# YU WANG

2011 Richard Jones Road, L4, zip: 37215
+1-615-397-2786 ◇ yu.wang.1@vanderbilt.edu
Personal webpage ◇ Github ◇ LinkedIn

## EDUCATION

**Vanderbilt University** *Fall 2019 - Present*
Ph.D. in Computer Science
- GPA: 3.95/4.00
- *Relevant Coursework:*
  Machine Learning, Nonlinear Optimization, Probabilistic Methods & Design,
  Graph Theory, Uncertainty Quantification, Advanced Algorithms,
  Social Network Analysis, Visual Analytics and Machine Learning

**University of Illinois at Urbana-Champaign** *Summer 2017*
Undergraduate Study Abroad Program
- GPA: 94.5/100

**Harbin Institute of Technology** *Fall 2015 - Spring 2019*
Bachelor in Engineering
- Degree Program Rank: 1 of 79
- GPA: 4.0/4.0

## RESEARCH EXPERIENCE

**Recommendation Data Science Team**, The Home Depot *Summer 2022*
- Research Scientist Intern
- Research topics: Knowledge-enhanced Session-based Recommendation
  Heterogeneous Graph Neural Networks for Knowledge Graphs, Transformer, Billion-scale Networks
- Advisor: Dr. Amin Javari

**Network and Data Science Lab**, Vanderbilt University *Spring 2021 - Present*
- Phd Student, Computer Science Department
- Research topics: Graph Neural Networks, Social Network Analysis,
  Learning with imbalanced and large-scale graph-structured data
- Advisor: Dr. Tyler Derr

**Baroud Research Group**, Vanderbilt University *Fall 2019 - Fall 2021*
- Phd Student, Civil and Environmental Engineering Department
- Research topics: Risk and Resilience of Infrastructure, Machine Learning
  Statistical Network Analysis
- Advisor: Dr. Hiba Baroud

**Taciroglu Research Group**, University of California, Los Angeles *Summer 2018*
- Undergraduate Summer Researcher, Civil and Environmental Engineering Department
- Selected for Cross-disciplinary Scholars in Science and Technology (UCLA-CSST)
- Research topics: Designed a modeling analysis tool for automatic bridge generation
- Advisor: Dr. Ertugrul Taciroglu

**Qingfei Research Group**, Harbin Institute of Technology *Spring 2018 - Fall 2019*
- Undergraduate Researcher, Civil and Environmental Engineering Department

- Research topics: Designed a novel adaptation to the percolation algorithm for automatic detection of bridge cracks
- Advisor: Dr. Qingfei Gao

## PUBLICATIONS

• Yu Wang, Yuying Zhao, Yushun Dong, Huiyuan Chen, Jundong Li and Tyler Derr. "Improving Fairness in Graph Neural Networks via Mitigating Sensitive Attribute Leakage." Proceedings of the 28th ACM SIGKDD International Conference on Knowledge Discovery Data Mining (KDD), 2022

• Yushun Dong, Song Wang, Yu Wang, Tyler Derr, 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), 2022

• 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 Data Mining (KDD), 2022

• Yu Wang. "Fair Graph Representation Learning with Imbalanced and Biased Data." Proceedings of the Fifteenth ACM International Conference on Web Search and Data Mining (WSDM), 2022.

• Yu Wang and Tyler Derr. "Tree Decomposed Graph Neural Network." In Proceedings of the 30th ACM International Conference on Information and Knowledge Management (CIKM), 2021.

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

• Yu Wang, Wei Jin, and Tyler Derr. "Graph Neural Networks: Self-supervised Learning." In Graph Neural Networks: Foundations, Frontiers, and Applications (Eds. Lingfei Wu, Peng Cui, Jian Pei, and Liang Zhao). Springer, (2021).

• 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**

• Yu Wang, Jin-Zhu Yu, and Hiba Baroud. "Quantifying the Interdependency Strength Across Critical Infrastructure Systems Using a Dynamic Network Flow Redistribution Model." ESREL 2020 PSAM 15, 2020.

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

### Symposiums and Workshops

• Yu Wang. Overcoming data quality issues of Graph Neural Networks. International Conference on Data Mining (SDM) Doctoral Forum, SIAM, Poster, 2022.

• Yu Wang. Tackling Over-smoothing in Graph Neural Networks via Higher-order Neighborhood Disentanglement. International Conference on Data Mining (SDM) Doctoral Forum, SIAM, Poster, 2021.

### Preprints and Submissions

• Yu Wang, Yuying Zhao, Neil Shah, and Tyler Derr. "Imbalanced Graph Classification via Graph Neural Networks on Graph of Graphs." 2021 (under review)

• Yu Wang, Charu Aggarwal, and Tyler Derr. "Distance-wise Prototypical Graph Neural Network in Node Imbalance Classification." 2021 (under review)

• Yuying Zhao, Yu Wang, and Tyler Derr. "Fairness and Explainability: Bridging the Gap." 2022 (under review)

## AWARDS & HONORS

- **Vanderbilt's C.F.Chen Best Paper Award** 04/2022
- IJCAI2021 Volunteers & Grants Program 08/2021
- SDM2021 Student Travel Award 03/2021
- IJCAI2020 Volunteers & Grants Program 01/2020
- Vanderbilt University Graduate School Travel Grant 10/2020
- **Best Paper Award** in 2020 Smoky Mountain Data Challenge Competition by ORNL 09/2020
- **Outstanding Research and Presentation Skills Award** by UCLA-CSST Program 08/2018
- First-class People's Scholarship×4 09/2016, 04/2017, 09/2017, 04/2018
- **National Scholarship** ×2 09/2016, 09/2017
- **Second Prize in the National College Student Mathematics Competition** 11/2016

## EXTERNAL SERVICES

**Conference Volunteering**

- KDD Session chair for Applied Data Science "Recommendation System" 08/2021
- IJCAI Student Volunteer 08/2021
- IJCAI Student Volunteer 12/2020

**Program Committee Member**

- ACM SIGKDD International Conference on Knowledge Discovery Data Mining (KDD) 2022-2023
- The workshop of Machine Learning on Graphs at the 15th ACM International Conference on Web Search and Data Mining (WSDM) 2021-2022
- Association for the Advancement of Artificial Intelligence (AAAI) 2021-2022

**Conference Sub-Reviewer**

- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 22) 2022-2023
- The workshop of Machine Learning on Graphs at the 15th ACM International Conference on Web Search and Data Mining (WSDM) 2021-2022
- International World Wide Web Conference (WWW) 2021-2022
- International Conference on Data Mining (SDM), SIAM 2021-2022
- ACM International Conference on Information and Knowledge Management (CIKM) 2021-2022
- IEEE/ACM Conference on Advances in Social Network Analysis and Mining (ASONAM) 2021-2022
- ACM International Conference on Web Science (WebSci 21) 2021-2022
- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 21) 2021-2022

**Journal Reviewer**

- IEEE Transactions on Knowledge and Data Engineering (TKDE) 2022-Present
- Springer Social Network Analysis and Mining (SNAM) 2021-Present

## TEACHING EXPERIENCE

**Vanderbilt University**

Teaching Assistant, Department of Data Science 02/2022 - Present
- DS5720: Social Network Analysis (Fall 22)

Teaching Assistant, Department of Computer Science 08/2021 - Present
- CS3891/5891-03: Social Network Analysis (Undergraduate/Graduate Level, Fall 21)

Teaching Assistant, Department of Civil and Environmental Engineering 08/2019 - 08/2020
- CE3300: Risk, Reliability, and Resilience Engineering (Undergraduate Level, Spring 20)
- CE2101-01: Civil Engineering Information Systems (Undergraduate Level, Fall 19)

## OTHER PROFESSIONAL SKILLS

- Python (including PyTorch, PyTorch-Geometric, Tensorflow-Keras, NetworkX, scikit-learn, etc.)
- C/C++, Visual Basic, Tcl, Apache Spark, MATLAB, Julia
- Skilled in object-based programming (for modeling networks and analyzing properties of network topology and flow statistically)
- In-depth knowledge of applying Bayesian inference (to detect network structures)
- Much experienced with optimization solvers: Pulp & Cplex (Docplex) & IPOPT
- Experienced in designing and building novel deep learning models
  especially graph neural network models on geometric data