Dr. Tyler Derr

CONTACT INFORMATION

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Google Scholar: https://scholar.google.com/citations?user=et6IhFcAAAAJ

BIOGRAPHY

Dr. Tyler Derr is an Assistant Professor in the Department of Computer Science, Teaching and Affiliate Faculty in the Data Science Institute, and Faculty Fellow in the Frist Center for Autism and Innovation at Vanderbilt University. He received his PhD in Computer Science from Michigan State University in 2020 under the supervision of Dr. Jiliang Tang and was a member of the Data Science and Engineering (DSE) Lab and Teachers in Social Media (TISM) Project. He completed his MS in Computer Science at The Pennsylvania State University in 2015 and earned dual BS degrees in Computer Science and Mathematical Sciences at The Pennsylvania State University in 2013.

Tyler directs the *Network and Data Science (NDS) lab*, which conducts research in the areas of data mining and machine learning, with emphasis on social network analysis, deep learning on graphs, and responsible AI for social good with applications in drug discovery, education, political science, and autism research. He has mentored his PhD students to have received numerous honors and awards, such as Vanderbilt's C. F. Chen Best Paper Award in 2022 and Runner-Up Award in 2023, Vanderbilt's Graduate Leadership Anchor Award for Research in 2023, Finalist in Vanderbilt's Three Minute Thesis (3MT) Competition in 2023, 1st Place in Vanderbilt's AI Showcase in 2024, Vanderbilt's Outstanding Doctoral Student Award in 2024, along with their works being selected among the top-10 Most Influential CIKM'22/WWW'23 Papers by Paper Digest. He is actively involved in top conferences in his field, both in terms of publishing and serving as an AC/SPC/PC member, while receiving recognition such as the Best Paper Award at GLFrontiers Workshop at NeurIPS'23, Best Student Poster Award at SDM'19, and three Best Reviewer Awards. He has contributed to the organization of numerous international conferences and workshops; specifically, 6 conference organizing committees (at DSAA, KDD, and WSDM), and co-founded the Machine Learning on Graphs (MLoG) Workshop (with 5 iterations co-located at ICDM and WSDM). Being passionate about sharing knowledge, he has delivered 3 tutorials on Graph Neural Networks at KDD'20, AAAI'21, and SDM'24, along with given numerous invited talks, e.g., 2023 ACM Web Conference Knowledge Graph Day, Oak Ridge National Laboratory (ORNL) Core Universities AI Workshop at Georgia Tech, Foundation Model Research Center at Tsinghua University, Max Planck Institute for Mathematics in the Sciences (MPI MiS), etc. He serves as Associate Editor for 4 journals, e.g., Tsinghua Science and Technology and IEEE Transactions on Big Data. Tyler has received numerous prestigious honors and awards, such as the *NSF CAREER Award* and being selected for the Visiting Faculty Research Program at AFRL/RI. Additionally, he was honored with the Fall 2020 *Teaching Innovation Award* from the School of Engineering and Provost Immersion Grant for Faculty at Vanderbilt University, highlighting his dedication to exceptional teaching and mentoring.

For more detailed information, please visit his website at https://www.TylerDerr.com.

POSITIONS

Assistant Professor, Vanderbilt University — Aug 2020 – Present
Department of Computer Science

Teaching & Affiliate Faculty Member, Vanderbilt University — Aug 2020 – Present
Data Science Insitute (DSI)

Faculty Fellow, Vanderbilt University — Aug 2020 – Present
Frist Center for Autism and Innovation

EDUCATION

Michigan State University

Doctor of Philosophy (**Ph.D.**) in Computer Science — Aug 2020

- Dissertation: Network Analysis with Negative Links
- Research areas: Social Network Analysis, Deep Learning on Graphs, Data Science for Social Good
- Advisor: Dr. Jiliang Tang

The Pennsylvania State University

Master of Science (**M.S.**) in Computer Science May 2015
- Thesis: A Clustering Approach to the Bounded Diameter Minimum Spanning Tree Problem Using Ants
- Research areas: Graph Algorithms, Evolutionary Computation, Ant Systems
- Advisor: Dr. Thang N. Bui

Dual Bachelor of Science (**B.S.**) in Computer Science and Mathematical Sciences May 2013

RESEARCH EXPERIENCE

Network and Data Science Lab, Vanderbilt University
Director Aug 2020 – Present
- Research Interests:
  data mining, network anlaysis, graph neural networks, graph mining,
  machine learning, responsible AI, data science for social good
  (e.g., drug discovery, education, political science, and autism research)

Information Directorate (AFRL/RI), The Air Force Research Laboratory
Visiting Faculty, Visiting Faculty Research Program (VRFP) May 2023 – Jul 2023
- Project: "Towards Advances in Graph Analytics"
- AFRL Mentors: Dr. Erika Ardiles Cruz, Leah Chance, & Phil Morrone

Teachers in Social Media, Michigan State University
PhD Student, Computer Science and Engineering Department Feb 2019 – Aug 2020
- Projects: Incorporating Online Social Media in Educational Research
- Principal Investigators: Dr. Kaitlin Torphy, Dr. Kenneth Frank, & Dr. Jiliang Tang

Data Science and Engineering Lab, Michigan State University
PhD Student, Computer Science and Engineering Department Jan 2017 – Aug 2020
- PhD Dissertation: Network Analysis with Negative Links
- Research area: Signed Network Anlaysis, Deep Learning on Graphs, Data Science for Social Good
- Advisor: Dr. Jiliang Tang

Center for Computational Network Intelligence, HRL Laboratories
Research Scientist Intern/Contractor May 2019 – Jul 2020
- Projects: (Related to my general research interests, but can not disclose.)
- Principal Investigator: Dr. Jiejun Xu

BEACON | An NSF Center for the Study of Evolution in Action, Michigan State University
PhD Student, Computer Science and Engineering Department Aug 2015 – Dec 2016
- Projects: Evolving Multi-Layer Markov Network Brains Using Adaptive Complexification
- Research areas: Evolving A.I., Evolutionary Reinforcement Learning, Genetic Programming
- Advisor: Dr. William F. Punch

Yue Lab, The Pennsylvania State University College of Medicine
Research Assistant, Institute for Personalized Medicine Jun 2014 – Aug 2015
- Projects: Prediction and Analysis of Chromatin Spatial Organization
- Research areas: Machine Learning & Computational Genomics/Epigenomics
- Principal Investigator: Dr. Feng Yue

Dr. Thang N. Bui's Lab, Penn State Harrisburg
Master's Student, Computer Science & Mathematical Sciences Department May 2014 – Aug 2015
- MS Thesis: Ant-Based Optimization for Bounded Diameter Minimum Spanning Tree Problem
- Advisor: Dr. Thang N. Bui
- Research areas: Ant Systems, Evolutionary Computation, Graph Algorithms

HONORS & AWARDS (AS FACULTY)

Research

- **Best Paper Award** at New Frontiers in Graph Learning Workshop at NeurIPS'23 Dec 2023
  for our paper "Knowledge Graph Prompting for Multi-Document Question Answering"
- **Most Influential WWW'23 Papers** by Paper Digest - Ranked 9th Sep 2023
  "Collaboration-Aware Graph Convolutional Network for Recommender Systems"
- **Most Influential CIKM'22 Papers** by Paper Digest - Ranked 6th Sep 2023
  "Imbalanced Graph Classification via Graph-of-Graph Neural Networks"
- National Science Foundation **(NSF) CAREER Award** Jun 2023
  CAREER: Harnessing the Positive Power of Negative Links for Network Analytics

- Visiting Faculty Research Program **(VFRP)** of The Air Force Research Lab's Information Directorate **(AFRL/RI)** and Information Institute (II) — Summer 2023
- Vanderbilt's C. F. Chen **Best Paper Runner-up Award** to student Yuying Zhao in Computer Science based on our AAAI'23 paper "Fairness and Explainability: Bridging the Gap Towards Fair Model Explanations" — May 2023
- Vanderbilt's C. F. Chen **Best Paper Award** to student Yu Wang in Computer Science based on our CIKM'21 paper "Tree Decomposed Graph Neural Network" — May 2022
- SIAM Early Career Travel Award for SDM'21 supported by NSF — 2021

Teaching and Mentoring

- Vanderbilt's Provost Immersion Grant for Faculty — Dec 2023
- **Teaching Innovation Award** from Vanderbilt's School of Engineering — 2021

Service

- Outstanding PC Member Award at WSDM'22. — 2022
- Best Reviewer Award at ICWSM'21. — 2021

Students' Honors

- Student Yunchao (Lance) Liu awarded 1st place in the AI Showcase at VU by the Data Science Institute presenting his project DiffWater — Apr 2024
- Student Yu Wang awarded Best Doctoral Forum Poster Runner-Up at SDM'24 (one of three selected by the Graduate School for the whole university) — Apr 2024
- Student Anne Tumlin awarded DOE's Computational Science Graduate Fellowship — Apr 2024
- Student Yu Wang awarded Vanderbilt's Outstanding Doctoral Student Award (one of three selected by the Graduate School for the whole university) — Feb 2024
- Student Yunchao (Lance) Liu selected as Finalist in Vanderbilt's 3MT Competition — Nov 2023
- Student Yu Wang awarded Vanderbilt's Graduate Leadership Anchor Award for Research for his dissertation work on graph machine learning (sole recipient of the whole university) — Aug 2023
- Student Yunchao (Lance) Liu awarded the Nvidia Academic Hardware Grant for his project in Interpretable 3D Graph Neural Networks for Drug Discovery — Nov 2023

HONORS & AWARDS (AS STUDENT)

PhD Student

- Student Registration Award for KDD'20 from NSF and ACM SIGKDD. (Including partial registration for KDD'21) — 2020
- ACM SIGIR Student Travel Award for WSDM'20. — 2020
- MSU COGS Professional Development Award (with fellowship funding) — 2019
- MSU COGS Conference Award (with fellowship funding) — 2019
- ACM SIGIR Student Travel Award for CIKM'19. — 2019
- MSU Engineering Graduate Leadership Fellow — Aug 2019 – May 2020
- MSU Education Opportunity Fellowship — Aug 2019 – May 2020
- Best Reviewer Award at ICWSM'19. — Jun 2019
- Best Student Poster Award at SDM'19. Title: Network Analysis with Negative Links — May 2019
- NSF Student Travel Award for SDM'19. — 2019
- "People's Choice" Award for Michigan State's 3-Minute Thesis (3MT) Competition — Feb 2019
- NSF Student Travel Award for ICDM'18. — 2018
- ACM SIGIR Student Travel Award for CIKM'18. — 2018
- 2nd Prize at the Southeast Michigan Postdoctoral Symposium University of Michigan Postdoctoral Association awarded for our ASONAM'19 paper "Multi-Factor Congressional Vote Prediction" — Oct 2018
- Department Fellowship, Michigan State University The Department of Computer Science and Engineering — Spring: 2018,2019, Summer: 2017,2018
- NSF/ACM SIGKDD Student Travel Award for KDD'17. — 2017
- NSF Student Travel Award for SDM'17. — 2017

MS & BS Student

- Graduate Student Chancellor's Award — Aug 2013 – May 2014
- Robert W. Graham Fellowship — Aug 2013 – May 2014
- Undergraduate Dean's List — Spring: 2010-2013 & Fall: 2012
- Webclients.net Trustee Scholarship — Aug 2010 – May 2011 & Aug 2012 – May 2013
- Schwab Trustee Scholarship — Aug 2008 – May 2009

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

*	denotes co-first authors
†	denotes *graduate student (co-)advised* by Tyler Derr
‡	denotes *graduate student mentored (not as formal advisor, e.g., committee member)* by Tyler Derr
‡	denotes *postgraduate mentored (not as formal advisor)* by Tyler Derr
††	denotes *undergraduate researcher/intern mentored* by Tyler Derr

Journal Papers:

[J05] Yuying Zhao† , Yu Wang† , Yunchao Liu† , Xueqi Cheng† , Charu Aggarwal, and Tyler Derr. Fairness and Diversity in Recommender Systems: A Survey. ACM Transactions on Intelligent Systems and Technology (TIST), 2024. (impact factor 5.0)

[J04] Wenqi Fan, Xiangyu Zhao, Qing Li, Tyler Derr, Yao Ma, Hui Liu, Jianping Wang, Jiliang Tang. Adversarial Attacks for Black-box Recommender Systems via Copying Transferable Cross-domain User Profiles. IEEE Transactions on Knowledge and Data Engineering (TKDE), 2023. (impact factor 8.9)

[J03] [J03] Yuying Zhao* † , Yunfei Hu* , Curtis T. Schunk, Yingxiang Ma, Tyler Derr, and Xin Maizie Zhou. ADEPT: Autoencoder with Differentially Expressed Genes and Imputation for a Robust Spatial Transcriptomics Clustering. iScience (also accepted and presented at RECOMB-Seq), 2023. (impact factor 6.107)

[J02] Tyler Derr, Zhiwei Wang, Jamell Dacon‡ , and Jiliang Tang. Link and Interaction Polarity Predictions in Signed Networks. Social Network Analysis and Mining (SNAM), 10(1), pp. 1-14. 2020. (impact factor 2.7)

[J01] Hamid Karimi, Tyler Derr, Kaitlin Torphy, Ken Frank, and Jiliang Tang. A Roadmap for Incorporating Online Social Media in Educational Research. Teachers College Record, 121(14), pp. 1-24. 2019. (impact factor 0.97)

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

[C43] Yu Wang† , Amin Javari, Janani Balaji, Walid Shalaby, Tyler Derr and Xiquan Cui. Knowledge Graph-based Session Recommendation with Session-Adaptive Propagation. In Proceedings of the ACM Web Conference (TheWebConf), Singapore, May 13-17, 2024. (acceptance rate 21.3% (Industry Track))

[C42] 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), Singapore, May 13-17, 2024. (acceptance rate 20.2%)

[C41] Yu Wang† , Tong Zhao, Yuying Zhao† , Yunchao Liu† , Xueqi Cheng† , Neil Shah, Tyler Derr. A Topological Perspective on Demystifying GNN-Based Link Prediction Performance. In Proceedings of the 12th International Conference on Learning Representations (ICLR), Vienna, Austria, May 7-11, 2024. (acceptance rate 31%)

[C40] Yuying Zhao† , Yu Wang† , Yi Zhang† , Pamela Wisniewski, Charu Aggarwal, and Tyler Derr. Leveraging Opposite Gender Interaction Ratio as a Path Towards Fairness in Online Dating Recommendations Based on User Sexual Orientation. In Proceedings of the 38th AAAI Conference on Artificial Intelligence (AAAI), Vancouver, CA, February 20-27, 2024. (acceptance rate 24.2% (AI for Social Impact special track))

[C39] Yu Wang[†] , Nedim Lipka, Ryan A Rossi, Alexa Siu, Ruiyi Zhang, and Tyler Derr. Knowledge Graph Prompting for Multi-Document Question Answering. In Proceedings of the 38th AAAI Conference on Artificial Intelligence (AAAI), Vancouver, CA, February 20-27, 2024. (acceptance rate 23.75%)

[C38] Kiana Kheiri, Muhammad Fawad Akbar Khan, Tyler Derr, and Hamid Karimi. An In-depth Analysis of the Broken Ties on Twitter. In Proceedings of the IEEE International Conference on Big Data (Big Data), Sorrento, Italy, December 15-18, 2023. (acceptance rate 17.4%)

[C37] Anwar Said[‡] , Mudassir Shabbir, Tyler Derr, Waseem Abbas, Xenofon Koutsoukos. Enhanced Graph Neural Networks with Ego-Centric Spectral Subgraph Embeddings Augmentation. In Proceedings of the 22nd IEEE International Conference on Machine Learning and Applications (ICMLA), Jacksonville, FL, December 15-17, 2023. (acceptance rate 32%)

[C36] Anwar Said[‡] , Roza G. Bayrak[‡] , Tyler Derr, Mudassir Shabbir, Daniel Moyer, Catie Chang, and Xenofon Koutsoukos. NeuroGraph: Benchmarks for Graph Machine Learning in Brain Connectomics. Advances in Neural Information Processing Systems (NeurIPS), New Orleans, LA, USA, December 10-16, 2023. (acceptance rate 32.7%)

[C35] Yu Wang[†] , Yuying Zhao[†] , Yi Zhang[†] , Tyler Derr. Collaboration-Aware Graph Neural Network for Recommender Systems. In Proceedings of the ACM Web Conference (TheWebConf), Austin, TX USA, April 30 - May 4, 2023. (acceptance rate 19.2%)

[C34] Yuying Zhao[†] , Yu Wang[†] , Tyler Derr. Fairness and Explainability: Bridging the Gap Towards Fair Model Explanations. In Proceedings of the 37th AAAI Conference on Artificial Intelligence (AAAI), Washington, DC, USA, February 7-14, 2023. (acceptance rate 19.6%)

[C33] Yunchao "Lance" Liu[†] , Yu Wang[†] , Oanh Vu, Rocco Moretti, Bobby Bodenheimer, Jens Meiler, Tyler Derr. Interpretable Chirality-Aware Graph Neural Network for Quantitative Structure Relationship Modeling in Drug Discovery. In Proceedings of the 37th AAAI Conference on Artificial Intelligence (AAAI), Washington, DC, USA, February 7-14, 2023. (acceptance rate 19.6%)

[C32] Shivam Agarwal[††] , Ramit Sawhney, Megh Thakkar, Preslav Nakov, Jiawei Han, and Tyler Derr. THINK: Temporal Hypergraph Hyperbolic Network. In Proceedings of the 22nd International Conference on Data Mining (ICDM), Orlando, FL, USA, November 28 - December 1, 2022. (acceptance rate 20%)

[C31] Hamid Karimi and Tyler Derr. Decision Boundaries of Deep Neural Networks. In Proceedings of the 21th IEEE International Conference on Machine Learning and Applications (ICMLA), Nassau, The Bahamas, December 12-15, 2022. (acceptance rate 32%)

[C30] Hamid Karimi, Muhammad Fawad Akbar Khan, Haochen Liu, Tyler Derr, and Hui Liu. Enhancing Individual Fairness through Propensity Score Matching. In Proceedings of the 9th IEEE International Conference on Data Science and Advanced Analytics (DSAA), Virtual, October 13-16, 2022. (acceptance rate 20%)

[C29] Yu Wang[†] , Yuying Zhao[†] , Neil Shah, Tyler Derr. Imbalanced Graph Classification via Graph-of-Graph Neural Network. In Proceedings of the 31th ACM International Conference on Information and Knowledge Management (CIKM), Atlanta, GA, USA, October 17-21, 2022. (acceptance rate 23.3%)

[C28] Xinmeng Zhang[*] , Yuying Zhao[* †] , Chao Yan, Tyler Derr, and You Chen. Inferring EHR Utilization Workflows through Audit Logs. AMIA Annual Symposium Proceedings. Vol. 2022. American Medical Informatics Association, Washington D.C., USA, November 5-9, 2022. (acceptance rate unknown)

[C27] Yu Wang[†] , Yuying Zhao[†] , Yushun Dong, Huiyuan Chen, Jundong Li, Tyler Derr. Improving Fairness in Graph Neural Networks via Mitigating Sensitive Attribute Leakage. In Proceedings of the 28th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), Washington D.C., USA, August 14-18, 2022. (acceptance rate 14.9% (research track))

[C26] Yushun Dong, Song Wang, Yu Wang[†] , Tyler Derr, and Jundong Li. On Structural Explanation of Bias in Graph Neural Networks. In Proceedings of the 28th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), Washington D.C., USA, August 14-18, 2022. (acceptance rate 14.9% (research track))

[C25] Benedek Rozemberczki, Charles Hoyt, Anna Gogleva, Piotr Grabowski, Klas Karis, Andrej Lamov, Andriy Nikolov, Sebastian Nilsson, Michael Ughetto, Yu Wang[†] , Tyler Derr, and Benjamin Gyori. ChemicalX: A Deep Learning Library for Drug Pair Scoring. In Proceedings of the 28th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), Washington D.C., USA, August 14-18, 2022. (acceptance rate 25.9% (applied data science track))

[C24] Yu Wang[†] and Tyler Derr. Tree Decomposed Graph Neural Network. In Proceedings of the 30th ACM International Conference on Information and Knowledge Management (CIKM), pp. 2040-2049. Virtual Conference, November 1-5, 2021. (acceptance rate 21.7%)

[C23] Tyler Derr, Hamid Karimi, Xiaorui Liu, Jiejun Xu, and Jiliang Tang. Deep Adversarial Network Alignment. In Proceedings of the 30th ACM International Conference on Information and Knowledge Management (CIKM), pp. 352-361. Virtual Conference, November 1-5, 2021. (acceptance rate 21.7%)

[C22] Wei Jin[‡] , Xiaorui Liu, Yao Ma, Tyler Derr, Charu Aggarwal and Jiliang Tang. Graph Feature Gating Network. In Proceedings of the 30th ACM International Conference on Information and Knowledge Management (CIKM), pp. 813-822. Virtual Conference, November 1-5, 2021. (acceptance rate 21.7%)

[C21] Aaron Brookhouse[*] [††] , Tyler Derr [*] , Hamid Karimi[*] , H. Russell Bernard, and Jiliang Tang. Road to the White House: Analyzing the Relations Between Mainstream and Social Media During the US Presidential Primaries. In Proceedings of the 32nd ACM Conference on Hypertext and Social Media, pp.57-66. Virtual Conference, August 30 - September 2, 2021. (acceptance rate for 2021 unknown, but prev. 3 year avg. was 28%)

[C20] Xuejiao Tang, Wenbin Zhang, Yi Yu, Kea Turner, Tyler Derr, Mengyu Wang, Eirini Ntoutsi. Interpretable Visual Understanding with Cognitive Attention Network. In Proceedings of the 30th International Conference on Artificial Neural Networks (ICANN), pp. 555-568. Springer. Virtual Conference, September 14-17, 2021. (acceptance rate unknown)

[C19] Yao Ma, Suhang Wang, Tyler Derr, Lingfei Wu, and Jiliang Tang. Graph Adversarial Attack via Rewiring. In Proceedings of the 27th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD), pp. 1161-1169. Singapore (Virtual Conference), August 14-18, 2021. (acceptance rate 15.4%)

[C18] Ramit Sawhney[*] , Shivam Agarwal[*] [††] , Arnav Wadhwa, Tyler Derr, Rajiv Shah. Stock Selection via Spatiotemporal Hypergraph Attention Network: A Learning to Rank Approach. In Proceedings of the 35th AAAI Conference on Artificial Intelligence (AAAI), pp. 497-504. Virtual Conference, February 2-9, 2021. (acceptance rate 21.4%)

[C17] Wei Jin[‡] , Tyler Derr, Yiqi Wang, Yao Ma, Zitao Liu, and Jiliang Tang. Node Similarity Preserving Graph Convolutional Networks. In Proceedings of the 14th ACM International Conference on Web Search and Data Mining (WSDM), pp. 148-156. Jerusalem, Israel, March 8-12, 2021. (acceptance rate 18.6%)

[C16] Wenqi Fan, Tyler Derr, Xiangyu Zhao, Yao Ma, Hui Liu, Jianping Wang, Jiliang Tang, Qing Li. Attacking Black-box Recommendations via Copying Cross-domain User Profiles. In Proceedings of the IEEE 37th International Conference on Data Engineering (ICDE), pp. 1583-1594. Chania, Greece, April 19-22, 2021. (acceptance rate 18%)

[C15] Hamid Karimi, Kaitlin T. Torphy, Tyler Derr, Kenneth A. Frank, and Jiliang Tang. Understanding and Promoting Teacher Connections in Online Social Media: A Case Study on Pinterest. IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE), Takamatsu, Japan, December 8-11, 2020. (acceptance rate unknown)

[C14] Wentao Wang[‡] , Tyler Derr, Yao Ma, Suhang Wang, Hui Liu, Zitao Liu, and Jiliang Tang. Learning from Incomplete Labeled Data via Adversarial Data Generation. International Conference on Data Mining (ICDM), pp. 1316-1321. Sorrento, Italy, November 17-20, 2020. (acceptance rate - full long 9.8%, shortened papers 9.9%)

[C13] Hamid Karimi[*] , Tyler Derr[*] , Jiangtao Huang, and Jiliang Tang. Online Academic Course Performance Prediction using Relational Graph Convolutional Neural Network. International Educational Data Mining Society (EDM), Ifrane, Morocco, July 10-13, 2020. (acceptance rate 25%)

[C12] Hamid Karimi, Kaitlin Torphy, Tyler Derr, Kenneth Frank and Jiliang Tang. Characterizing Teacher Connections in Online Social Media: A Case Study on Pinterest. (WIP) In Proceedings of the 7th Learning@ Scale (L@S), pp. 249-252. Atlanta, USA, August 12-14, 2020. (acceptance rate unknown, but last three years known 2019-2017 is 29.3%)

[C11] Tyler Derr, Yao Ma, Wenqi Fan, Xiaorui Liu, Charu Aggarwal, and Jiliang Tang. Epidemic Graph Convolutional Network. In Proceedings of the 13th ACM International Conference on Web Search and Data Mining (WSDM), pp. 160-168. Houston, USA, February 3-7, 2020. (acceptance rate 14.8%)

[C10] Tyler Derr. Network Analysis with Negative Links. In Proceedings of the 13th ACM International Conference on Web Search and Data Mining (WSDM), pp. 917-918. Houston, USA, February 3-7, 2020. (acceptance rate of DC unknown), but conf. in general 14.8%)

[C09] Hamid Karimi, Tyler Derr, Kaitlin T. Torphy, Kenneth A. Frank, and Jiliang Tang. Towards Improving Sample Representativeness of Teachers on Online Social Media: A Case Study on Pinterest. In Proceedings of the 21st International Conference on Artificial Intelligence in Education (AIED), Ifran, Morocco, July 6-10, 2020. (acceptance rate 22.9%)

[C08] Amin Javari[‡] , Tyler Derr, Pouya Esmalian, Jiliang Tang, Kevin Chen-Chuan Chang. ROSE: Role-based Signed Network Embedding. The World Wide Web Conference, pp. 2782-2788. Taipei, Taiwan, April 20-24, 2020. (acceptance rate 24.7%)

[C07] Tyler Derr, Cassidy Johnson[††] , Yi Chang, and Jiliang Tang. Balance in Signed Bipartite Networks. In Proceedings of the 28th ACM International Conference on Information and Knowledge Management (CIKM), pp. 1221-1230. Beijing, China, November 3-7, 2019. (acceptance rate 19.4%)

[C06] Hamid Karimi[*] , Tyler Derr[*] , Aaron Brookhouse[††] , and Jiliang Tang. Multi-Factor Congressional Vote Prediction. In Proceedings of the 2019 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM), pp. 266-273. Vancouver, Canada, August 27-30, 2019. (acceptance rate 14%)

[C05] Wenqi Fan, Tyler Derr, Yao Ma, Qing Li, Jiliang Tang, and Jianping Wang. Deep Adversarial Social Recommendation. In Proceedings of the 28th International Joint Conference on Artificial Intelligence (IJCAI), pp. 1351-1357. Macao, China, August 10-16, 2019. (acceptance rate 17.9%)

[C04] Tyler Derr, Yao Ma, and Jiliang Tang. Signed Graph Convolutional Networks. In Proceedings of the 18th International Conference on Data Mining (ICDM), pp. 929-934. Singapore, November 17-20, 2018. (acceptance rate - full long 8.9%, shortened papers 11.1%)

[C03] Tyler Derr, Charu Aggarwal, and Jiliang Tang. Signed Network Modeling Based on Structural Balance Theory. In Proceedings of the 27th ACM International Conference on Information and Knowledge Management (CIKM), pp. 557-566. Turin, Italy, October 22-26, 2018. (acceptance ratio 17.0%)

[C02] Tyler Derr, Zhiwei Wang, and Jiliang Tang. Opinions Power Opinions: Joint Link and Interaction Polarity Predictions in Signed Networks. In Proceedings of the IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM), pp. 363-366. Barcelona, Spain, August 28-31, 2018. (acceptance rates - long 16% and short 15%)

[C01] Zhiwei Wang, Tyler Derr, Dawei Yin, and Jiliang Tang. Understanding and Predicting Weight Loss with Mobile Social Networking Data. In Proceedings of the 26th ACM International Conference on Information and Knowledge Management (CIKM), pp. 1269-1278. Singapore, November 6-10, 2017. (acceptance rate 20.0%)

Book Chapters:

[B01] Yu Wang[†] , Wei Jin[‡] , and Tyler Derr. Graph Neural Networks: Self-supervised Learning. Graph Neural Networks: Foundations, Frontiers, and Applications (Lingfei Wu, Peng Cui, Jian Pei, and Liang Zhao (Eds.)), Springer, Chapter 18, pp. 391-420. 2022.

Workshop Papers:

[W02] Yu Wang[†] and Tyler Derr. Degree-related Bias in Link Prediction. In Proceedings of the 22nd International Conference on Data Mining Workshop (ICDMW), Orlando, FL, USA, November 28, 2022. (acceptance rate unknown)

[W01] Tyler Derr and Jiliang Tang. Congressional Vote Analysis using Signed Networks. In Proceedings of the 18th International Conference on Data Mining Workshops (ICDMW), 2018. (acceptance rate unknown)

Preprints

[Pre11] Ruiqi Feng, Zhichao Hou, Tyler Derr, and Xiaorui Liu. Robust Graph Neural Networks via Unbiased Aggregation. arXiv preprint arXiv:2311.14934 2023.

[Pre10] Aikta Arya, Pradumn Kumar Pandey, Niloy Ganguly, and Tyler Derr. A Survey on Signed Network Modeling and its Applications. 2023.

[Pre09] Anwar Said[‡] , Tyler Derr, Mudassir Shabbir, Waseem Abbas, Xenofon Koutsoukos. Graph Unlearning: A Review. arXiv preprint arXiv:2310.02164 2023.

[Pre08] Yi Zhang[†] , Yuying Zhao[†] , Zhaoqing Li[‡] , Xueqi Cheng[†] , Yu Wang[†] , Olivera Kotevska, Philip S. Yu, and Tyler Derr. A Survey on Privacy in Graph Neural Networks: Attacks, Preservation, and Applications. arXiv preprint arXiv:2308.16375 2023.

[Pre06] Yunchao "Lance" Liu[†] , Rocco Moretti, Yu Wang[†] , Bobby Bodenheimer, Tyler Derr, and Jens Meiler. Integrating Expert Knowledge with Deep Learning Improves QSAR Models for CADD Modeling . bioRxiv preprint 10.1101/2023.04.17.537185 2023.

[Pre05] Yu Wang[†] , Charu Aggarwal, and Tyler Derr. Distance-wise Prototypical Graph Neural Network for Imbalanced Node Classification. arXiv preprint arXiv:2110.12035 2021.

[Pre04] Wei Jin[‡] , Tyler Derr, Haochen Liu[‡] , Yiqi Wang, Suhang Wang, Zitao Liu, and Jiliang Tang. Self-supervised Learning on Graphs: Deep Insights and New Directions. arXiv preprint arXiv:2006.10141 2020.

[Pre03] Haochen Liu[‡] , Zhiwei Wang, Tyler Derr, Zitao Liu, and Jiliang Tang. Chat as Expected: Manipulating Black-box Neural Dialogue Models. arXiv preprint arXiv:2005.13170 2020.

[Pre02] Haochen Liu[‡] , Tyler Derr, Zitao Liu, and Jiliang Tang. Say What I Want: Towards the Dark Side of Neural Dialogue Models. arXiv preprint arXiv:1909.06044 2019.

[Pre01] Tyler Derr, Chenxing Wang, Suhang Wang, and Jiliang Tang. Signed Node Relevance Measurements. arXiv preprint arXiv:1710.07236 2017.

MENTORING IN NDS LAB (AS ADVISOR)

Network and Data Science Lab, Vanderbilt University

Ph.D. Students

- Bo Ni, Ph.D. Computer Science — Spring 2024 – Present
  -Research topics: Deep learning on graphs, knowledge graphs, uncertainty quantification, and causal reasoning

- Anne Tumlin, Ph.D. Computer Science Fall 2023 – Present
  -Co-advised in VeriVITAL Lab @ VU
  -Research topics: Fairness verification in ML, fairness in NLP applications, and graph neural network verification
  -Awarded Vanderbilt Provost's Graduate Fellowship Award
  -Awarded the DOE Computational Science Graduate Fellowship
- Xueqi Cheng, Ph.D. Computer Science Fall 2023 – Present
  -Research topics: Deep learning on complex graphs, out of distribution and imbalanced learning on graphs
  -Awarded Vanderbilt IBM Fellowship Award
- Yuying Zhao, Ph.D. Computer Science Fall 2021 – Present
  -Research topics: Network science for social good, beyond utility metrics, including model explainability and fairness in ML
  -Awarded Vanderbilt IBM Fellowship Award
  -Awarded Vanderbilt's C. F. Chen Best Paper Runner-Up Award in 2023
- Yunchao (Lance) Liu, Ph.D. Computer Science Spring 2021 – Present
  -Co-advised in Meiler Lab @ VU
  -Research topics: computer-aided drug discovery, geometric deep learning, self-supervised learning, molecular representation learning
  -Awarded Nvidia Academic Hardware Grant in 2022
  -Finalist in Vanderbilt's 3MT Competition in 2023
  -1st Place in VU's AI Showcase by the Data Science Institute in 2024
- Yu Wang, Ph.D. Computer Science Spring 2021 – Present
  -Research topics: data issues including class imbalance, fairness, heterophily, in graph neural networks, recommender systems, advanced link prediction
  -Awarded Vanderbilt Russell G. Hamilton Graduate Scholars Award
  -Awarded Vanderbilt's C. F. Chen Best Paper Award in 2022
  -Awarded Vanderbilt's Graduate Leadership Anchor Award for Research in 2023
  -Best Paper Award at Frontiers in Graph Learning @ NeurIPS in 2023
  -Awarded Vanderbilt's Outstanding Doctoral Student Award in 2024
  -Awarded Best Doctoral Forum Poster Runner-Up at SDM 2024
  -Incoming Assistant Professor of Computer Science at University of Oregon

M.S. Students

- Fanhao Zhou, M.S. Computer Science, Spring 2024 – Present
  -Research topic: user retention understanding and prediction
- Xuhui (Daniel) Zhan, M.S. Data Science, Spring 2024 – Present
  -Research topic: predictions on large-scale transaction networks
- Qinwen Ge, M.S. Computer Science, Fall 2023 – Present
  -Research topic: deep learning on graphs for neuroimaging
  -Awarded Vanderbilt's Engineering Graduate Fellowship Award
- Xin (Allen) Wang, M.S. Computer Science, Fall 2023 – Present
  -Research topic: topological deep learning and graph diffusion models for computer-aided drug discovery
  -Awarded Vanderbilt's Engineering Graduate Fellowship Award
- Catherine Yang, B.S. Computer Science, M.S. Computer Science Fall 2023 – Present
  -Thesis: "An Analysis of Local Neighborhood-based Paradoxes in Signed Social Networks"
  -KDD'23 Undergraduate Consortium - The Friendship Paradox: An Analysis on Signed Social Networks with Positive and Negative

B.S. Students

- Leyao (Laura) Wang, B.S. Computer Science & Mathematics — Fall 2023 – Present
  - -Research topic: Learnable pairwise conformation selection mechanism in GNN-based target protein-ligand binding activity prediction
  - -Independent Study for Spring'24
  - -Vanderbilt's Undergraduate Summer Research Program in Summer'24
- Macharia Kanyatte, B.S. Electrical and Computer Engineering — Fall 2022 – Present
  - -Research topic: Constructing a signed network repository and basic network analysis toolkit
  - -Tennessee Louis Stokes Alliance Program
  - -Georgia Tech REU program in Summer'23

Former M.S. Students

- 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
  - -Independent study on relations between Bitcoin network and energy sector (Spring'22)
  - - Next Position: Business Analyst at McKinsey & Company
- Kayla Johnson, M.S. Data Science — Spring 2021 – Spring 2022
  - -Awarded the Neurodiversity Inspired Science & Engineering (NISE) Graduate Trainee Fellowship
  - -Trained in mentoring two summer interns through the Frist Center for Autism and Innovation during Summer'21 and assisted on analysis of PredictIt.org project
  - -Final MS Project on (fair) chatbots for job interviews

Former B.S. Students

- Emily Doehring, B.S. Computer Science — Fall 2021 – Spring 2022
  - -Project on analysis of PredictIt.org
- Ao Qu, B.S. Computer Science, B.S. Economics, B.S. Mathematics — Fall 2021
  - -Project on adaptive views in contrastive learning for GNNs
  - -Next Position: PhD student at Massachusetts Institute of Technology (MIT)
- Sam Libaire, B.S. Computer Science — Summer 2021
  - -Clark Scholars Program
  - -Project on predicting unfollower links in online social media
  - -Established initial NDS Lab signed network dataset repository
- Chet Weissberg, B.S. Computer Science — Spring 2021 – Summer 2021
  - -2021 Data Science Institute Summer Research Program (DSI-SRP) Fellow
  - -Project on Understanding Neurodiversity on Social Media
- Trevor Pillow, B.S. Computer Science — Fall 2020 – Fall 2021
  - -2021 Vanderbilt Undergraduate Summer Research Program (VUSRP)
  - -Project on analyzing the (un)friendship paradox in online social networks
- Jack M. O'Keefe, B.S. Computer Science, B.S. Economics — Fall 2020 – Spring 2021
  - -Project on analysis and predictions in Venmo network

Former Research Interns

- Shivam Agarwal, B.S. Electrical and Computer Engineering — Summer 2020 – Summer 2022
  - -Remote from IIIT-Delhi (then as Engineer at Cisco)
  - -Two first-author publications: AAAI'21 and ICDM'22
  - -Wrote him letters of recommendation for his Fall'22 graduate applications
  - -Next Position: M.S./Ph.D. in Computer Science at University of Illinois Urbana-Champaign (UIUC)

- Kaleb Briggs, B.S. Computer Information Systems — Summer 2021
  -Visiting from Austin Peay State University
  -Frist Center for Autism and Innovation Summer Intern (2021)
  -Project on data collection from and analysis of PredictIt.org
- Norman Jetmundsen, B.S. Computer Science — Summer 2021
  -Visiting from University of Tennessee at Chattanooga
  -Frist Center for Autism and Innovation Summer Intern (2021)
  -Project on data collection from and analysis of PredictIt.org
- Aaron Brookhouse, B.S. Electrical Engineering — Fall 2020 – Fall 2021
  -Remote from Michigan State University
  -Published one first-author paper in ACM HyperText'21
  -Wrote him letters of recommendation for Fall'22 CS PhD programs
  -Nominated for the 2021 CRA Outstanding Undergraduate Researchers Award

Former High School Students

- Xinran Pan — Jun 2021 – May 2022
  -Project on Social Good and Simpson's Paradox
  -Wrote her letters of recommendation for BS programs starting Fall 2022
  -Next position: Undergraduate student at Carnegie Mellon University

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MENTORING (NOT AS ADVISOR)

Network and Data Science Lab, Vanderbilt University

- Effat Farhana, Postdoctoral Fellow Scholar — Oct 2022 – Present
  -Effat was working with Maithilee Kunda
  -Mentored for her faculty search materials in 2023/24
- Anwar Said, Postdoctoral Research Scholar — Sep 2022 – Present
  -Anwar was working with Xenofon Koutsoukos
  -Mentored on 2 proposal and co-authored 3 papers

Data Science and Engineering Lab, Michigan State University

- Wei Jin, Ph.D. Computer Science & Engineering — Nov 2019 – May 2022
  -Mentored and co-authored on 3 papers
  -Next position: Assistant Professor of Computer Science at Emory University
- Jamell Dacon, Ph.D. Computer Science & Engineering — Aug 2018 – May 2021
  -MSU Enrichment Fellowship (UEF)
  -Mentored on 2 projects and co-authored on 1 paper
  -Next position: Assistant Professor of Computer Science at Morgan State University
- Hua Liu, Ph.D. Mathematics at Shandong University — Nov 2019 – Nov 2020
  -Mentored on a project for signed network analysis
- Namratha Shah, M.S. Computer Science & Engineering — May 2020 – Aug 2020
  -Project on social media and mental health
  -Next Position: Software Engineer at Informed.IQ
- Andrew McDonald, B.S. in Computer Science, Mathematics, and Statistics — Mar 2019 – Aug 2020
  -Work accepted at AAAI'20 Undergrad Consortium
  -Mentored through the Graduate Women in Science Mentor Program
  -Next position: Ph.D. stutdent at Cambridge University
- Aaron Brookhouse, B.S. Electrical Engineering — Aug 2018 – Jun 2020
  -MSU Professorial Assistantship Program
  -Mentored and co-authored on 2 papers
  -Next position: WSU's Smart Environments REU Program

- Haochen Liu, Ph.D. Computer Science & Engineering Jan 2019 – Dec 2019
  - Mentored and co-authored 2 papers
  -Next position: Senior Data Scientist at Fidelity Investments
- Daniel K. Ofori-Dankwa, M.S. Computer Science & Engineering May 2018 – May 2019
  -Mentored a project on "Bitcoin Price Predictions"
  -Next position: Software Engineer at Microsoft
- Linghao Ji, B.S. Computer Science & Engineering Aug 2018 – Aug 2019
  -Project a project on "Analyzing Swing Voters in Congress"
  -Supported as a letter writer for M.S. applications
  -Next position: Applied Data Analytics M.S. student at Boston University
- Cassidy Johnson, B.S. Computer Science & B.S. Mathematics May 2018 – Aug 2018
  -2018 Summer Research Opportunities Program
  -Mentored and co-authored on 1 paper
  -Next position: Lawrence Livermore National Lab Intern
- Mitansh Madan, B.S. Computer Science & Engineering Oct 2017 – May 2018
  -Independent study through CSE department
- Pegah Varghaei, B.S. Computational Mathematics Mar 2017 – May 2018
  -Next position: Comp. Math Science and Eng. Ph.D. student at MSU
- Chenxing Wang, M.S. Statistics Feb 2017 – May 2018
  -Co-authored "Relevance Measurements in Online Signed Social Networks" MLG'18
  -Next position: Computer Science Ph.D. student at IUPUI

Yue Lab, The Pennsylvania State University College of Medicine

- Simon Kuang, High School student Jun 2014 – Apr 2015
  Project nominated for Google Science Fair Regional Finalist (2014)
  Next Position: Computer Science & Electrical Engineering B.S. student at UC Berkeley

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SYMPOSIUMS / WORKSHOPS / (NON-ARCHIVAL)

[S25] Yu Wang[†] , Nedim Lipka, Ryan A Rossi, Alexa Siu, Ruiyi Zhang, and Tyler Derr. Knowledge Graph Prompting for Multi-Document Question Answering. New Frontiers in Graph Learning (GLFrontiers) Workshop @ NeurIPS, Oral Presentation, 2023. **Best Paper Award**

[S24] Anwar Said[‡] , Roza G. Bayrak[‡] , Tyler Derr, Mudassir Shabbir, Daniel Moyer, Catie Chang, and Xenofon Koutsoukos. NeuroGraph: Benchmarks for Graph Machine Learning in Brain Connectomics. The 3rd Workshop on Graph Learning Benchmarks @ ACM KDD, Oral Presentation, 2023.

[S23] 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. The 18th International Workshop on Mining and Learning with Graphs (MLG) @ KDD, Poster, 2023.

[S22] Catherine Yang[††] , Yuying Zhao[†] , and Tyler Derr. The Friendship Paradox: An Analysis on Signed Social Networks with Positive and Negative Links. 29th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD) - Undergraduate Consortium, Presentation and Poster, 2023.

[S21] Yuying Zhao[*] [†] , Yunfei Hu[*] , Curtis T. Schunk, Yingxiang Ma, Tyler Derr, and Xin Maizie Zhou. ADEPT: Autoencoder with Differentially Expressed Genes and Imputation for a Robust Spatial Transcriptomics Clustering. RECOMB-Seq Conference, Presentation and poster, 2023.

[S20] Yu Wang[†] , Charu Aggarwal, and Tyler Derr. Distance-wise Prototypical Graph Neural Network for Imbalanced Node Classification. The 17th International Workshop on Mining and Learning with Graphs (MLG) @ KDD, Presentation and poster, 2022.

[S19] Yu Wang[†] , Yuying Zhao[†] , Neil Shah, Tyler Derr. Imbalanced Graph Classification via Graph-of-Graph Neural Network. The 1st International Workshop on Machine Learning on Graphs (MLoG) @ WSDM, Poster, 2022.

[S18] Wei Jin[‡] , Tyler Derr, Haochen Liu, Yiqi Wang, Suhang Wang, Zitao Liu, and Jiliang Tang. Self-supervised Learning on Graphs: Deep Insights and New Directions. The Workshop on Self-Supervised Learning for the Web @ WWW, Presentation and poster, 2021.

[S17] Tyler Derr and Jiliang Tang. Network Analysis with Negative Links. *Michigan State University Engineering Graduate Research Symposium*, Poster, 2020.

[S16] Tyler Derr. Analyzing Negative Links in Online Social Media. *Michigan State University Graduate Academic Conference*, Presentation, 2020.

[S15] Hamid Karimi, Jiangtao Huang, Tyler Derr. A Deep Model for Predicting Online Course Performance. *Workshop on Artificial Intelligence for Education (AI4EDU) @ AAAI*, Presentation, 2020.

[S14] Tyler Derr. Network Analysis with Negative Links. *Michigan AI Symposium - AI For Society*, Poster, 2019.

[S13] Tyler Derr. Network Analysis with Negative Links. *International Conference on Data Mining (SDM19) Doctoral Forum*, SIAM, Poster, 2019. **Best Poster Award at SDM'19**

[S12] Aaron Brookhouse[††] , Tyler Derr, Hamid Karimi, and Jiliang Tang. Why Do People Unfollow on Twitter. *Mid-Michigan Symposium for Undergraduate Research Experiences (MID-SURE)*, Poster, 2019.

[S11] Tyler Derr, Yao Ma, and Jiliang Tang. Signed Graph Convolutional Networks. *Michigan State University Engineering Graduate Research Symposium*, Poster, 2019 .

[S10] Tyler Derr, Hamid Karimi, and Jiliang Tang. Multi-Factor Congressional Vote Prediction. *Michigan State University Graduate Academic Conference - Three-Minute Thesis Competition*, Presentation 2019. **"People's Choice" Award**

[S09] Tyler Derr, Hamid Karimi, and Jiliang Tang. Deep Congressional Vote Prediction. *Southeast Michigan Postdoctoral Symposium*, Presentation 2018. **Second Prize** Awarded by University of Michigan's Postdoctoral Association

[S08] Tyler Derr and Jiliang Tang. Congressional Vote Analysis using Signed Networks. *IEEE International Conference on Data Mining (ICDM18) Ph.D. Forum*, Presentation, 2018.

[S07] Tyler Derr, Chenxing Wang[‡] , Suhang Wang, and Jiliang Tang. Relevance Measurements in Online Signed Social Networks. In ACM SIGKDD 14th International Workshop on Mining and Learning with Graphs (MLG), 2018.

[S06] Tyler Derr, Chenxing Wang[‡] , Suhang Wang, and Jiliang Tang. Node Relevance Measurements in Online Signed Social Networks. *Michigan State University Engineering Graduate Research Symposium*, Poster, 2018 .

[S05] Tyler Derr. Opinions Power Opinions: Joint Link and Interaction Polarity Predictions in Signed Networks. *International Conference on Data Mining (SDM17) Doctoral Forum*, SIAM, Poster, 2017.

[S04] Tyler Derr, Zhiwei Wang, and Jiliang Tang. Opinions Power Opinions: Joint Link and Interaction Polarity Predictions in Signed Networks. *Michigan State University Engineering Graduate Research Symposium*, Poster, 2017 .

[S03] Tyler Derr, Yanli Wang, and Feng Yue. A Supervised Learning Approach to the Prediction of Hi-C Data. *ENCODE 2015: Research Applications and Users Meeting*, Poster and presentation, 2015 .

[S02] Yanli Wang, Gal Yaroslavsky, Tyler Derr, and Feng Yue. Visualizing three-dimensional organization and long-range interactions of the mammalian genome with the 3D Genome Browser. *ENCODE 2015: Research Applications and Users Meeting*, Poster, 2015 .

[S01] Tyler Derr. Archimedes and His Approximation of $\sqrt{3}$. *MAA-EPaDel Regional Spring Conference*, Student Paper Session Talk, Dickinson College, 2013.

TUTORIALS

Data-Quality-Aware Graph Machine Learning 2024
- Yu Wang[†] , Yijun Tian, Tong Zhao, Xiaorui Liu, Jian Kang, and Tyler Derr.
- 2024 SIAM International Conference on Data Mining (SDM)

Graph Neural Networks: Models and Applications 2021
- Yao Ma, Wei Jin, Yiqi Wang, Tyler Derr, and Jiliang Tang.
- 35th AAAI Conference on Artificial Intelligence (AAAI)

Deep Graph Learning: Foundations, Advances and Applications 2020
- Yu Rong, Tingyang Xu, Junzhou Huang, Wenbing Huang, Hong Cheng, Yao Ma, Yiqi Wang, Tyler Derr, Lingfei Wu, Tengfei Ma.
- 26th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD)
- One of the most popular tutorials at KDD'20 with more than 800 attendees

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TALKS

Keynote Presentations:

[KT03] Data-Centric AI for Real-World Graph Applications Dec 2023
Graph Techniques for Adversarial Activity Analytics Workshop
IEEE BigData 2023

[KT02] Overcoming Data Quality Issues in Graph Learning Nov 2022
Knowledge Graph Workshop
IEEE International Conference on Data Mining (ICDM) 2022

[KT01] Self-supervised Learning on Graphs: Deep Insights and New Directions Aug 2020
Workshop on Deep Learning on Graphs: Methods and Applications (DLG-KDD'20)/
Workshop on Mining and Learning with Graphs (MLG'20)
ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2020

Invited Presentations:

[IT31] Network Science for Social Good Jan 2024
Frist Center Salon Series
Vanderbilt University

[IT30] Data-Centric AI for Real-World Graph Applications Nov 2023
Symposium on Frontiers of Mathematics and Analysis, Control and Applications of Complex Systems, at the School of Mathematics and System Sciences
Shandong University, China

[IT29] Data-Centric AI for Real-World Graph Applications Nov 2023
ORNL Core Universities AI Workshop
Georgia Institute of Technology

[IT28] Computational Social Science Topics in the NDS Lab: An Introduction Sep 2023
Quantitative Methods Colloquium
Vanderbilt University

[IT27] Data Quality-Aware Learning on Graphs Sep 2023
Computer Science Speaker Series
Brandeis University

[IT26] Enhancing Graph Neural Networks with Data Quality-Aware Learning Aug 2023
Foundation Model Research Center, Institute for A.I.
Tsinghua University

[IT25]	Towards Data-Centric Graph Learning for Real-World Applications Graph Neural Networks Mini Meeting Max Planck Institute for Mathematics in the Sciences (MPI MiS)	Jun 2023
[IT24]	Advanced Graph Analytics for Real-World Applications Griffiss Institute Tech Talks Air Force Research Lab Information Directorate (AFRL/RI)	Jun 2023
[IT23]	Creating and Leveraging Knowledge Graphs in Real-World Applications Invited Speaker at Knowledge Graph Day ACM Web Conference	Apr 2023
[IT22]	Overcoming Data Quality Issues in Graph Learning AI Seminar North Carolina State University	Nov 2022
[IT21]	Overcoming Data Quality Issues in Graph Learning Mathematics and Data Science Forum Shandong University, China	Nov 2022
[IT20]	Overcoming Data Quality Issues in Graph Learning ORNL Core Universities AI Workshop Virginia Tech	Oct 2022
[IT19]	Machine Learning on Graphs Computer Science and Mathematics Division Oak Ridge National Laboratory (ORNL)	Aug 2022
[IT18]	AI in Intellectual and Developmental Disabilities Research: A Network Perspective AI in IDD Research Dinner Conversation Vanderbilt Kennedy Center	Mar 2022
[IT17]	Navigating the Faculty Job Search College of Engineering Graduate Lunch & Learn Michigan State University	Oct 2020
[IT16]	Demystifying the Black Box: AI/Machine Learning in the Modern Era Change++	Sep 2020
[IT15]	Graph Neural Networks: Social Networks and Beyond Biomedical Engineering Vanderbilt University	Sep 2020
[IT14]	Analyzing Signed Social Networks Seminar in Computer Science University of Texas Rio Grande Valley	Sep 2020
[IT13]	Data Science for Social Good Data Science Institute Vanderbilt University	Spring 2020
[IT12]	Network Analysis with Negative Links Computer Science Department Binghamton University	Spring 2020
[IT11]	Network Analysis with Negative Links Computer Science Department Drexel University	Spring 2020
[IT10]	Network Analysis with Negative Links Computer Science Department Illinois Institute of Technology	Spring 2020
[IT09]	Network Analysis with Negative Links Ying Wu College of Computing New Jersey Institute of Technology	Spring 2020

[IT08]	Network Analysis with Negative Links School of Electrical Engineering and Computer Science Oregon State University	Spring 2020
[IT07]	Network Analysis with Negative Links Department of Computer Science University of Alabama at Birmingham (canceled due to COVID-19)	Spring 2020
[IT06]	Network Analysis with Negative Links Department of Computer Science University of Kentucky	Spring 2020
[IT05]	Network Analysis with Negative Links Department of Computer Science & Engineering University of Nebraska	Spring 2020
[IT04]	Network Analysis with Negative Links School of Computing and Information University of Pittsburgh	Spring 2020
[IT03]	Network Analysis with Negative Links Department of Electrical Engineering and Computer Science Vanderbilt University	Spring 2020
[IT02]	Network Analysis with Negative Links Center for Computational Network Intelligence HRL Laboratories	May 2019
[IT01]	Signed Network Analysis: Community Detection & Link Prediction Applying Social Network Methods and Theories Counseling, Educational Psychology, and Special Education Department, MSU	Mar 2017

Guest Lectures:

[LT04]	The Social-Side of Autism Spectrum Disorder and Deep Learning Predictions NISE6100: The Science of Neurodiversity-Inspired Science and Engineering Vanderbilt University	Sep 2023
[LT03]	The Social-Side of Autism Spectrum Disorder and Deep Learning Predictions NISE6100: The Science of Neurodiversity-Inspired Science and Engineering Vanderbilt University	Mar 2023
[LT02]	Introduction to Social Network Analysis CS4959: Computer Science Seminar Vanderbilt University	Nov 2021
[LT01]	Interpretable Autism Identification via Deep Learning CS8395-05: Introduction to Neurodiversity Inspired Science & Engineering Vanderbilt University	Apr 2021

Conference/Workshop Paper Presentations:

Please see the full list of conference/workshop papers. I mostly presented the first-author papers.

TEACHING EXPERIENCE

Vanderbilt University

Instructor, Department of Computer Science — Jul 2021 – Present

- CS3892/5892: Project in Data-Centric AI and Mining
  Undergraduate/Graduate Level, (Planned for) Fall 24
- CS4352/5352: Social Network Analysis
  Undergraduate/Graduate Level, Fall 22 & 23
- CS3891/5891-03: Social Network Analysis
  (Listed as Special Topics course)
  Undergraduate/Graduate Level, Fall 21

Instructor, Data Science Institute — Jan 2021 – Present

- DS5720: Social Network Analysis (Graduate Level, Spring 21-24)

Instructor, Department of Electrical Engineering and Computer Science Aug 2020 – Jul 2021
- CS3891/5891-06: Social Network Analysis (Undergraduate/Graduate Level, Fall 20)
- Received the **Teaching Innovation Award from the School of Engineering** in Fall 2020
- Note: Our EECS department separated into ECE and CS in July 2021.

Michigan State University

Co-Instructor, Computer Science and Engineering Department Aug 2018 – Dec 2019
- Big Data Analysis (Undergraduate Level, Fall 18, Fall 19)
- Data Mining (Graduate Level, Spring 18)

Teaching Assistant, Computer Science and Engineering Department Aug 2015 – May 2017
- Operating Systems (Fall 15 & Summer 16)
- Intro to Programming I (Fall 16)
- Database Systems (Spring 16 & Spring 17)

The Pennsylvania State University

Grader, Computer Science and Mathematical Sciences Department Aug 2014 – Dec 2015
- Course: Theory of Computation (Graduate level)

Graduate Assistant, Computer Science and Mathematical Sciences Department Aug 2013 – May 2014
Teaching assistant for:
- Artificial Intelligence (Spring 14)
- Formal Languages (Spring 14)
- Discrete Mathematics (Fall 13)
- Intermediate Programming in C++ (Fall 13)

Math & Computer Science Tutor, Russell E. Horn Sr. Learning Center Aug 2012 – May 2013
- Tutor and provide mentorship to students in mathematics and programming courses
- Received training on learning techniques, cross-cultural communication, and critical thinking

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OTHER WORK EXPERIENCE

United BioSource Corp., Harrisburg, PA, USA
Software Developer Intern May 2012 – Aug 2012
- Redesigned and then programmed a software configuration management system

Computer Aid, Inc., Harrisburg, PA, USA
Technical Developer Intern May 2011 – Dec 2011
- Received training in ASP.NET, SQL, and C# for Web Application Development

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OLDER RESEARCH/ PROJECTS (MS,BS)

A Clustering Approach to the Bounded Diameter Minimum Spanning Tree Problem Using Ants May 2014 – Aug 2015
- **Master's Thesis** under the supervision of Dr. Thang N. Bui at Penn State Harrisburg
- Using ant-based optimization to find good intra- and inter-cluster edges to cluster the nodes, build constrained spanning trees per cluster, connect them, then use local optimization.

Micromouse for the IEEE Region 2 Student Activities Conference Jan 2014 – May 2014
- Worked in a team to design, build, and program a robotic mouse to solve the IEEE maze.

Software Verification and Security Analysis by Modeling System Specifications Aug 2012 – Aug 2013
- Creating statecharts, modeling them using PROMELA, and designing safety/liveness properties in Linear Temporal Logic (LTL) to prove correctness using the Spin Model Checker

Voice-to-Braille Translation System May 2012 – May 2013
- Worked in a team to design and create a refreshable braille display based on utilizing an Arduino and Android app communicating via bluetooth to our custom refreshable braille device.

EXTERNAL SERVICES

Times Higher Education (THE)
- Invited survey participant for THE Global Academic Reputation Survey contributing to the 2024 THE World University Ranking 2023

Grant Proposal Panelist/Reviewer
- National Science Foundation (NSF) 2024
- Army Research Office (ARO) 2024
- Research Grants Council (RGC) of Hong Kong (x2) 2024
- National Science Foundation (NSF) (x2) 2023

- Research Grants Council (RGC) of Hong Kong (x2) 2023
- National Science Foundation (NSF) (x2) 2022
- National Science Foundation (NSF) (x2) 2021

Journal Editor

- Associate Editor, Tsinghua Science and Technology - (Impact Factor: 6.6) 2024 - Present
- Associate Editor, IEEE Transactions on Big Data - (Impact Factor: 7.2) 2023 - Present
- Associate Editor, Frontiers in Big Data - (Impact Factor: 3.1) 2023 - Present
- Associate Editor, Elsevier Big Data Research - (Impact Factor: 3.3) 2022 - Present
- Topic Editor, Machine Learning on Complex Graphs 2022 - 2023
  Frontiers in Big Data

Conference Organizer Chairships

- CIKM'24 - Student Travel Awards Co-Chair 2024
  ACM Conference on Information and Knowledge Management
- KDD'24 - Student Travel Awards Co-Chair 2024
  ACM Conference on Knowledge Discovery and Data Mining
- DSAA'24 - Publicity Co-Chair 2024
  IEEE International Conference on Data Sicnece and Advanced Analytics
- WSDM'24 - Student Travel Awards Co-Chair 2024
  ACM International Conference on Web Search and Data Mining
- KDD'23 - Social Media and Publicity Co-Chair 2023
  ACM Conference on Knowledge Discovery and Data Mining
- KDD'22 - Social Media and Publicity Co-Chair 2022
  ACM Conference on Knowledge Discovery and Data Mining
- WSDM'22 - Doctoral Consortium Co-Chair 2022
  ACM International Conference on Web Search and Data Mining
- KDD'21 - Proceedings Co-chair 2021
  ACM Conference on Knowledge Discovery and Data Mining

Workshop Organizer Chairships

- Workshop Co-Founder and Co-Chair, Machine Learning on Graphs (MLoG):
  @ ACM International Conference on Web Search and Data Mining (WSDM) 2022 – 2024
  @ IEEE International Conference on Data Mining (ICDM) 2022 – 2023
- Workshop Co-Chair, Graph Techniques for Adversarial Activity Analytics (GTA3):
  @ IEEE International Conference on Big Data (IEEE BigData) 2022 - 2023
- Workshop Co-Chair, Privacy Algorithms in Systems:
  @ ACM International Conference on Information and Knowledge Management (CIKM) 2022
- Workshop Co-organizer and Publicity Chair, Deep Graph Learning:
  Methodologies and Applications (DGLMA'19) @ IEEE BigData 2019

Senior Area Chair Member

- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2024

Area Chair Member

- Joint International Conference on Computational Linguistics, Language 2024
  Resources and Evaluation (LREC-COLING)

Senior Program Committee Member

- International Conference on Pattern Recognition (ICPR) 2024
- Association for the Advancement of Artificial Intelligence (AAAI) 2023 – 2024
- The International AAAI Conference on Web and Social Media (ICWSM) 2022 – 2024
- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2022
- ACM International Conference on Web Search and Data Mining (WSDM) 2022

Program Committee Member

- The Web Conference (WWW) 2021, 2022, 2024
- International Conference on Learning Representations (ICLR) 2021, 2024
- SIAM International Conference on Data Mining (SDM) 2022 – 2024

- ACM International Conference on Web Search and Data Mining (WSDM) 2022 – 2024
  2022 Outstanding PC Member Award
- SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2021 – 2023
- International Conference on Machine Learning (ICML) 2021 – 2023
- International Joint Conferences on Artificial Intelligence (IJCAI) 2020, 2021, 2023
- Neural Information Processing Systems (NeurIPS) 2020 – 2022
- International ACM Conference on Web Science (WebSci) 2020 – 2022
- Advances in Social Networks Analysis and Mining (ASONAM) 2021
- Graph Neural Networks and Systems Workshop (GNNSys) @ MLSys 2021
- Conference on Empirical Methods in Natural Language Processing (EMNLP) 2021
- Association for Computational Linguistics Annual Meeting (ACL) 2021
- Educational Advances in Artificial Intelligence Symposium @ AAAI 2021
- Deep Learning on Graphs: Methods and Applications Workshop @ KDD 2020 – 2021
- Association for the Advancement of Artificial Intelligence (AAAI) 2020 – 2021
- International Conference on Information Reuse and Integration for Data Science (IRI) 2020 – 2021
- International Conference on Information and Knowledge Management (CIKM) 2019 – 2021
- The International AAAI Conference on Web and Social Media (ICWSM) 2019 – 2021
  2021 Best Reviewer Award
  2019 Best Reviewer Award
- IEEE International Conference on Big Data (BigData) 2018 – 2021
- Graph Techniques for Adversarial Activity Analytics Workshop @ IEEE BigData 2019 – 2021
- Artificial Intelligence for Education (AI4EDU) @ AAAI 2020
- Deep Learning on Graphs: Methodologies and Applications (DLGMA) @ AAAI 2020
- Applied Data Science for Healthcare Workshop @ KDD 2019 – 2020
- International Conference on Artificial Neural Networks (ICANN) 2019
- Deep Graph Learning: Methodologies and Applications (DGLMA'19) @ IEEE BigData 2019

Conference Sub-Reviewer

- SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2019
- International Joint Conference on Artificial Intelligence (IJCAI) 2019
- North American Chapter of the Association for Computation Linguistics (NAACL-HLT) 2019
- Conference on Empirical Methods in Natural Language Processing (EMNLP) 2019
- The Web Conference (WWW) 2018 – 2019
- ACM International Conference on Web Search and Data Mining (WSDM) 2017 – 2019
- Association for the Advancement of Artificial Intelligence (AAAI) 2017 – 2019
- International Conference on Web and Social Media (ICWSM) 2017 – 2018
- Conference on Information and Knowledge Management (CIKM) 2017 – 2019
- Advances in Social Networks Analysis and Mining (ASONAM) 2017 – 2018
- ACM Conference on Research and Development in Information Retrieval (SIGIR) 2018 – 2019
- ACM Recommender Systems (RecSys) 2017, 2019

Journal Reviewer

- IEEE Transactions on Cybernetics 2023 – Present
- ACM Transactions on Sensor Networks 2023 – Present
- Proceedings of the National Academy of Sciences of the USA (PNAS) 2021 – Present
- IEEE Transactions on Intelligent Transportation Systems 2021 – Present
- Frontiers in Big Data - Data Mining and Management 2021 – Present
- IEEE Transactions on Computational Social Systems 2021 – Present
- Nature Communications Physics 2020 – Present
- IEEE Transactions on Knowledge and Data Engineering (TKDE) 2020 – Present
- Data Mining and Knowledge Discovery (DAMI) 2020 – Present
- Applied Network Science (ANS) 2019 – Present
- IEEE Transactions on Neural Networks and Learning Systems (TNNLS) 2019 – Present
- Neurocomputing 2019 – Present
- ACM Transactions on Knowledge Discovery from Data (TKDD) 2018 – Present

Journal Sub-Reviewer

- ACM Transactions on Information Systems (TOIS) 2019
- Data Mining and Knowledge Discovery (DAMI) 2017 – 2018

- IEEE Transactions on Network Science and Engineering (TNSE) 2017 – 2018
- Field Methods 2017
- Journal of Complex Networks 2017
- IEEE MultiMedia 2017
- International Journal of Data Science and Analytics (JDSA) 2017

Book Sub-Reviewer

- Springer 2019

INTERNAL SERVICES

Department of Computer Science (CS)

- CS Immersion Vanderbilt Showcase Judge Spring 2022 & Fall 2022
- Ad hoc Committee for AI/ML Pathway (and formation of CS 3241) Fall 2021–Present
- Ad hoc Committee for Online Presence Summer 2021–Present
- CS Undergraduate Advising 2021–Present
  Computer Science cohort of ∼34 advisees from the Class of 2025
- Vanderbilt Machine Learning Seminar Series Spring 2022–Present
  Co-Founder/Co-Host

School of Engineering (VUSE)

- Undergraduate Summer Book Club 2021 - 2023
  Volunteer Faculty Cohort Leader
- PhD Preliminary Exam Committee
  - William Schreiber (Computer Science) 2024
  - Joyce Fonteles (Computer Science) 2024
  - Naima Samreen Ali (Computer Science) 2023
  - Ali Abbasi (Computer Science) 2023
  - Kieran Nehil-Puleo (Interdisciplinary Material Science) 2022
  - Xinchun Ran (Chemistry) 2022
  - Yubo Feng (Computer Science) 2022
  - Yayan (Ava) Zhao (Computer Science) 2020/2021
  - Qi Yang (Computer Science) 2020
  - Caleb Vatral (Computer Science) 2020
- PhD Qualifying Exam/Dissertation Committee
  - Jia Guo (Computer Science) 2024
  - Shuang Zhou (Computer Science) 2024
  - Caitlin Snyder (Computer Science) 2023
  - Joel Michelson (Computer Science) 2023
  - Chandreyee Bhowmick (Computer Science) 2023
  - Yixuan Huang (Mathematics) 2023
  - Xinchun Ran (Chemistry) 2023
  - Robert Canady (Computer Science) 2022
  - Roza Bayrak (Computer Science) 2022
  - Yongtai Liu (Computer Science) 2022
  - Yunchao Liu (Computer Science) 2021
  - Anabil Munshi (Computer Science) 2021
  - Tianshu Bao (Computer Science) 2021
  - James Ainooson (Computer Science) 2021

Data Science Institute

- Admissions Committee 2022 - 2024
  Volunteer member taking the role of reviewing and scoring DS MS applicants

Frist Center for Autism and Innovation

- Summer Autism Internship Program
  Volunteer faculty co-mentor of 2 summer interns Summer 2023
  Volunteer faculty mentor of 2 summer interns Summer 2021

Vanderbilt University

- Faculty Marshal
  - Commencement Main Ceremony, Graduate School Procession Leader 2022
  - Undergraduate Diploma Ceremony, Stage Scanner 2022

VOLUNTEERING

Conference Volunteering

- Session chair at SDM 2024 2024
  "Applications I"
- Session chair at WSDM 2024 2024
  Main Session 4
- Invited/Volunteer Faculty Mentor for KDD 2022 Undergraduate Consortium 2022
- Session chair at KDD 2022 2022
  "Graph Learning" ADS Track
  "Interdisciplinary Applications: Medicine, Humanities and Social Good" Research Track
- Session chair at KDD 2021 2021
  "Web mining"
  "Humanities and Social Science"
- Invited/Volunteer judge for SDM 2021 Doctoral Forum
- Volunteer at KDD 2020 2020
- Volunteer at ICML 2020 2020
- Session chair at CIKM 2019 2019
  "Network Embedding I"
- Session chair at at ASONAM 2019 2019
  "Network Emebdding"
  "Network Algorithms"
- Session chair for "PhD Forum" at ICDM 2018 2018
- Session chair at ASONAM 2018 2018
  "Ranking & Centrality" and "Modeling II"
- Volunteer at KDD 2017 2017

General Volunteering

- Volunteer mentor for LatinX in AI Mentoring Program 2021 – Present
- Volunteer scientist for Skype a Scientist 2020 – Present
- Volunteer for Principles of Flight 1 @ Griffiss Institute (elementary/middle school students) 2023
- Invited Judge for VandyHacks (VU's premier student hackathon) 2021-2023
- Intro to CS and AI @ Tohoku International School (adding to their technology course) 2021
- Intro to Machine Learning @ Ardsley High School's Science Research class 2020
- Intro to Machine Learning @ Change++ (undergraduate students) 2020
- "Grad Chat" Nominated Panelist @ Michigan State University (undergraduate students) 2020
- Graduate Women in Science (Mid-MI) Mentor Program (undergraduate students) 2019 – 2020
- Activity leader for Girls Math & Science Data at MSU (middle school students) 2019 – 2020
- MSU Science Festival (K-5 students) 2019
- Intro to Artificial Intelligence @ Our Savior Lutheran Church Middle School 2019
- Intro to Computer Science @ Our Savior Lutheran Church Elementary School 2019
- Mid-Michigan Symposium for Undergraduate Research Experiences (Mid-SURE) 2017 – 2019
- Hosting and discussing with potential visiting MSU CSE Graduate Students 2017 – 2019
- "Life as a Grad Student" @ Michigan State University (undergraduate students) 2016 – 2019
- Michigan State University Undergraduate Research and Arts Forum (UURAF) 2016 – 2019
- Global Lions Mentor Program (incoming international students) 2013 – 2015
- MATHCOUNTS (middle school students) 2012 – 2014
- South Central PA Robotics Competition (high school students) 2012 – 2013

PROFESSIONAL AFFILIATIONS/ MEMBERSHIPS

Pi Mu Epsilon, Honorary National Mathematics Society
- Inducted Member 2012 – Present

Institute of Electrical and Electronic Engineers (IEEE)
- Member 2011 – Present

Association of Computing Machinery (ACM)
- Member 2010 – Present

[*CV compiled on 2024-05-05*]