Tyler Derr

CONTACT INFORMATION

Office: 364 Featheringill-Jacobs Hall
400 24th Ave S
Nashville, TN 37212

E-mail: Tyler.Derr@vanderbilt.edu

Personal Homepage: http://www.TylerDerr.com
NDS Lab Homepage: http://my.vanderbilt.edu/NDS
LinkedIn: http://www.linkedin.com/in/TylersNetwork
Twitter: http://www.twitter.com/TylersNetwork
Google Scholar: https://scholar.google.com/citations?user=et6IhFcAAAAJ

POSITIONS

Assistant Professor, Vanderbilt University — Aug 2020 – Present
Computer Science in the Department of CS
(Previously EECS and separated into ECE and CS in July 2021)

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
- Advisor: Dr. Jiliang Tang
- Research areas: Signed Network Analysis, Deep Learning on Graphs, Data Science for Social Good
- Cumulative GPA: 4.00 / 4.00

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
- Advisor: Dr. Thang N. Bui
- Research areas: Ant Systems, Evolutionary Computation, Graph Algorithms
- Cumulative GPA: 3.97 / 4.0

Dual Bachelor of Science (B.S.) in Computer Science and Mathematical Sciences — May 2013
- Cumulative GPA: 3.35 / 4.00

RESEARCH EXPERIENCE

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

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 Investigator: Dr. Kaitlin Torphy

Data Science and Engineering Lab, Michigan State University
PhD Student, Computer Science and Engineering Department — Jan 2017 – Aug 2020
- Projects: 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
- Advisor: Dr. William F. Punch
- Research areas: Evolving A.I., Evolutionary Reinforcement Learning, Genetic Programming

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 in Cells
- Principal Investigator: Dr. Feng Yue
- Research areas: Machine Learning & Computational Genomics/Epigenomics

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

PUBLICATIONS

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, 2021.

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.

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), 2021.

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), 2021.

Aaron Brookhouse, Tyler Derr (co-first author), Hamid Karimi (co-first author), H. Russell Bernard, and Jiliang Tang. 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, 2021.

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), 2021.

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), 2021.

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), 2021.

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), 2021.

Wenqi Fan, Tyler Derr, Xiangyu Zhao,Yao Ma,Hui Liu, Jianping Wang, Jiliang Tang, Qing Li. CopyAttack: Attacking Black-box Recommendations via Copying Cross-domain User Profiles. In Proceedings of the IEEE 37th International Conference on Data Engineering (ICDE), 2021.

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), 2020.

Yu Rong, Tingyang Xu, Junzhou Huang, Wenbing Huang, Hong Cheng, Yao Ma, Yiqi Wang, Tyler Derr, Lingfei Wu, Tengfei Ma. Deep Graph Learning: Foundations, Advances and Applications. In Proceedings of the 26th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD), 2020.

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), 2020.

Tyler Derr, Hamid Karimi (co-first author), Jiangtao Huang, and Jiliang Tang. Online Academic Course Performance Prediction using Relational Graph Convolutional Neural Network. International Educational Data Mining Society (EDM), 2020.

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), 2020.

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), 2020.

Tyler Derr. Network Analysis with Negative Links. In Proceedings of the 13th ACM International Conference on Web Search and Data Mining (WSDM), 2020.

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), 2020.

Amin Javari, Tyler Derr, Pouya Esmalian, Jiliang Tang, Kevin Chen-Chuan Chang. ROSE: Role-based Signed Network Embedding. The World Wide Web Conference, 2020.

Tyler Derr, Zhiwei Wang, Jamell Dacon, and Jiliang Tang. Link and Interaction Polarity Predictions in Signed Networks. Social Network Analysis and Mining (SNAM), 2020.

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), 2019.

Tyler Derr, Hamid Karimi (co-first author), 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), 2019.

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), 2019.

Hamid Karimi, Tyler Derr, Kaitlin Torphy, Ken Frank, and Jiliang Tang. A Roadmap for Incorporating Online Social Media in Educational Research. Teachers College Record, 2019.

Tyler Derr, Yao Ma, and Jiliang Tang. Signed Graph Convolutional Networks. In Proceedings of the 18th International Conference on Data Mining (ICDM), 2018.

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

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), 2018.

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), 2018.

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.

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), 2017.

Preprints and Submissions

Yu Wang, Charu Aggarwal, and Tyler Derr. Distance-wise Prototypical Graph Neural Network for Imbalanced Node Classification. arxiv 2021.

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 2020.

Hamid Karimi, Tyler Derr, Jiliang Tang. Explaining the Behavior of Deep Neural Networks Through the Lens of Decision Boundary.

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

Jiangtao Huang, Tyler Derr, Hamid Karimi, and Jiliang Tang. A Survey of Computational Methods in Massive Open Online Courses.

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

Hamid Karimi, Tyler Derr, and Jiliang Tang. Characterizing the Decision Boundary of Deep Neural Networks. arXiv 2019.

HONORS & AWARDS

- **Best Reviewer Award** at ICWSM'21. 2021
- SIAM Early Career Travel Award for SDM'21 supported by NSF 2021
- Fall 2020 **Teaching Innovation Award from the School of Engineering** at Vanderbilt 2021
- Student Registration Award for KDD'20 from NSF and ACM SIGKDD. 2020
  (Including partial registration for KDD'21)
- Student Travel Award for WSDM'20 from ACM SIGIR. 2020
- MSU COGS Professional Development Award (with fellowship funding) 2019
- MSU COGS Conference Award (with fellowship funding) 2019
- Student Travel Award for CIKM'19 from ACM SIGIR. 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. May 2019
  Title: Network Analysis with Negative Links
- Student Travel Award for SDM'19 from NSF. 2019
- My advisor Dr. Jiliang Tang was awarded the NSF CAREER award based on my research. 2019
- **"People's Choice" Award** for 3 Minute Thesis Competition at Michigan State Feb 2019
- Student Travel Award for ICDM'18. 2018
- Student Travel Award for CIKM'18 from ACM SIGIR. 2018
- 2nd Prize at the Southeast Michigan Postdoctoral Symposium Oct 2018
  University of Michigan Postdoctoral Association
- Department Fellowship, Michigan State University Spring: 2018,2019, Summer: 2017,2018
  The Department of Computer Science and Engineering
- Student Travel Award for KDD'17. 2017
- Student Travel Award for SDM'17 from NSF. 2017
- 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

MENTORING IN NDS LAB (AS ADVISOR)

Network and Data Science Lab, Vanderbilt University

Ph.D. Students

- Zhaoqing Li, Ph.D. Computer Science — Officially Starting in Spring 2022
  Research topic: Graph mining and representation learning
  Awarded Vanderbilt Dean's Graduate Fellowship Award
- Yuying Zhao, Ph.D. Computer Science — Fall 2021 – Present
  Research topic: Graph mining and representation learning
  Awarded Vanderbilt IBM Fellowship Award
- Yu Wang, Ph.D. Computer Science — Spring 2021 – Present
  Research topic: Deep Learning on Graphs
  Awarded Vanderbilt Russell G. Hamilton Graduate Scholars Award

M.S. Students

- Kayla Johnson, M.S. Data Science — Feb 2021 – Present
  Awarded the Neurodiversity Inspired Science & Engineering (NISE) Graduate Trainee Fellowship

B.S. Students

- Emily Doehring, B.S. Computer Science — Aug 2021 – Present
- Ao Qu, B.S. Computer Science, B.S. Economics, B.S. Mathematics — Aug 2021 – Present
- Benjamin Van Sleen, B.S. Computer Engineering, B.S. Economics, and accelerated M.S. Computer Science — Dec 2020 – Present
  2021 Data Science Institute Summer Research Program (DSI-SRP) Fellow

Research Interns

- Shivam Agarwal, B.S. Electrical and Computer Engineering — Jul 2020 – Present
  Remote from IIIT-Delhi (and now Cisco)
  Co-authored "Stock Selection via Spatiotemporal Hypergraph Attention Network: A Learning to Rank Approach" AAAI'21
  Co-authored "Dynamic Time Evolving Hypergraph Attention on the Riemannian Manifold" (preprint)
  Wrote him letters of recommendation for PhD programs starting Fall 2022

High School Students

- Xinran Pan — Jun 2021 – Present
  Wrote her letters of recommendation for BS programs starting Fall 2022

Former B.S. Students

- Sam Libaire, B.S. Computer Science — May 2021 – Aug 2021
  Clark Scholars Program
- Chet Weissberg, B.S. Computer Science — Feb 2021 – Aug 2021
  2021 Data Science Institute Summer Research Program (DSI-SRP) Fellow
- Trevor Pillow, B.S. Computer Science — Dec 2020 – Aug 2021
  2021 Vanderbilt Undergraduate Summer Research Program (VUSRP)
- Cole Sawyer, B.S. Computer Science — Aug 2020 – Aug 2021
- Jack M. O'Keefe, B.S. Computer Science, B.S. Economics — Dec 2020 – May 2021

Former Research Interns

- Kaleb Briggs, B.S. Computer Information Systems — Summer 2021
  Visiting from Austin Peay State University
  Frist Center for Autism and Innovation Summer Intern (2021)
- Norman Jetmundsen, B.S. Computer Science — Summer 2021
  Visiting from University of Tennessee at Chattanooga
  Frist Center for Autism and Innovation Summer Intern (2021)

- Aaron Brookhouse, B.S. Electrical Engineering Aug 2020 – Aug 2021
  Remote from Michigan State University
  Co-authored "Road to the White House: Analyzing the Relations Between Mainstream and Social Media During the U.S. Presidential Primaries"
  Wrote him letters of recommendation for PhD programs starting Fall 2022
  Nominated for the 2021 CRA Outstanding Undergraduate Researchers Award

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MENTORING (NOT AS ADVISOR)

Data Science and Engineering Lab, Michigan State University

- Wei Jin, Ph.D. Computer Science & Engineering Nov 2019 – Present
  Ongoing Project on graph neural networks
  Co-authored "Node Similarity Preserving Graph Convolutional Networks" WSDM'21
  Co-authored "Self-supervised Learning on Graphs: Deep Insights and New Directions" (Preprint)
- Aaron Brookhouse, B.S. Electrical Engineering Aug 2018 – Jun 2020
  MSU Professorial Assistantship Program
  Co-authored "Multi-Factor Congressional Vote Prediction" ASONAM'19
  Poster presentation of our work at MID-SURE 2019
  Wrote him letters of recommendation for 2020 REU applications
  He accepted WSU's Smart Environments REU Program (and invited to others)
- Jamell Dacon, Ph.D. Computer Science & Engineering Aug 2018 – May 2021
  MSU Enrichment Fellowship (UEF)
  Project on Black Lives Matter in Social Media
  Co-authored "Link and Interaction Polarity Predictions in Signed Networks" SNAM
- Hua Liu, Ph.D. Mathematics at Shandong University Nov 2019 – Nov 2020
  Project on signed network analysis
- Namratha Shah, M.S. Computer Science & Engineering May 2020 – Aug 2020
  Project on social media and mental health
- Andrew McDonald, B.S. in Computer Science, Mathematics, and Statistics Mar 2019 – Aug 2020
  MSU Alumni Distinguished Scholar
  Mentored through the Graduate Women in Science Mentor Program
  Work accepted at AAAI 2020 Undergraduate Consortium
- Haochen Liu, Ph.D. Computer Science & Engineering Jan 2019 – Dec 2019
  Two papers under review
  Co-authored "Chat as Expected: Learning to Manipulate Black-box Neural Dialogue Models" (Preprint)
  Co-authored "Say What I Want: Towards the Dark Side of Neural Dialogue Models" (Preprint)
- Daniel K. Ofori-Dankwa, M.S. Computer Science & Engineering May 2018 – May 2019
  Project on "Bitcoin Price Predictions"
  Next position: Microsoft
- Linghao Ji, B.S. Computer Science & Engineering Aug 2018 – Aug 2019
  Project on "Analyzing Swing Voters in Congress"
  Wrote him letters of recommendation for M.S. applications
  Next position: Applied Data Analytics M.S. student at BU
- Cassidy Johnson, B.S. Computer Science & B.S. Mathematics May 2018 – Aug 2018
  2018 Summer Research Opportunities Program
  Co-authored "Balance in Signed Bipartite Networks" CIKM'19
  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

Yu Wang and Tyler Derr. Tackling Over-squashing in Graph Neural Networks via Higher-order Neighborhood Disentanglement. International Conference on Data Mining (SDM21) Doctoral Forum, SIAM, Poster, 2021.

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.

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

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

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

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

Tyler Derr. Network Analysis with Negative Links. *International Conference on Data Mining (SDM19) Doctoral Forum*, SIAM, Poster, 2019. **Best Poster Award**

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.

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

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**

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

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

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 .

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.

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 .

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 .

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 .

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

TUTORIALS

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**

INVITED TALKS

Introduction to Social Network Analysis — Nov 2021
Computer Science Seminar
Vanderbilt University

Navigating the Faculty Job Search — Oct 2020
College of Engineering Graduate Lunch & Learn
Michigan State University (virtual due to COVID-19)

Demystifying the Black Box: AI/Machine Learning in the Modern Era — Sep 2020
Change++ (virtual due to COVID-19)

Graph Neural Networks: Social Networks and Beyond — Sep 2020
Biomedical Engineering
Vanderbilt University (virtual due to COVID-19)

Analyzing Signed Social Networks — Sep 2020
Seminar in Computer Science
University of Texas Rio Grande Valley (virtual due to COVID-19)

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 (virtual due to COVID-19)

Data Science for Social Good — Spring 2020
Data Science Institute
Vanderbilt University (virtual due to COVID-19)

Network Analysis with Negative Links — Spring 2020
Computer Science Department
Binghamton University (virtual due to COVID-19)

Network Analysis with Negative Links — Spring 2020
Computer Science Department
Drexel University (virtual due to COVID-19)

Network Analysis with Negative Links — Spring 2020
Computer Science Department
Illinois Institute of Technology

Network Analysis with Negative Links — Spring 2020
Ying Wu College of Computing
New Jersey Institute of Technology

Network Analysis with Negative Links — Spring 2020
School of Electrical Engineering and Computer Science
Oregon State University (virtual due to COVID-19)

Network Analysis with Negative Links — Spring 2020
Department of Computer Science
University of Alabama at Birmingham (canceled due to COVID-19)

Network Analysis with Negative Links — Spring 2020
Department of Computer Science
University of Kentucky

Network Analysis with Negative Links — Spring 2020
Department of Computer Science & Engineering
University of Nebraska

Network Analysis with Negative Links — Spring 2020
School of Computing and Information
University of Pittsburgh

Network Analysis with Negative Links — Spring 2020
Department of Electrical Engineering and Computer Science
Vanderbilt University (virtual due to COVID-19)

Network Analysis with Negative Links — May 2019
Center for Computational Network Intelligence
HRL Laboratories

Signed Network Analysis: Community Detection & Link Prediction — Mar 2017
Applying Social Network Methods and Theories
Counseling, Educational Psychology, and Special Education Department, MSU

TEACHING EXPERIENCE

Vanderbilt University

Instructor, Department of Computer Science — Jul 2021 – Present
- CS3891/5891-03: Social Network Analysis (Undergraduate/Graduate Level, Fall 21)

Instructor, Data Science Institute — Jan 2021 – Present
- DS5720: Social Network Analysis (Graduate Level, Spring 21)

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 **Fall 2020 Teaching Innovation Award** from the School of Engineering
- 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

OTHER WORK EXPERIENCE

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

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

EXTERNAL SERVICES

Grant Proposal Panelist
National Science Foundation (NSF) (x2) 2021

Conference and Workshop Chairships
- Workshop Lead-organizer, Machine Learning on Graphs (MLoG): @ ACM International Conference on Web Search and Data Mining (WSDM) 2022
- Social Media and Publicity Co-Chair, ACM Conference on Knowledge Discovery and Data Mining (KDD) 2022
- Doctoral Consortium Co-Chair, ACM International Conference on Web Search and Data Mining (WSDM) 2022
- Proceedings Co-chair, ACM Conference on Knowledge Discovery and Data Mining (KDD) 2021
- Workshop Co-organizer and Publicity Chair, Deep Graph Learning: Methodologies and Applications (DGLMA'19) @ IEEE BigData 2019

Senior Program Committee Member
- 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
- Advances in Social Networks Analysis and Mining (ASONAM) 2021
- International Conference on Learning Representations (ICLR) 2021
- Graph Neural Networks and Systems Workshop (GNNSys) @ MLSys 2021
- International Conference on Machine Learning (ICML) 2021
- Conference on Empirical Methods in Natural Language Processing (EMNLP) 2021
- Association for Computational Linguistics Annual Meeting (ACL) 2021
- SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2021
- Educational Advances in Artificial Intelligence Symposium @ AAAI 2021
- Neural Information Processing Systems (NeurIPS) 2020 – 2021
- Deep Learning on Graphs: Methods and Applications Workshop @ KDD 2020 – 2021
- Association for the Advancement of Artificial Intelligence (AAAI) 2020 – 2021
- International Joint Conferences on Artificial Intelligence (IJCAI) 2020 – 2021
- International ACM Conference on Web Science (WebSci) 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
  Best Reviewer Award (2019 & 2021)
- 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
- Network Modeling, Learning and Analysis (NMLA) Workshop @ WorldCIST 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

- Proceedings of the National Academy of Sciences of the USA (PNAS) 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
- Wireless Communications and Mobile Computing 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)

- Ad hoc Committee for AI/ML Pathway formation of CS 3241 Fall 2021–Present
- Ad hoc Committee for Online Presence Summer 2021–Present
- CS Undergraduate Advising 2021–Present
  Computer Science cohort from the Class of 2025

School of Engineering (VUSE)

- Undergraduate Summer Book Club 2021
  Faculty Cohort Leader

PhD Preliminary Exam Committee

- Caleb Vatral (Computer Science) 2020
- Qi Yang (Computer Science) 2020
- Yayan (Ava) Zhao (Computer Science) 2020/2021

PhD Qualifying Exam Committee

- Yunchao Liu (Computer Science) 2021
- Anabil Munshi (Computer Science) 2021
- Tianshu Bao (Computer Science) 2021
- James Ainooson (Computer Science) 2021

VOLUNTEERING

Conference Volunteering

- Session chair at KDD 2021 2021
  - "Web mining"
  - "Humanities and Social Science"
- Invited 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
- Invited Judge for VandyHacks (VU's premier student hackathon) 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

OLDER RESEARCH/ PROJECTS (PHD,MS,BS)

Evolving Multi-Layer Markov Network Brains Using Adaptive Complexification Dec 2015 – Nov 2016

- Evolving binary logic gate networks than can adaptively adjust their network complexity to solve boolean logic problems (e.g., 3-bit full adder) and a Mario Bros. agent.

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.

PROFESSIONAL AFFILIATIONS/ MEMBERSHIPS

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

Institute of Electrical and Electronic Engineers
- Member 2011 – Present

Association of Computing Machinery
- Member 2010 – Present

Official ACM Student Chapter (Est. Fall 2012), Penn State Harrisburg
- Vice President Aug 2012 – May 2013
- Graduate Coordinator Aug 2013 – May 2014

Association for Computing Machinery (ACM) Club, Penn State Harrisburg
- Vice President Aug 2011 – May 2012

Math Club, Penn State Harrisburg
- Vice President / Director of Activities Aug 2011 – May 2013

Student Government Association (SGA), Penn State Harrisburg
- Senator Aug 2012 – May 2013
- Chairperson of Student Activities Aug 2012 – Dec 2012

College Reading & Learning Association, International Tutor Training Program,
- Level 1 Certified Tutor 2012

[*CV compiled on 2021-11-25*]