in information retrieval, infrastructure systems, and biochemistry. He received numerous honors and awards, including the sole recipient of Vanderbilt's Graduate Leadership Anchor Award for Research in 2023, the 2023-2024 Recipient of the Vanderbilt Outstanding Doctoral Student Award, the Best Paper Award in 2020 Smokey Mountain Data Challenge Competition by ORNL, first-author of Vanderbilt's C.F.Chen Best Paper Award in 2022, first-author of the Best Paper Award at GLFrontiers Workshop at Neurips'23, Best Doctoral Forum Poster Runner-ups at SDM'24, along with two of his works being selected among the top-10 Most Influential CIKM'22 and WWW'23 Papers by Paper Digest. He actively contributed to top conferences/journals in the field of data mining and machine learning, both in terms of publishing such as NeurIPS, ICLR, AAAI, KDD, WWW, CIKM, WSDM, TKDD, TIST and serving as a PC member/reviewer/organizer such as KDD, ICML, AAAI (ICWSM), WWW, WSDM, CIKM, TKDD, and TNNLS. He has contributed to organizing workshops in WSDM'22/24, presenting tutorials in SDM'24/CIKM'24, and chairing the travel award program at CIKM'24. For more details, please visit his website at https://yuwang0103.github.io/

POSITIONS

Tenure Track Assistant Professor, University of Oregon — Sep 2024- Present
Department of Computer Science

Teaching and Research Assistant, Ph.D., Vanderbilt University — Aug 2019 – Aug 2024
Department of Computer Science

EDUCATION

Vanderbilt University

Master and Doctor of Philosophy (**Ph.D.**) in Computer Science — May 2024

- Master Degree Awarded in May 2024
- Dissertation: Data-quality-aware Graph Machine Learning
- Advisor: Dr. Tyler Derr
- Research areas: Data-centric Graph Machine Learning, Multi-Purpose-Driven Graph Machine Learning, Machine Learning for Social Goodness including Chemistry/Infrastructure/Information Retrieval
- Cumulative GPA: 3.95 / 4.00

Harbin Institute of Technology

Bachelor of Engineering (**B.E.**) — May 2019

- Thesis: Machine Learning for Bridge Crack Detection
- Advisor: Dr. Qingfei Gao
- Cumulative GPA: 4.0 / 4.0, Rank: 1/92
- First-class People's Scholarship×4, National Scholarship×2

RESEARCH EXPERIENCE

Network and Data Science Lab, Vanderbilt University — Dec 2020 –Aug 2024
Ph.D. Program, Research/Teaching Assistant
- Research Interests: Data mining, Machine Learning, Network Analysis, Graph Neural Networks (GNNs)
  Data-centric Graph Machine Learning (Structure/Imbalance/Limited Data).
  Multi-Purpose-Driven Graph Machine Learning (Fairness/Diversity/Reliability).
  Graph-ML for Chemistry/Infrastructure/Information Retrieval Systems
- Publications: ICLR, NeurIPS, KDD×3, WWW×3, AAAI×4, WSDM×2, CIKM×4, ICDMW, LOG, Book-Chapter, TKDD, TKDE, TIST
- Mentor/Advisor: Dr. Tyler Derr

Document Intelligence Team, Adobe Research — May 2023 – Dec 2023
Research Scientist/Engineer Intern
- Project-1: Knowledge Graph Prompting for Multi-Document Question Answering [paper][demo][news]
- Project-2: Fairness in GNNs [paper]
- Project-3: Graph Verbalization via Topological-aware Positional Encoding [paper]
- Mentors: Dr. Nedim Lipka, Dr. Ryan Rossi, Dr. Alexa Siu, Dr. Ruiyi Zhang, Manager: Dr. Tong Sun

Recommendation Data Science Team, The Home Depot — May 2022 – Aug 2022
Research Data Scientist
- Project-1: Knowledge Graph-enhanced Session Recommendation [paper]
- Project-2: Prototyping the Knowledge Graph-enhanced Session Recommendation Framework in A/B test.
- Mentors: Dr. Amin Javari, Dr. Walid Shalaby, Manager: Dr. Xiquan Cui

Hiba Baroud Research Group, Vanderbilt University — Aug 2019 – Dec 2020
Ph.D. Program, Research/Teaching Assistant
- Research Interests: Graph Theory, Machine Learning, Statistical Network Models
  Resilience and Risk Analysis of Infrastructure Networks
- Publications: IEEE System Journal/ESREL/SMC2020 Data Competition [news]
- Mentors: Dr. Hiba Baroud, Dr. Jinzhu Yu

Taciroglu Research Group, UCLA-CSST — Jul 2019 – Sep 2019
Undergraduate Summer Researcher
- Project: Designing a modeling analysis tool for automatic bridge generation [poster]
- Mentors: Dr. Ertugrul Taciroglu, Dr. Barbaros Cetiner

Qingfei Gao Research Group, Harbin Institute of Technology — Oct 2018 – Jul 2019
Undergraduate Researcher
- Project: Improving the existing percolation-based algorithm for bridge crack detection [paper]
- Mentors: Dr. Qingfei Gao

HONORS & AWARDS

- Outstanding Reviewer at Applied Data Science Track at ECML-PKDD'24 — Dec 2024
- Best Doctoral Forum Poster Runner-Up at SDM'24 — Apr 2024
- Vanderbilt Outstanding Doctoral Student Award — Feb 2024
- Best Paper Award at GLFrontiers Workshop in Neurips'23 — Dec 2023
- Vanderbilt Graduate Leadership Anchor Award for Research — May 2023
- Vanderbilt's C.F.Chen Best Paper Runner-up Award (as co-author) — May 2023
- American Bureau of Shipping Scholarship Award — Jan 2023
- NSF Student Travel Award (To attend ICDM'22) — Nov 2022
- SIGIR Student Travel Grant (To attend CIKM'22) — Nov 2022
- NSF Student Registeration&Travel Award (To attend KDD'22/SDM'21) — Jun 2022 Mar 2021
- Vanderbilt's C.F.Chen Best Paper Award — Apr 2022
- IJCAI'21 Volunteers & Grants Program — Aug 2021
- IJCAI'20 Volunteers & Grants Program — Jan 2020
- Vanderbilt University Graduate School Travel Grant — Oct 2020 Nov 2022
- Best Paper Award in 2020 Smoky Mountain Data Challenge Competition by ORNL — Sep 2020
- Outstanding Research and Presentation Skills Award by UCLA-CSST Program — Aug 2018
- First-class People's Scholarship×4 — Sep 2016 Apr 2017 Sep 2017 Apr 2018
- National Scholarship×2 — Sep 2016 Sep 2017
- Second Prize in the National College Student Mathematics Competition — Sep 2017

PUBLICATIONS Please note the following symbols below to signify certain author types in the below lists:

*	denotes co-first authors
†	denotes *graduate student mentored* by Yu Wang
††	denotes *undergraduate researcher/intern mentored* by Yu Wang

Conference Papers (acceptance based on peer review of full paper):

[C21] Bo Ni†, **Yu Wang**, Lu Cheng, Erik Blasch, Tyler Derr. "Towards Trustworthy Knowledge Graph Reasoning: An Uncertainty Aware Perspective" 2024. The 39th AAAI Conference on Artificial Intelligence (AAAI), Philadelphia, Pennsylvania, 2025
Acceptance Rate 23.4%
[Paper][code]

[C20] Xueqi Cheng*,†, **Yu Wang***, Yuying Zhao†, Charu Aggarwal, and Tyler Derr. "Edge Classification on Graphs: New Directions in Topological Imbalance" The 18th ACM International Conference on Web Search and Data Mining, 2025.
Acceptance rate 17.3%
[Paper][Code]

[C19] Yunchao Liu†, Ha Dong, Xin Wang†, Rocco Moretti, **Yu Wang**, Zhaoqian Su, Jiawei Gu, Bobby Bodenheimer, Charles Weaver, Jens Meiler, Tyler Derr. "WelQrate: Defining the Gold Standard in Small Molecule Drug Discovery Benchmarking" 2024 Conference on Neural Information Processing Systems.
Acceptance rate 25.3%
[Paper][Code][Slides][Poster]

[C18] **Yu Wang**, Nedim Lipka, Ruiyi Zhang, Alexa Siu, Yuying Zhao†, Bo Ni†, Xin Wang†, Ryan Rossi, Tyler Derr. "Augmenting Textual Generation via Topology Aware Retrieval" Proceedings of the 33th ACM International Conference on Information and Knowledge Management, 2024
Acceptance rate 23.00%
[Paper][Code][Slides][Poster]

[C17] **Yu Wang**, Jin-Zhu Yu, Hiba Baroud. "A Bayesian Approach to Reconstructing Interdependent Infrastructure Networks from Cascading Failures." 14th International Conference on Applications of Statistics and Probability in Civil Engineering, 2023.
[Paper]

[C16] **Yu Wang**, Amin Javari, Janani Balaji, Walid Shalaby, Tyler Derr, Xiquan Cui "Knowledge Graph-Based Sequential Recommendation with Session-Adaptive Propagation." In Proceedings of the ACM Web Conference (TheWebConf - Industry Track), 2024.
Acceptance Rate 21.30%,

[C15] Yuying Zhao†, Minghua Xu, Huiyuan Chen, Yuzhong Chen, Yiwei Cai, Rashidul Islam, **Yu Wang**, Tyler Derr. "Can One Embedding Fit All? A Multi-interest Learning Paradigm Towards Improving User Interest Diversity Fairness." In Proceedings of the ACM Web Conference (TheWebConf - Research Track), 2024.
Acceptance Rate 20.20%,

[C14] **Yu Wang**, Tong Zhao, Yuying Zhao†, Yunchao Liu†, Xueqi Cheng†, Neil Shah, Tyler Derr. "A Topological Perspective on Demystifying GNN-based Link Prediction Performance." 2024. International Conference on Learning Representation (ICLR'24)
[Paper][Code]

[C13] **Yu Wang**, Nedim Lipka, Ryan Rossi, Alexa Siu, Ruiyi Zhang, Tyler Derr "Knowledge Graph Prompting for Multi-Document Question Answering." The 38th AAAI Conference on Artificial Intelligence (AAAI), Vancouver, Canada, 2024
Acceptance Rate 23.75%, **Best Paper Award at GLFrontiers Workshop in Neurips'23**
[Paper][Code][Slides][Poster]

[C12] Yuying Zhao†, **Yu Wang**, Yi Zhang, Pamela Wisniswski, Charu Aggarwal, and Tyler Derr. "Fair online dating recommendations for sexually fluid users via leveraging opposite gender interaction ratio." The 38th AAAI Conference on Artificial Intelligence (AAAI), Vancouver, Canada, 2024
Acceptance Rate 24.20%
[Paper]

[C11] **Yu Wang**, Yuying Zhao†, Yi Zhang†, and Tyler Derr. "Collaboration-aware Graph Convolutional Networks for Recommender Systems." In Proceedings of the ACM Web Conference (TheWebConf), Austin, TX, USA, April 30 - May 4, 2023.
Acceptance Rate 19.2%, **Top-10 most influential paper in WWW'23**
[Paper][Code][Slides]

[C10] Yuying Zhao†, **Yu Wang** and Tyler Derr. "Fairness and Explainability: Bridging the Gap Towards Fair Model Explanations." The 37th AAAI Conference on Artificial Intelligence (AAAI), Washington, DC, USA, 2023.
Acceptance Rate 19.6%
[Paper][Code][Slides][Poster]

[C9] Yunchao Liu†, **Yu Wang**, Oanh Vu, Rocco Moretti, Bobby Bodenheimer, Jens Meiler and Tyler Derr. "Interpretable Chirality-Aware Graph Neural Network for Quantitative Structure-Activity Relationship Modeling in Drug Discovery." The 37th AAAI Conference on Artificial Intelligence (AAAI), Washington, DC, USA, February 7-14, 2023.
Acceptance Rate 19.6%
[Paper] [Code][Slides][Poster]

[C8] **Yu Wang**, Yuying Zhao†, Neil Shah, and Tyler Derr. "Imbalanced Graph Classification via GNNs on Graph of Graphs." In Proceedings of the 31th ACM International Conference on Information and Knowledge Management, Atlanta, GA, 2022.
Acceptance rate 27.51%, **Top-10 most influential paper in CIKM'22**
[Paper][Code][Slides][Poster]

[C7] **Yu Wang**, Yuying Zhao†, Yushun Dong, Huiyuan Chen, Jundong Li and Tyler Derr. "Improving Fairness in GNNs via Mitigating Sensitive Attribute Leakage." Proceedings of the 28th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD), Washington D.C., USA, 2022.
Acceptance rate 14.9% (Research Track)
[Paper][Code][Slides][Poster]

[C6] Yushun Dong, Song Wang, **Yu Wang**, Tyler Derr, and Jundong Li. "On Structural Explanation of Bias in Graph Neural Networks ." Proceedings of the 28th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD), Washington D.C., USA, 2022.
Acceptance rate 14.9% (Research Track)
[Paper][Code]

[C5] Benedek Rozemberczki, Charles Tapley Hoyt, Anna Gogleva, Piotr Grabowski, Klas Karis, Andrej Lamov, Andriy Nikolov, Sebastian Nilsson, Michael Ughetto, **Yu Wang**, Tyler Derr, Benjamin M Gyori. "ChemicalX: A Deep Learning Library for Drug Pair Scoring." Proceedings of the 28th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), Washington D.C., USA, 2022.
Acceptance rate 25.9% (Applied Track)
[Paper][Code][Slides][Poster]

[C4] **Yu Wang**. "Fair Graph Learning with Imbalanced and Biased Data." Proceedings of the Fifteenth ACM International Conference on Web Search and Data Mining (WSDM), 2022.
[Paper][Slides]

[C3] **Yu Wang** and Tyler Derr. "Tree Decomposed Graph Neural Network." In Proceedings of the 30th ACM International Conference on Information and Knowledge Management (CIKM), Virtual Conference, November 1-5, 2021.
Acceptance rate 21.7%
[Paper][Code][Slides][Poster]

[C2] **Yu Wang**, Jinzhu Yu, and Hiba Baroud. "Quantifying the Interdependency Strength Across Critical Infrastructure Systems Using a Dynamic Network Flow Redistribution Model." Proceedings of the 30th European Safety and Reliability Conference, 2020.
[Paper]

[C1] Ao Qu[††], **Yu Wang**, Yue Hu, Yanbing Wang, and Hiba Baroud. "A Data-Integration Analysis on Road Emissions and Traffic Patterns." Smoky Mountains Computational Sciences and Engineering Conference. Springer, 2020.
Best Paper Award
[Paper]

Book Chapters

[B1] **Yu Wang**, Wei Jin, and Tyler Derr. "Graph Neural Networks: Self-supervised Learning." In Graph Neural Networks: Foundations, Frontiers, and Applications. Springer, (2021).
[Paper]

Journal Papers

[J5] Yi Zhang[†], Yuying Zhao[†], Zhaoqing Li, Xueqi Cheng[†], **Yu Wang**, Olivera Kotevska, Philip S. Yu, Tyler Derr. "A Survey on Privacy in Graph Neural Networks: Attacks, Preservation, and Applications" 2023.
TKDE journal
[Paper]

[J4] April Chen, Ryan A. Rossi, Namyong Park, Puja Trivedi, **Yu Wang**, Tong Yu, Sungchul Kim, Franck Dernoncourt, Nesreen K. Ahmed "Fairness-Aware Graph Neural Networks: A Survey".
TKDD journal, 2023
[Paper]

[J3] Yuying Zhao[†], **Yu Wang**, Yunchao Liu[†], Xueqi Cheng[†], Charu Aggarwal, Tyler Derr "Fairness and Diversity in Recommender Systems: A Survey"
TIST journal, 2023
[Paper]

[J2] **Yu Wang**, Jin-Zhu Yu, and Hiba Baroud. "Generating Synthetic Systems of Interdependent Critical Infrastructure Networks." IEEE System Journals (2021) Generating Synthetic Systems of Interdependent Critical Infrastructure Networks.
[Paper]

[J1] Qingfei Gao, **Yu Wang**, Jun Li, Kejian Sheng, and Chenguang Liu. "An Enhanced Percolation Method for Automatic Detection of Cracks in Bridges." Advances in Civil Engineering, 2020.
[Paper]

Preprints and Submissions

[P3] **Yu Wang**, Ryan A. Rossi, Namyong Park, Huiyuan Chen, Nesreen K. Ahmed, Puja Trivedi, Franck Dernoncourt, Danai Koutra, Tyler Derr. "Large Graph Generative Models" 2024.
Preprint
[Paper][Code][Demo]

[P2] Yunchao Liu[†], Rocco Moretti, **Yu Wang**, Ha Dong, Bobby Bodenheimer, Tyler Derr, Jens Meiler, Advancements in Ligand-Based Virtual Screening through the Synergistic Integration of Graph Neural Networks and Expert-Crafted Descriptors.
Submission in JCBC journal

[P1] **Yu Wang**, Charu Aggarwal, Tyler Derr. "Distance-wise Prototypical Graph Neural Network in Node Imbalance Classification." 2022.
Preprint
[Paper][Code]

SYMPOSIUMS / WORKSHOPS

Workshops

[W8] **Yu Wang**, Ram Durairajan. "Network Management with Graph Machine Learning: Challenges and Sollutions." Security Datasets for AI Workshop, SECDAI, Presentations, 2024.

[W7] **Yu Wang**. "Data-quality Aware Graph Machine Learning." International Conference on Data Mining (SDM) Doctoral Forum, SIAM, Poster, 2024. **Best Poster Award Runner-ups**

[W6] **Yu Wang**, Nedim Lipka, Ryan Rossi, Alexa Siu, Ruiyi Zhang, Tyler Derr. "Knowledge Graph Prompting for Multi-Document Question Answering" GLFrontiers Workshop at NeurIPS 2023, New Orleans, LA, USA, 2023. [Paper]

[W5] Yuying Zhao, **Yu Wang**, Yi Zhang, Pamela Wisniewski, Charu Aggarwal, and Tyler Derr. "Fair Online Dating Recommendations for Sexually Fluid Users via Leveraging Opposite Gender Interaction Ratio." 19th International Workshop on Mining and Learning with Graphs, Long Beach, CA, USA, 2023. [Paper]

[W4] **Yu Wang** and Tyler Derr. "Degree-Related Bias in Link Prediction." IEEE International Conference on Data Mining Workshops, Orlando, FL, USA, November 28, 2022. [Paper]

[W3] **Yu Wang**. "Overcoming Data Quality Issues of Graph Neural Networks." International Conference on Data Mining (SDM) Doctoral Forum, SIAM, Poster, 2022.

[W2] **Yu Wang**, Charu Aggarwal, and Tyler Derr. "Distance-wise Prototypical Graph Neural Network in Node Imbalance Classification." 17th International Workshop on Mining and Learning with Graphs. [Paper][Code]

[W1] **Yu Wang** and Tyler Derr. "Tackling Over-smoothing in Graph Neural Networks via Higher-order Neighborhood Disentanglement." International Conference on Data Mining (SDM) Doctoral Forum, SIAM, Poster, 2021.

TUTORIALS

Data Quality-Aware Graph Machine Learning [Tutorial] 2024
- **Yu Wang**, Kaize Ding, Xiaorui Liu, Jian Kang, Ryan Rossi, and Tyler Derr.
- Proceedings of the 33th ACM International Conference on Information and Knowledge Management, 2024 (CIKM2024)
- Comprehensively review Graph data-quality issues, including topological/imbalanced/biased/noisy/weak data issues.

Data Quality-Aware Graph Machine Learning [Tutorial] 2023
- **Yu Wang**, Yijun Tian, Tong Zhao, Xiaorui Liu, Jian Kang, and Tyler Derr.
- SIAM International Conference on Data Mining (SDM24)
- Comprehensively review Graph data-quality issues, including topological/imbalanced/biased/noisy/weak data issues.

OPEN SOURCE PROJECTS

ChemicalX: A Deep Learning Library for Drug Pair Scoring [GitHub] 2022
- Proceedings of the 28th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)
- A deep learning library for drug-drug interaction, polypharmacy side effects, and synergy prediction.
- **Received 650+ GitHub stars.**

Knowledge Graph Prompting for Multi-Document Question Answering[GitHub] 2022
- The 38th Annual AAAI Conference on Artificial Intelligence (AAAI)
- A knowledge graph prompting method for assisting LLMs in automatically answering questions over documents.
- **Received around 250 GitHub stars.**

In total, my research projects contributed 7 GitHub repositories and **received 1000+ GitHub stars**

TALKS

Academic Talks:

[AT8] Data-quality-aware Graph Machine Learning for Multi-Purpose-Driven Applications Oct 2024
Online Machine Learning Seminar
Vanderbilt University, TN

[AT7] Data-quality-aware Graph Machine Learning Sep 2024
Intelligent Data Engineering and Analytics Lab
University of North Texas, TX

[AT6] Relational-aware Retrieval Augmentation for Text Generation (Remote) May 2024
Large Language Models for Graph Learning Workshop
The World Wide Web Conference, Sentosa, Singapore

[AT5] Data-quality-aware Graph Machine Learning — Apr 2024
Data Science for Smart Manufacturing and Healthcare Workshop
SIAM International Conference on Data Mining, Houston, TX

[AT4] Data-quality-aware Graph Machine Learning — Feb 2024
School of Information
University of Arizona, Tucson, AZ

[AT3] Data-quality-aware Graph Machine Learning — Feb 2024
Department of Computer Science, Data Science Center
University of Memphis, Memphis, TN

[AT2] Data-quality-aware Graph Machine Learning — Jan 2024
Department of Computer Science and Data Science
University of Oregon, Eugene, Oregon

[AT1] Relational-aware Retrieval Augmentation for Text Generation (Remote) — Jan 2024
Learning of Graphs at MidNorth, Notre Dame, Indiana

Industry Presentations:

[IT2] Knowledge Graph Prompt Learning for Multi-Document QA — Aug 2023
Document Intelligence Team, Adobe Research
Adobe Inc., SanJose, CA

[IT1] Knowledge Graph-based Session Recommendation — Aug 2022
Online Recommendation Data Science Team
The Home Depot, Atlanta, GA

Guest Lectures:

[GT4] Welcome to Grad School Seminar — Oct 2024
Computer Science Department
University of Oregon, Eugene, OR

[GT3] Graph Partitioning with Spectral Methods — Mar 2024
Social Network Analysis, Computer Science Department
Vanderbilt University, Nashville, TN

[GT2] Scalability of Graph Neural Networks (GNNs) — Nov 2023
Social Network Analysis, Computer Science Department
Vanderbilt University, Nashville, TN

[GT1] Measuring Node Centrality in Social Network Analysis — Oct 2021
Social Network Analysis, Computer Science Department
Vanderbilt University, Nashville, TN

Conference/Workshop Presentations:

[CT13] Augmenting Textual Generation via Topology Aware Retrieval. — Oct 2024
CIKM 2024, Boise, ID

[CT12] Knowledge Graph Prompting Learning for Multi-Document QA. — Dec 2023
NeurIPS 2023, New Orleans, LA

[CT11] Collaboration-aware Graph Convolutional Networks for Recommender Systems. — May 2023
WWW 2023, Austin, Texas

[CT10] Degree-Related Bias in Link Prediction. — Nov 2022
ICDMW 2022, Orlando, FL

[CT9] Degree-Related Bias in Link Prediction. — Nov 2022
ICDMW 2022, Orlando, FL

[CT8] Imbalanced Graph Classification via Graph Neural Networks on Graph of Graphs — Nov 2022
CIKM 2022, Atlanta, GA

[CT7] Improving Fairness in GNNs via Mitigating Sensitive Attribute Leakage — Aug 2022
KDD 2022, Washington D.C.

[CT6] ChemicalX: A Deep Learning Library for Drug Pair Scoring — Aug 2022
KDD 2022, Washington D.C.

[CT5] Distance-wise Prototypical Graph Neural Network in Node Imbalance Classification — Aug 2022
KDD 2022, Washington D.C.

[CT4] Overcoming data quality issues of Graph Neural Networks — Apr 2022
SDM Doctoral Forum 2022, Virtual

[CT3] Fair Graph Representation Learning with Imbalanced and Biased Data. — Feb 2022
WSDM Doctoral Consortium 2022, Virtual

[CT2] Tree Decomposed Graph Neural Network. — Nov 2021
CIKM 2021, Virtual
Selected among the top 3/11 papers in the GNN track to give two live virtual presentations

[CT1] Tackling Over-smoothing in GNNs via Higher-order Neighbor Disentanglement — Apr 2021
SDM Doctoral Forum 2021, Virtual

PROPOSAL WRITING

Safeguard Graph Retrieval-Augmented Generation with Structure-aware Reliability and Robustness
PI: Dr. Yu Wang
- **Role:** Proposal focused on the safety of GraphRAGs by addressing reliability through a multi-hop conformal prediction framework and robustness through structure-aware adversarial attacks and adversarial training. My work ensures safer, more trustworthy deployment of GraphRAGs in real-world applications like e-commerce and healthcare.
- Result: Submitted to Amazon Research Award Fall 2024 and currently under company internal review.

Trustworthy GraphRAG for Safe Coding LLMs
PI: Dr. Yu Wang
- **Role:** Propose a Graph Retrieval Augmented Generation (GraphRAG) system, which effectively retrieves the domain expertise from the world vulnerability knowledge base to automate code safety evaluation, detects vulnerabilities and provides early warnings of potential attack strategies simultaneously.
- Result: Submitted to Amazon Trustworthy AI challenge and was declined in 2024.

Specializing the knowledge and Regulating Behaviors of LLMs for Recommending Systems
PI: Dr. Yu Wang
- **Role:** Specialize the Expertise of LLMs for Recommender Systems (RS) by augmenting the knowledge and regulating the behaviors of LLMs for RS.
- Result: Under company internal review.

Data Quality-Aware Graph Machine Learning
PI: Dr. Tyler Derr
- **Role:** Currently designing/writing one of three research objectives on topological issues. This one specific objective is based on my dissertation topic "Data Quality-Aware Graph Machine Learning".
- Result: Still in preparation to submit to the National Science Foundation in 2024.

Towards Mitigating the Cold-Start Problem in Recommender Systems
PI: Dr. Tyler Derr
- **Role:** Designed/wrote one of the two research objectives "Cold-Start Mitigation via Node Topological Concentration Augmentation." The whole proposal was based on my research [paper]
- Result: Submitted to Snap Inc. and **funded** in 2023.

CAREER: Harnessing the Positive Power of Negative Links for Network Analytics
PI: Dr. Tyler Derr
- **Role:** Designed/wrote one of the four research objectives "Network Representation Learning with Negative Links."
- Result: Submitted to National Science Foundation and **funded** in 2023.

Fairness-aware Graph Machine Learning for Recommender Systems
PI: Yu Wang
- **Role:** Designed/wrote the research objective "Fairness-aware Graph Machine Learning for Recommender Systems."
- Result: Submitted to Nvidia Academic Hardware Grant Program and was declined in 2022.

New Frontiers of Deep Learning on Graphs for Social Good
PI: Dr. Tyler Derr
- **Role:** Designed and drafted the whole proposal on topics of imbalanced classification and learning with limited labeled data on graphs for applications in neuroimaging and computational drug discovery. Most of the proposal content was based on my research. [paper1][paper2]
- Result: Submitted to Miscrosoft Research Faculty Fellowship and was declined in 2021.

MENTORING IN DGL LAB

Data Mining and Graph Machine Learning Lab, University of Oregon
Ph.D. Students
- Yongjia Lei, Ph.D. Computer Science — Fall 2024 – Present
  - Research topic: Data-centric and Trustworthy Structure-aware LLMs for Social Good.

MENTORING IN NDS LAB

Network and Data Science Lab, Vanderbilt University
Ph.D. Students
- Bo Ni, Ph.D. Computer Science — Fall 2023 – Present
  - Research topic: Deep learning on graphs, knowledge graphs.
  - Project: Towards Trustworthy Knowledge Graph Reasoning: An Uncertainty Aware Perspective
- Xueqi Cheng, Ph.D. Computer Science — Fall 2023 – Present
  - Research topic: Deep Learning on Complex Graphs, out of distribution and imbalanced learning on graphs
  - Awarded Vanderbilt IBM Fellowship Award
  - Project: Imbalanced Edge Classification by Topological Reweighting
- Yuying Zhao, Ph.D. Computer Science — Fall 2021 – Present
  - Research topic: Data science for social good, beyond utility metrics,
  - Awarded Vanderbilt IBM Fellowship Award
  - Awarded Vanderbilt's C.F. Chen Best Paper Runner-Up Award in Computer Science in 2023
  - Co-authored Publications: AAAI'23, MloG at KDD'23
- Yunchao (Lance) Liu, Ph.D. Computer Science — Spring 2021 – Present
  - Research topic: Computer-aided drug discovery, geometric deep learning, self-supervised learning, molecular representation learning
  - Co-authored Publications: AAAI'23

M.S. Students
- Xin Wang, M.S. Computer Science, — Jan 2024 – Present
  - Research topic: Topological Graph Generative Models
  - Awarded Vanderbilt's Engineering Graduate Fellowship Award
  - Co-authored Publications: NeurIPS'24, CIKM'24
- Benjamin Van Sleen, B.S. Computer Engineering, B.S. Economics, and accelerated M.S. Computer Science — Dec 2020 – May 2023
  - 2021 Data Science Institute Summer Research Program (DSI-SRP) Fellow
  - Project: "Voices of Identity: Analyzing Language Use in Autism Communities on Reddit"
  - Next Position: Business Analyst at McKinsey & Company

B.S. Students

- Leyao Wang, B.S. Computer Science, B.S. Mathematics — Mar 2024 – Present
  - Nominated for CRA Outstanding Undergraduate Research Award
  - Co-authored Publications: one paper under review
- Macharia Kanyatte, B.S. Electrical and Computer Engineering — Nov 2022 – May 2023
  - Tennessee Louis Stokes Alliance Program
  - Proejct: Preprocessing signed network datasets and basic network analysis toolkit
  - Georgia Tech REU program during Summer'23
- Ao Qu, B.S. Computer Science, B.S. Economics, B.S. Mathematics — Aug 2020 – Jun 2022
  - Project: "Adaptive views in contrastive learning for GNNs"
  - **Co-authored Publication won the best paper award in fourth annual Smoky Mountain Computational Sciences and Engineering Conference**
  - Next Position: Ph.D. student at Massachusetts Institute of Technology

High School Students

- Xinran Pan — Jun 2021 – May 2022
  - Mentor the Project on Social Good and Simpson's Paradox
  - Next position: Undergraduate Student at Carnegie Mellon University

TEACHING EXPERIENCE

University of Oregon

Lecturer, Department of Computer Science — Oct 2024 – Present

- CS 410/510: Mining and Learning on Graphs (Undergraduate/Graduate Level, Fall 2024) [Website]
- CS 453: Data Mining (Undergraduate/Graduate Level, Winter 2025)[Website]
- CS 610: Advanced Machine Learning (Graduate Level, Spring 2025)

Vanderbilt University

Teaching Assistant, Department of Computer Science — Jan 2021 – Present

- CS4260: Artificial Intelligence (Undergraduate/Graduate Level, Spring 2023)
- DS5720: Social Network Analysis (Graduate Level, Fall 2022)
- CS3891/5891-03: Social Network Analysis (Undergraduate/Graduate Level, Fall 2021)

Teaching Assistant, Department of Civil and Environmental Engineering — Aug 2019 – Jan 2021

- CE3300: Risk, Reliability and Resilience Engineering (Undergraduate Level, Spring 20)
- CE2101-01: Civil Engineering Information Systems (Undergraduate Level, Fall 19)

EXTERNAL SERVICES

Workshop Organizer

- Workshop Co-organizer and Web Chair, Machine Learning on Graphs (MLoG) — 2024
  - Collocated at ACM WSDM'24
- Workshop Co-organizer and Web Chair, Machine Learning on Graphs (MLoG) — 2022
  - Collocated at ACM WSDM'22

Conference Organizer Chairships

- Student Travel Awards Co-chair, CIKM'24 — 2024
  - ACM International Conference on Information and Knowledge Management

Program Committee Member

- The 16th Asian Conference on Machine Learning (ACML) — 2025
- ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD) — 2025
- ACM International Conference on Web Search and Data Mining (WSDM) — 2025
- Association for the Advancement of Artificial Intelligence (AAAI) — 2025
- European Conference on Machine Learning and Data Mining (ECML PKDD) — 2024
- SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) — 2024
- Association for the Advancement of Artificial Intelligence (AAAI) — 2024
- SIAM International Conference on Data Mining (SDM) — 2024
- ACM International Conference on Web Search and Data Mining (WSDM) — 2024
- SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) — 2023
- ACM International Conference on Web Search and Data Mining (WSDM) — 2023
- Association for the Advancement of Artificial Intelligence (AAAI) — 2022
- SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) — 2022

Conference (Sub-)Reviewer

- AISTATS 2025 Conference Reviewers 2025
- International Conference on Learning Representation (ICLR) 2025
- Learning on Graphs Conference (LOG) 2024
- Neural Information Processing Systems 2024
- International AAAI Conference on Web and Social Media (AAAI ICWSM) 2024
- Learning on Graphs Conference (LOG) 2023
- Association for the Advancement of Artificial Intelligence (AAAI) 2023
- ACM International Conference on Web Search and Data Mining (WSDM) 2023
- International Conference on Machine Learning (ICML) 2023
- International Conference on Web and Social Media (ICWSM) 2023
- SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2022
- Neural Information Processing Systems (NeurIPS) 2022
- Learning on Graphs Conference (LOG) 2022
- SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2021
- Conference on Information and Knowledge Management (CIKM) 2021
- Advances in Social Networks Analysis and Mining (ASONAM) 2021
- SIAM International Conference on Data Mining(SDM) 2021
- International ACM Conference on Web Science (WebSci) 2021
- The Web Conference (WWW) 2021

Journal Reviewer

- IEEE Transactions on Interactive Intelligent Sytems 2024 – Present
- IEEE Transactions on Artificial Intelligence 2024 – Present
- ACM Transactions on Intelligent Systems and Technology (TIST) 2023 – Present
- IEEE Transactions on Big Data (TBD) 2023 – Present
- ACM Transactions on Knowledge Discovery from Data (TKDD) 2023 – Present
- Neural Networks 2023 – Present
- IEEE Transactions on Knowledge and Data Engineering (TKDE) 2022 – Present
- Data Mining and Knowledge Discovery (DAMI) 2022 – Present
- Journal of Combinatorial Optimization (JOCO) 2022 – Present

Grant Proposal Panelist

- National Science Foundation (NSF) 2024

VOLUNTEERING

Conference Volunteering

- Session chair at CIKM 2024 2024
  "Graph Learning II"
- Session chair at SDM 2024 2024
  "Social Networks/Graphs"
- Session chair at ICDM 2022 2022
  "Graph Mining and Embedding"
- Volunteer at ICDM 2022 2022
- Volunteer at CIKM 2022 2022
- Volunteer at KDD 2022 2022
- Session chair at KDD 2021 2021
  "Recommender System"
- Volunteer at IJCAI 2021 2021
- Volunteer at IJCAI 2020 2020

[*CV compiled on 2025-01-21*]