HANGHANG TONG

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RESEARCH INTEREST

Large scale data mining and machine learning, especially for graph data with applications to social networks analysis, healthcare, transportation, cyber-security, e-commerce, etc.

EDUCATION

Carnegie Mellon University   Pittsburgh, PA

- *Ph.D in Machine Learning, Nov., 2009*
  - Dissertation: "Fast Algorithms for Querying and Mining Large Graphs"
  - Advisor: Christos Faloutsos
- *M.Sci. in Machine Learning, Sep., 2008*
  - Thesis: "Center-Piece Subgraphs: Problem Definition and Fast Solutions"
  - Advisor: Christos Faloutsos

Tsinghua University   Beijing, China

- *M.Eng. in Pattern Recognition and Intelligent System, Jul., 2005*
  - Thesis: "Machine Learning for Internet Traffic Prediction and Anomaly Detection"
  - Advisor: Chongrong Li
- *B.Eng. in Automation, Jul., 2002*

EMPLOYMENT HISTORY

- Associate Professor (with tenure), University of Illinois at Urbana-Champaign   Aug. 2019 – present
- Associate Professor (with tenure), Arizona State University   Aug. 2018 – Aug. 2019
- Assistant Professor, Arizona State University   Aug. 2014 – July 2018
- Assistant Professor, City College, City University of New York   Jan. 2013 – Aug. 2014
- Research Staff Member, IBM T.J. Watson Research Center   Jul. 2010 – Jan. 2013
- Post-Doctoral Fellow, Carnegie Mellon University   Dec. 2009 – Jul. 2010

AWARDS AND HONORS

- IEEE ICDM 2022 10-Year Highest Impact Paper Award, 2022   IEEE
- Springer Knowl. Inf. Syst. (KAIS) on "Best-ranked paper of ICDM 2022", 2022   Springer
- Dean's Award for Excellence in Research, Associate Professor, 2022   UIUC
- IEEE Fellow, for "contributions to graph mining", 2022   IEEE
- Excellent Paper Award, IEEE Big Data Mining and Analytics, 2021   IEEE
- Best Student Paper Runner-up, IEEE ICDM, 2021   IEEE
- Visa Research Faculty Award, 2021   VISA
- ACM Distinguished Member, 2020   ACM
- Teachers Ranked as Excellent for "CS 598: Network Mining", spring 2020.   UIUC
- "Most Influential Scholar Award", honorable mention in data mining, 2020   AMiner
- IEEE Senior Member, 2020   IEEE
- IEEE ICDM Tao Li Award, for "contributions to large-scale graph mining", 2019   IEEE
- Yahoo Research Faculty Research Engagement Program (FREP) Recipient, 2019   Yahoo!
- Computational Social Networks on "Bests of CSoNet 2018", 2019   Springer

- Distinguished Senior Program Committee Member, 2019 — IJCAI
- SDM/IBM Early Career Data Mining Research Award, 2018 — SIAM
- Springer Knowl. Inf. Syst. (KAIS) on "Bests of ICDM 2018", 2018 — Springer
- ICWSM Best Reviewer Award, 2018 — AAAI
- ASU CIDSE Best Researcher Award – Junior Faculty, 2017 — ASU
- ACM CIKM'17 Best Demo Candidate (Second Place), 2017 — ACM
- ACM SIGMOD'17 Best Demo, Honorable Mention, 2017 — ACM
- NSF CAREER Award, 2017 — NSF
- ACM TKDD on "Best Papers of ACM TKDD 2016", 2016 — ACM
- IEEE ICDM 2015 10-Year Highest Impact Paper Award, 2015 — IEEE
- Springer Knowl. Inf. Syst. (KAIS) on "Bests of ICDM 2015", 2015 — Springer
- Best Paper Award, IEEE Tsinghua Science and Technology, 2015 — IEEE
- Statistical Analysis and Data Mining on "Bests of SDM 2015", 2015 — Wiley
- "Data Mining Reveals the Secret to Getting Good Answers", MIT Tech. Review, 2013 — MIT
- Best Paper Award, ACM CIKM, 2012 — ACM
- IBM Research Accomplishment Award on "Social & Cognitive Network Science", 2012 — IBM
- Statistical Analysis and Data Mining on "Bests of SDM 2011", 2011 — Wiley
- Frontiers of Computer Science on "Bests of ICDM 2010", 2010 — Springer
- Best Paper Award, 2008 SIAM Conference on Data Mining (SDM), 2008 — SIAM
- Best Research Paper Award, IEEE ICDM, 2006 — IEEE

PUBLICATIONS

Summary & Highlights

- 2 'test of time' awards, 6 best paper awards, 8 'bests of the conferences', 2 best demo finalists
- 64 h-index (Google Scholar, 9/5/2023)
- Books: 4
- Invited Book Chapters Published: 5
- Refereed Conference Papers: 205
- Refereed Journal Publications (Published, In Press, and /or Accepted): 76
- Conference Demos: 16
- Technical Reports and Workshop Papers (unreferreed): 25
- Intellectual Property (filed or issued): Patents 17

Books

1. J. Han, J. Pei and H. Tong: Data Mining: Concepts and Techniques (4th edition). 2022, Elsevier/Morgan Kaufmann (ISBN: 9780128117606)
2. C. Chen and H. Tong: Network Connectivity: Concepts, Computation, and Optimization. 2022, Morgan & Claypool (ISBN: 9781636392950)
3. L. Li and H. Tong: Computational Approaches to the Network Science of Teams. 2021, Cambridge University Press (ISBN-10: 110849854X)
4. Y. Yao, X. Su and H. Tong: Mobile Data Mining. 2018, Springer (ISBN 978-3-030-02101-6).

Book Chapters

1. S.R. Corman, S. Ruston and H. Tong: Toward Generative Narrative Models of the Course and Resolution of Conflict. Book chapter in "Social-Behavioral Modeling for Complex Systems". 2018. Wiley Publishing (editors: P. Davis, A. O'Mahony, and J. Pfautz).
2. Y. Yao, H. Tong, F. Xu and J. Lu: "Feature generation for graphs and networks". Book chapter in "Feature Engineering for Machine Learning and Data Analytics", 2018: 167-188. CRC Press (editor: G. Dong and H. Liu).
3. H. Tong and U Kang. Big Data Clustering. Book chapter in "Data Clustering: Algorithms and Applications". 2012: 255-272. CRC Press (editor: C. Aggarwal)
4. H. Tong, S. Papadimitriou, P.S. Yu and C. Faloutsos. Proximity Tracking on Dynamic Bipartite Graphs: Problem

Definitions and Fast Solutions. Book Chapter in "Link Mining: Models, Algorithms and Applications" 2010, Part 2, 211-236.

5. H. Tong, Y. Koren, and C. Faloutsos. Direction-Aware Proximity on Graphs. Book chapter in "Encyclopedia of Data Warehousing and Mining" 2009: 646-653.

Refereed Journal Publications

1. Z. Xu, K. Ding, Y. Wang, H. Liu, and H. Tong: Generalized Few-Shot Node Classification on Graphs: Towards an Uncertainty-Based Solution. KAIS (accepted).

2. Z. Yu, D. Jin, Z. Liu, D. He, X. Wang, H. Tong, J. Han: Embedding text-rich graph neural networks with sequence and topical semantic structures. Knowl. Inf. Syst. 65(2): 613-640 (2023)

3. H. Wang, D. Lian, H. Tong, Q. Liu, Z. Huang, E. Chen: Decoupled Representation Learning for Attributed Networks. IEEE Trans. Knowl. Data Eng. 35(3): 2430-2444 (2023)

4. S., Freitas, D. Yang, S. Kumar, H. Tong, and D. Chau: Graph Vulnerability and Robustness: A Survey. IEEE TKDE 2023

5. Q. Zhou, L. Li, N. Cao, L. Ying, and H. Tong: Adversarial Attacks on Multi-Network Mining: Problem Definition and Fast Solutions. TKDE 2023.

6. L. Liu, R. Zhao, B. Du, Y. Fung, H. Ji, J. Xu, H. Tong: Knowledge Graph Comparative Reasoning for Fact Checking: Problem Definition and Algorithms. IEEE Data Eng. Bull. 45(4): 19-38 (2022)

7. J. Zhou, B. Jing, Z. Wang, H. Xin, H. Tong: SODA: Detecting COVID-19 in Chest X-Rays with Semi-Supervised Open Set Domain Adaptation. IEEE ACM Trans. Comput. Biol. Bioinform. 19(5): 2605-2612 (2022)

8. K. Ding, Z. Xu, H. Tong, and H. Liu: Data Augmentation for Deep Graph Learning: A Survey. SIGKDD Explorations 2022.

9. Y. Wang, H. Tong, Z. Zhu and Y. Li: Nested Named Entity Recognition: A Survey. ACM TKDD 16(6): 108:1-108:29 (2022)

10. H. Wang, D. Lian, H. Tong, Q. Liu, Z. Huang, E. Chen: HyperSoRec: Exploiting Hyperbolic User and Item Representations with Multiple Aspects for Social-aware Recommendation. ACM Trans. Inf. Syst. 40(2): 24:1-24:28 (2022)

11. Z. Zhu, H. Tong, Y. Wang, Y. Li: Enhancing Bug Localization with Bug Report Decomposition and Code Hierarchical Network. Knowl. Based Syst. 248: 108741 (2022)

12. Y. Shi, Y. Liu, H. Tong, J. He, G. Yan, N. Cao: Visual Analytics of Anomalous User Behaviors: A Survey. IEEE Trans. Big Data 8(2): 377-396 (2022)

13. C. Lin, D. Liu, H. Tong, Y. Xiao: Spiral of Silence and Its Application in Recommender Systems. IEEE Trans. Knowl. Data Eng. 34(6): 2934-2947 (2022)

14. Z. Zhu, Y. Li, Y. Wang, Y. Wang, H. Tong: A deep multimodal model for bug localization. Data Min. Knowl. Discov. 35(4): 1369-1392 (2021)

15. L. Torres, K.S. Chan, H. Tong, T. Eliassi-Rad: Nonbacktracking Eigenvalues under Node Removal: X-Centrality and Targeted Immunization. SIAM J. Math. Data Sci. 3(2): 656-675 (2021)

16. S. Yu, J. Liu, H. Wei, F. Xia, H. Tong: How to Optimize an Academic Team When the Outlier Member is Leaving? IEEE Intell. Syst. 36(3): 23-30 (2021)

17. C. Chen, Y. Xia, H. Zang, J. Li, H. Liu, H. Tong: Incremental one-class collaborative filtering with co-evolving side networks. Knowl. Inf. Syst. 63(1): 105-124 (2021)

18. D. Zhou, S. Zhang, M. Yildirim, S. Alcorn, H. Tong, H. Davulcu, J. He: High-Order Structure Exploration on Massive Graphs: A Local Graph Clustering Perspective. ACM Trans. Knowl. Discov. Data 15(2): 18:1-18:26 (2021)

19. W. Wang, F. Xia, J. Wu, Z. Gong, H. Tong, B. D. Davison: Scholar2vec: Vector Representation of Scholars for Lifetime Collaborator Prediction. ACM Trans. Knowl. Discov. Data 15(3): 40:1-40:19 (2021)

20. M. Wang, J. Kang, N. Cao, Y. Xia, W. Fan, H. Tong. Graph Ranking Auditing: Problem Definitions and Fast Solutions. In IEEE Transactions on Knowledge and Data Engineering (TKDE) 2021

21. C. Chen, R. Peng, L. Ying, H. Tong: Fast Connectivity Minimization on Large-Scale Networks. ACM Trans. Knowl. Discov. Data 15(3): 53:1-53:25 (2021)

22. J. Liu, F. Xia, L. Wang, B. Xu, X. Kong, H. Tong, I. King: Shifu2: A Network Representation Learning Based Model for Advisor-Advisee Relationship Mining. IEEE Trans. Knowl. Data Eng. 33(4): 1763-1777 (2021)

23. T. Xie, Y. Ma, H. Tong, M. Thai, R. Maciejewski: Auditing the Sensitivity of Graph-based Ranking with Visual Analytics. IEEE Trans. Vis. Comput. Graph. 27(2): 1459-1469 (2021)

24. J. Zhang, W. Wang, F. Xia, Y. Lin, H. Tong: Data-Driven Computational Social Science: A Survey. Big Data Res. 21: 100145 (2020)

25. Y. Wang, Y. Yao, H. Tong, X. Huo, M. Li, F. Xu, J. Lu: Enhancing supervised bug localization with metadata and stack-trace. Knowl. Inf. Syst. 62(6): 2461-2484 (2020)

26. L. Shi, Q. Liao, H. Tong, Y. Hu, C. Wang, C. Lin, W. Qian: OnionGraph: Hierarchical topology+attribute multivariate network visualization. Vis. Informatics 4(1): 43-57 (2020)

27. Y. Wang, Y. Li, Z. Zhu, H. Tong, Y. Huang: Adversarial Learning for Multi-Task Sequence Labeling With Attention Mechanism. IEEE ACM Trans. Audio Speech Lang. Process. 28: 2476-2488 (2020)

28. S. Zhang, H. Tong, J. Tang, J. Xu, W. Fan: Incomplete Network Alignment: Problem Definitions and Fast Solutions. ACM Trans. Knowl. Discov. Data 14(4): 38:1-38:26 (2020)

29. Z. Chen, H. Tong, L. Ying: Inferring Full Diffusion History from Partial Timestamps. IEEE Trans. Knowl. Data Eng. 32(7): 1378-1392 (2020)

30. Y. Huang, L. Shi, Y. Su, Y. Hu, H. Tong, C. Wang, T. Yang, D. Wang, S. Liang: Eiffel: Evolutionary Flow Map for Influence Graph Visualization. IEEE Trans. Vis. Comput. Graph. 26(10): 2944-2960 (2020)

31. Y. Wang, Y. Yao, H. Tong, F. Xu, J. Lu: A Brief Review of Network Embedding. Big Data Min. Anal. 2(1): 35-47 (2019) **[Excellent Paper Award 2021]**

32. C. Huang, H. Tong, J. He, R. Maciejewski: Location Prediction for Tweets. Frontiers Big Data 2: 5 (2019)

33. Y. Shi, Y. Liu, H. Tong, J. He, G. Yan, and N. Cao: Visual Analytics of Anomalous User Behaviors: A Survey. IEEE Transactions on Big Data 2019

34. Y. Yao, H. Tong, G. Yan, F. Xu, X. Zhang, B.K. Szymanski, J. Lu: Dual-regularized one-class collaborative filtering with implicit feedback. World Wide Web 22(3): 1099-1129 (2019)

35. S. Zhang, H. Tong, J. Xu and R. Maciejewski: Graph Convolutional Networks: A Comprehensive Review. Springer Computational Social Networks 2019 **["Bests of CSoNet 2018"]**

36. Y. Yao, *H. Tong*, G. Yan, F. Xu, X. Zhang, B.K. Szymanski, J. Lu: Dual-regularized one-class collaborative filtering with implicit feedback. World Wide Web 22(3): 1099-1129 (2019)

37. S. Zhang, H. Tong. Attributed Network Alignment: Problem Definitions and Fast Solutions. IEEE Trans. Knowl. Data Eng (TKDE) 31(9): 1680-1692 (2019)

38. Y. Wang, C. Shi, L. Li, H. Tong and H. Qu: Visualizing Research Impact through Citation Data. ACM Transactions on Interactive Intelligent Systems, 2018, 8(1), 17-34

39. Y. Wu, S. Xi, Y. Yao, F. Xu, H. Tong, and J. Lu: Guiding supervised topic modeling for content based tag recommendation. Neurocomputing 2018

40. J. Zhang, J. Tang, C. Ma, H. Tong, Y. Jing, J. Li, W. Luyten, M. Moens: Fast and flexible top-k similarity search on large networks. ACM Transactions on Information Systems (TOIS), 2017, 36 (2), 13

41. Y. Yao, W. Zhao, Y. Wang, H. Tong, F. Xu, J. Lu: Version-Aware Rating Prediction for Mobile App Recommendation. ACM Transactions on Information Systems (TOIS) 35 (4), 38

42. C. Chen, J. He, N. Bliss and H. Tong: Towards Optimal Connectivity on Multi-layered Networks. IEEE Trans. Knowl. Data Eng., 29(10): 2332-2346 (2017)

43. C. Chen, H. Tong, L. Xie, L. Ying and Q. He: Cross-Dependency Inference in Multi-layered Networks: A Collaborative Filtering Perspective. ACM TKDD 2017, 42:1-42:26 **["Best of KDD'16"]**

44. C. Chen, H. Tong: On the eigen-functions of dynamic graphs: Fast tracking and attribution algorithms. Statistical Analysis and Data Mining 10(2): 121-135 (2017) **["Best of SDM'15"]**

45. L. Li, H. Tong, N. Cao, K. Ehrlich, Y. Lin, N. Buchler: Enhancing Team Composition in Professional Networks: Problem Definitions and Fast Solutions. IEEE Trans. Knowl. Data Eng. 29(3): 613-626 (2017)

46. Y. Yao, H. Tong, F. Xu, J. Lu: On the Measurement and Prediction of Web Content Utility. A Review. SIGKDD Explorations 19(2): 1-12 (2017)

47. Y. Yao, H. Tong, F. Xu, J. Lu: Scalable Algorithms for CQA Post Voting Prediction. IEEE Trans. Knowl. Data Eng. 29(8): 1723-1736 (2017)

48. C. Chen, H. Tong, B. Prakash, T. Eliassi-Rad, M. Faloutsos, C. Faloutsos: Eigen-Optimization on Large Graphs by Edge Manipulation. ACM Transactions on Knowledge Discovery from Data. TKDD 10(4): 49:1-49:30 (2016)

49. C. Chen, H. Tong, B. Prakash, C. Tsourakakis, T. Eliassi-Rad, C. Faloutsos, D. Chau: Node Immunization on Large Graphs: Theory and Algorithms. IEEE TKDE 2016: 113-126 (2016)

50. X. Su, H. Tong and P. Ji: "Activity Recognition with Smartphone Sensors", Tsinghua Science and Technology, 19 (3), 235-249, 2014 **[Best Paper Award]** [published in 2014, awarded received in 2015]

51. X. Su, H. Caceres, H. Tong, Q. He: Online Travel Mode Identification Using Smartphones With Battery Saving Considerations. IEEE Transactions on Intelligent Transportation Systems 17 (10), 2921-2934 (2016)

52. X. Yang, L. Shi, M. Daianu, H. Tong, Q. Liu, P. Thompson: Blockwise Human Brain Network Visual Comparison Using NodeTrix Representation. IEEE transactions on visualization and computer graphics, 23 (1), 181-190, (2017)

53. J. Ni, M. Koyuturk, H. Tong, J. Haines, R. Xu, X. Zhang: Disease gene prioritization by integrating tissue-specific molecular networks using a robust multi-network model. BMC bioinformatics 17 (1), 453 (2016) [13 pages, no page number]

54. J. Xu, Y. Yao, H. Tong, X. Tao, J. Lu: RaPare: A Generic Strategy for Cold-Start Rating Prediction Problem. IEEE Transactions on Knowledge and Data Engineering 29(6): 1296-1309 (2017)

55. H. Lim, A. Poleksic, Y. Yao, H. Tong, D. He, L. Zhuang, P. Meng, L. Xie: Large-Scale Off-Target Identification Using Fast and Accurate Dual Regularized One-Class Collaborative Filtering and Its Application to Drug Repurposing. PLOS Comput Biol 12 (10), e1005135. 2016. [26 pages, no page number]

56. Z. Zhang, Q. He, H. Tong, J. Gou, X. Li: Spatial-temporal traffic flow pattern identification and anomaly detection with dictionary-based compression theory in a large-scale urban network. Transportation Research Part C: Emerging Technologies 71, 284-302 2016

57. Y. Lin, H. Tong, J. Tang, K. Candan: Guest Editorial: Big Scholar Data Discovery and Collaboration. IEEE Trans. Big Data 2(1): 1-2 (2016)

58. L. Shi, H. Tong, J. Tang, C. Lin: VEGAS: Visual influEnce GrAph Summarization on Citation Networks. IEEE TKDE 27(12): 3417-3431 (2015)

59. Y. Yao, H. Tong, T. Xie, L. Akoglu, F. Xu, J. Lu: "Detecting high-quality posts in community question answering sites". Inf. Sci. 302: 70-82 (2015)

60. F Shang, Y Liu, H Tong, J Cheng, H Cheng: "Robust bilinear factorization with missing and grossly corrupted observations" Inf. Sci. 307: 53-72 (2015)

61. L. Akoglu, H. Tong, D. Koutra: "Graph-based Anomaly Detection and Description: A Survey", DAMI, 29(3): 626-688, 2015

62. Y. Yao, H. Tong, X. Yan, F. Xu and J. Lu: "Multi-Aspect+Transitivity+Bias: An Integral Trust Inference Model. TKDE, 26(7): 1706-1719 (2014)

63. F Shang, L.C. Jiao, Y Liu, H Tong. Semi-supervised learning with nuclear norm regularization. Pattern Recognition, 46(8): 2323-2336 (2013)

64. J. F. Rodrigues Jr., H. Tong, J.-Y. Pan, A. J. M. Traina, C. Traina Jr., C. Faloutsos. Large Graph Analysis in the GMine System. IEEE TKDE 25(1): 106-118 (2013)

65. Y. Yao, H. Tong, F. Xu, J. Lu: Pairwise trust inference by subgraph extraction. Social Netw. Analys. Mining 3(4): 953-968 (2013)

66. Y. Yao, F. Xu, Y. Ren, H. Tong, J. Lu: SelfTrust: leveraging self-assessment for trust inference in Internetware. Science China Information Sciences 56(10): 1-14 (2013)

67. F. Wang, H. Tong, P.S. Yu, C. Aggarwal: Guest editorial: special issue on data mining technologies for computational social science. DMKD 25(3): 415-419 (2012)

68. H. Tong, S. Papadimitriou, C. Faloutsos, P.S. Yu, T. Eliassi-Rad: Gateway finder in large graphs: problem definitions and fast solutions. Information Retrieval 15(3-4): 391-411 (2012)

69. J. He, H. Tong, J. Carbonell, An Effective Framework for Characterizing Rare Category, Frontiers of Computer Science 6(2): 154-165 (2012) **("bests of ICDM 2010")**

70. U Kang, H. Tong, J. Sun, C. Lin and C. Faloutsos. GBASE: An Efficient Analysis Platform for Large Graphs. VLDB J. 21(5): 637-650 (2012)

71. C. Lin, L. Wu, Z. Wen, H. Tong, V. Griffiths-Fisher, L. Shi and D. Lubensky: Social Network Analysis in Enterprise. Proceedings of the IEEE 100, 2759-2776 (2012)
72. H. Tong and C. Lin. Non-Negative Residual Matrix Factorization: Problem Definition, Fast Solutions and Applications. SAM 5(1): 3-15 (2012) **["bests of SDM 2011"]**
73. H. Tong, S. Papadimitriou, P. S. Yu and C. Faloutsos. Fast Monitoring Proximity and Centrality on Time-Evolving Bipartite Graphs. SAM 1(3): 142-156 (2008) **[" bests of SDM08"]**
74. H. Tong, C. Faloutsos, and J.-Y. Pan. Random Walk with Restart: Fast Solutions and Applications. Knowl. Inf. Syst. 14(3): 327-346 (2008)
75. H. Tong, J. He, M. Li, W.-Y. Ma, H.-J. Zhang, C. Zhang. Manifold-Ranking Based Keyword Propagation for Image Retrieval. EURASIP J. Adv. Sig. Proc. 1-10, (2006)
76. J. He, M. Li, H.-J. Zhang, H. Tong and C. Zhang. Generalized Manifold-Ranking Based Image Retrieval. IEEE Transactions on Image Processing 15(10): 3170-3177 (2006)

Refereed Conference Publications

1. Q. Zhou, K. Ding, H. Liu and H. Tong: Learning Node Abnormality with Weak Supervision. CIKM 2023
2. B. Du, C. Yuan, F. Wang and H. Tong: Geometric Matrix Completion via Sylvester Multi-Graph Neural Network. CIKM 2023
3. Z. Xu, Y. Chen, Q. Zhou, Y. Wu, M. Pan, H. Yang, H. Tong: Node Classification Beyond Homophily: Towards a General Solution. KDD 2023
4. Z. Xu, Y. Chen, M. Pan, H. Chen, M. Das, H. Yang, H. Tong: Kernel Ridge Regression-Based Graph Dataset Distillation. KDD 2023
5. D. Wang, Y. Yan, R. Qiu, Y. Zhu, K. Guan, A. Margenot, H. Tong: Networked Time Series Imputation via Position-aware Graph Enhanced Variational Autoencoders. KDD 2023
6. R. Qiu, D. Wang, L. Ying, H. Poor, Y. Zhang, H. Tong: Reconstructing Graph Diffusion History from a Single Snapshot. KDD 2023
7. R. Wang, B. Li, Y. Lu, D. Sun, J. Li, Y. Yan, S. Liu, H. Tong, T. Abdelzaher: Noisy Positive-Unlabeled Learning with Self-Training for Speculative Knowledge Graph Reasoning. Findings of ACL 2023
8. Q. Chen, W. Shuai, Z. Xu, H. Tong, G. Wu, N. Chen and N. Cao: Calliope-Net: Automatic Generation of Graph Data Facts via Annotated Node-link Diagrams. IEEE VIS 2023
9. Z. Zeng, R. Zhu, Y. Xia, H. Zeng, and H. Tong: Generative Graph Dictionary Learning. ICML 2023
10. Z. Zeng, S. Zhang, Y. Xia and H. Tong: PARROT: Position-Aware Regularized Optimal Transport for Network Alignment. WWW 2023
11. L. Liu, Y. Chen, M. Das, H. Yang and H. Tong: Knowledge Graph Question Answering with Ambiguous Query. WWW 2023
12. Y. Ko, S. Ryu, S. Han, Y. Jeon, J. Kim, S. Park, K. Han, H. Tong and S. Kim: KHAN: Knowledge-Aware Hierarchical Attention Networks for Accurate Political Stance Prediction. WWW 2023
13. W. Cong, S. Zhang, J. Kang, B. Yuan, H. Wu, X. Zhou, H. Tong, and M. Mahdavi: Do We Really Need Complicated Model Architectures For Temporal Networks? ICLR 2023 **[notable-top-5%]**
14. C. Han, Q. He, C. Yu, X. Du, H. Tong, and H. Ji: Logical Entity Representation in Knowledge-Graphs for Differentiable Rule Learning. ICLR 2023
15. S. Feng and H. Tong: Concept Discovery for Fast Adaptation. SDM 2023
16. S. Zhang, Y. Xia, Y. Zhu, and H. Tong: Representation Learning on Dynamic Network of Networks. SDM 2023
17. S. Xu, L. Li, Y. Yao, Z. Chen, H. Wu, Q. Lu, and H. Tong: MUSENET: Multi-Scenario Learning for Repeat-Aware Personalized Recommendation. WSDM 2023
18. H. Luo, H. Tong, M. Zhang, and Y. Zhang: Improved High-Probability Regret for Adversarial Bandits with Time-Varying Feedback Graphs. ALT 2023
19. H. Wang, W. Huang, Z. Wu, H. Tong, A. Margenot, and J. He: Deep Active Learning by Leveraging Training Dynamics. NeuIPS 2022
20. J. Xie, J. Xu, G. Wang, Y. Yao, Z. Li, C. Cao, and H. Tong: A Deep Learning Data loader with Shared Data Preparation. NeuIPS 2022
21. H. Li, Y. Weng, and H. Tong: CoNSoLe: Convex Neural Symbolic Learning. NeuIPS 2022

22. Y. Ban, Y. Zhang, H. Tong, A. Banerjee, and J. He: Improved Algorithms for Neural Active Learning. NeuIPS 2022

23. Z. Xu, K. Ding, Y. Wang, H. Liu, and H. Tong: Generalized Few-Shot Node Classification. ICDM 2022 **[Best-ranked paper of ICDM 2022]**

24. Y. Zhang, Y. Xia, Y. Zhu, Y. Chi, L. Ying, and H. Tong: Active Heterogeneous Graph Neural Networks with Per-step Meta-Q-Learning. ICDM 2022

25. W. Du, X. Wu, and H. Tong: Fair Regression under Sample Selection Bias. IEEE Big Data 2022

26. J. Wu, H. Tong, E. Ainsworth, and J. He: Adaptive Knowledge Transfer on Evolving Domains. IEEE Big Data 2022

27. B. Du, C. Yuan, R. Barton, T. Neiman, and H. Tong: Self-supervised Hypergraph Representation Learning. IEEE Big Data 2022

28. W. Xu, L. Liu and H. Tong: ABM: Attention-based Message Passing Network for Knowledge Graph Completion. IEEE Big Data 2022

29. L. Liu, H. Ji, J. Xu and H. Tong: Comparative Reasoning for Knowledge Graph Fact Checking. IEEE Big Data 2022

30. J. Kang, T. Xie, X. Wu, R. Maciejewski, H. Tong. InfoFair: Information-Theoretic Intersectional Fairness. IEEE Big Data 2022

31. Y. Wang, J. Kang, Y. Xia, J. Luo, H. Tong. iFiG: Individually Fair Multi-view Graph Clustering. IEEE Big Data 2022

32. S. Xu, Y. Yao, F. Xu, T. Gu, H. Tong: Combining Code Context and Fine-grained Code Difference for Commit Message Generation. Internetware 2022: 242-251

33. Z. Zhang, B. Du and H. Tong: SUGER: A Subgraph-based Graph Convolutional Network Method for Bundle Recommendation. CIKM 2022

34. Y. Yan, Q. Zhou, J. Li, T. Abdelzaher and H. Tong: Dissecting Cross-Layer Dependency Inference on Multi-Layered Inter-Dependent Networks. CIKM 2022

35. B. Jing, S. Feng, Y. Xiang, X. Chen, Y. Chen and H. Tong: X-GOAL: Multiplex Graph Prototypical Contrastive Learning. CIKM 2022

36. L. Liu, B. Du, J. Xu, Y. Xia and H. Tong: Joint Knowledge Graph Completion and Question Answering. KDD 2022

37. J. Kang, Q. Zhou and H. Tong: JuryGCN: Quantifying Jackknife Uncertainty on Graph Convolutional Networks. KDD 2022

38. J. Liu, Z. Li, Y. Yao, F. Xu, X. Ma, M. Xu and H. Tong: Fair Representation Learning: An Alternative to Mutual Information. KDD 2022

39. H. Li, H. Tong and Y. Weng: Domain Adaptation in Physical Systems via Graph Kernel. KDD 2022

40. Z. Xu, B. Du and H. Tong: Graph Sanitation with Application to Node Classification. WWW 2022: 1136-1147

41. B. Li, B. Jing and H. Tong: Graph Communal Contrastive Learning. WWW 2022: 1203-1213

42. J. Kang, Y. Zhu, Y. Xia, J. and H. Tong: RawlsGCN: Towards Rawlsian Difference Principle on Graph Convolutional Network. WWW 2022: 1214-1225

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3. J. Kang, S. Freitas, H. Yu, Y. Xia, N. Cao, H. Tong: X-Rank: Explainable Ranking in Complex Multi-Layered Networks. CIKM 2018: 1959-1962

4. Q. Zhou, L. Li, N. Cao, N. and H. Tong: Extra: Explaining Team Recommendation in Networks. Recsys 2018

5. S. Freitas, H. Tong, N. Cao, Y. Xia: Rapid Analysis of Network Connectivity. CIKM 2017: 2463-2466 **[Best Demo Candidate, Second Place]**

6. R. Pienta, F. Hohman, A. Tamersoy, A. Endert, S. Navathe, H. Tong, D. Chau: Visual Graph Query Construction and Refinement. SIGMOD Conference 2017: 1587-1590 **[Best Demo, Honorable Mention]**

7. L. Li, H. Tong, N. Cao, K. Ehrlich, Y. Lin, N. Buchler: TEAMOPT: Interactive Team Optimization in Big Networks. CIKM 2016: 2485-2487 *[Student Travel Award]*

8. R. Pienta, A. Tamersoy, H. Tong, A. Endert, D. Chau: Interactive Querying over Large Network Data: Scalability, Visualization, and Interaction Design. IUI Companion 2015: 61-64

9. X. Su, H. Tong and P. Ji: Accelerometer-based Activity Recognition on Smartphone. CIKM 2014: 2021-2023

10. K. Zhang, Y. Xiao, H. Tong, H. Wang and W. Wang: WiiCluster: a Platform for Wikipedia Infobox Generation. CIKM 2014: 2033-2035

11. Z. Lin, N. Cao, H. Tong, F. Wang, U Kang, and D. Chau: Demonstrating Interactive Multi-resolution Large Graph Exploration. ICDM 2013: 1097-1100

12. D. Chau, L. Akoglu, J. Vreeken, H. Tong and C. Faloutsos: TOURVIZ: Interactive Visualization of Connection Pathways in Large Graphs. KDD 2012: 1516-1519

13. D. Chau, L. Akoglu, J. Vreeken, H. Tong and C. Faloutsos: Interactively and Visually Exploring Tours of Marked Nodes in Large Graphs. ASONAM 2012: 696-698

14. D. Chau, A. Kittur, H. Tong, C. Faloutsos, and J. I. Hong. SHIFTR: A Fast and Scalable System for Ad Hoc Sensemaking of Large Graphs.

15. D. Chau, C. Faloutsos, H. Tong, J. Hong, B. Gallagher, and T. Eliassi-Rad. GRAPHITE: A Visual Query System for Large Graphs. ICDM 2008: 963-966

16. J. Rodrigues Jr., H. Tong, A. Traina, C. Faloutsos, J. Leskovec: Gmine: A System for Scalable, Interactive Graph Visualization and Mining. VLDB 2006: 1195-1198

Tech Reports

1. L. Li, H. Tong: The Child is Father of the Man: Foresee the Success at the Early Stage. CoRR abs/1504.00948 (2015)

2. J. Zhang, J. Tang, C. Ma, H. Tong, Y. Jing, J. Li: Panther: Fast Top-k Similarity Search in Large Networks. CoRR abs/1504.02577 (2015)

3. J. Fernando Rodrigues Jr., H. Tong, J.-Y. Pan, A. J. M. Traina, C. Traina Jr., Christos Faloutsos: Large Graph Analysis in the GMine System. CoRR abs/1505.07777 (2015)

4. L. Akoglu, H. Tong, D. Koutra: Graph-based Anomaly Detection and Description: A Survey. CoRR abs/1404.4679 (2014)

5. K. Zhang, Y. Xiao, H. Tong, H. Wang, W. Wang: The Links Have It: Infobox Generation by Summarization over Linked Entities. CoRR abs/1406.6449 (2014)

6. L. Shi, H. Tong, J. Tang, C. Lin: Flow-based Influence Graph Visual Summarization. CoRR abs/1408.2401 (2014)

7. F. Shang, Y. Liu, H. Tong, J. Cheng, H. Cheng: Structured Low-Rank Matrix Factorization with Missing and Grossly Corrupted Observations. CoRR abs/1409.1062 (2014)

8. L. Li, H. Tong, N. Cao, K. Ehrlich, Y. Lin, N. Buchler: Replacing the Irreplaceable: Fast Algorithms for Team Member Recommendation. CoRR abs/1409.5512 (2014)

9. Y. Yao, H. Tong, T. Xie, L. Akoglu, F. Xu, J. Lu: Want a Good Answer? Ask a Good Question First! CoRR abs/1311.6876 (2013)

10. R Pienta, A Tamersoy, H Tong and D. Chau: Mage: Expressive Pattern Matching in Richly-Attributed Graphs. GT-CSE-13-08 (2013)

11. Y. Yao, H. Tong, X. Yan, F. Xu, J. Lu: MaTrust: An Effective Multi-Aspect Trust Inference Model. CoRR abs/1211.2041 (2012)

12. L. Akoglu, J. Vreeken, H. Tong, D. H. Chau, and C. Faloutsos. Islands and bridges: Making sense of marked nodes in large graphs. CMU-CS-12-124

13. H. Tong, B. A. Prakash, C. Tsourakakis, T. Eliassi-Rad, C. Faloutsos, and D. H. Chau. BridgeFind: Fast Detection of Top-k Bridges in Large Graphs. LLNL-TR-414449

14. H. Tong, C. Faloutsos, and J.-Y. Pan. Fast Random Walk with Restart and Its Application. CMU-ML-06-109

15. H. Tong and C. Faloutsos. Center-Piece Subgraphs: Problem Definition and Fast Solutions. CMU-ML-06-102

Workshop Papers

1. W. Wang, J. Liu, F. Xia, I. King, H. Tong: Shifu: Deep Learning Based Advisor-advisee Relationship Mining in Scholarly Big Data. WWW (workshop) 2017: 303-310

2. L. Li, H. Tong, N. Cao, K. Ehrlich, Y. Lin, N. Buchler: Enhancing Team Composition in Professional Networks: Problem Definitions and Fast Solutions. Poster at Science of Team Science (SciTS) Conference 2016

3. L. Li, H. Tong, N. Cao, K. Ehrlich, Y. Lin, N. Buchler: Computational Methods to Enhance Team Composition in Networks. Poster at the 2nd International Computational Social Science Conference2nd International Computational Social Science Conference (IC2S2 2016)

4. Y. Cheng, Y. Lin and H. Tong: A Network Regression Framework for Forecasting Labor Transitions. Poster at the 2nd International Computational Social Science Conference2nd International Computational Social Science Conference (IC2S2 2016)

5. H. Lu, Y. Hong, W. N. Street, F. Wang, H. Tong: Overlapping Clustering with Sparseness Constraints. ICDM Workshops 2012

6. L. Akoglu, J. Vreeken, H. Tong, D. H. Chau, and C. Faloutsos: Mining and Visualizing Connection Information Networks Pathways in Large Information Networks. 2012 Workshop on Information in Networks (WIN)

7. K. Ehrlich and H. Tong: The effect of leader centrality on team performance. WIDS 2012
8. Wang, Z. Wen, H. Tong, C.-Y. Lin, C. Song, A.-L. Barabási: Impact of context on information spreading. WIDS 2011
9. J. He, H. Tong, S. Papadimitriou, T. Eliassi-Rad, C. Faloutsos, and J. Carbonell: PaCK: Scalable Parameter-Free Clustering on K-Partite Graphs. SDM 2009 Workshop on Link Analysis, Counterterrorism and Security
10. J. He, H. Tong, M. Li, W.-Y. Ma and C. Zhang: Multiple random walk and its application in content-based image retrieval. ACM MIR 2005: 151-158

Patents (filed + issued, as of November 2015)

1. Direction-aware proximity for graph mining. Publication number: US 2009/0204554 A1, US Pat. 12069500. Filed Feb. 11, 2008
2. System and method to measure node proximity on graphs with side information. Application Serial No.: 12/638531. Filed Dec. 15, 2009
3. Efficient method to compute node proximity with on line feedback on large graphs. Application Serial No.: 12/638514. Filed Dec. 15, 2009
4. Method and system for large-scale centrality measures in social networks. Filed April 2011
5. Method and apparatus for detecting abnormal behaviors on large bi-partite graphs. Filed April 2011
6. Method and apparatus for privacy-aware on-line user role tracking. Filed August 2011.
7. Method and system for measuring the goodness of a top-k diversified ranking list on graphs. Filed August 2011
8. Method and system for finding a top-k diversified ranking list on graphs. Filed August 2011
9. Method and apparatus to for managing large graphs. Filed September 2011
10. Method and algorithm for efficient egonet computation in social network graphs. Filed June 2012
11. Method and system for tracking anomalies and clusters from dynamic data. Filed May 2012
12. Method and system for finding anomalies, cross-association and contextual clustering from static data. Filed May 2012
13. Determining a similarity between graphs. Filed, December 2012
14. Determining soft graph correspondence. Filed, December, 2012
15. Method and system for bi-partite graph matching, filed, September 2013
16. Characterizing success pathways in networked graphs, 2017 (US Patent 9,754,049)
17. Improving team performance by refining team structure, 2017 (US Patent App. 14/870,077)

INVITED TALKS

1. **"Toward Optimal Deep Graph Learning"**
- Keynote talk at Machine Learning on Graphs (MLoG) workshop, at ICDM 2022
- Invited talk at Visa Research, 2023
2. **"User Response Prediction and Beyond: A Graph-based Approach"**
- Keynote talk at Meta, 2022
3. **"NetFair: Toward the Why Question of Network Mining"**
- Keynote talk at the first Workshop on Algorithmic Fairness in Artificial Intelligence, Machine Learning, and Decision Making (AFair-AMLD), SDM 2023
- Plenary talk at Artificial Intelligence, Machine Learning and Data Science World Forum, 2022
- Invited talk at Kent State University, 2022
- Invited talk at Fudan University, 2022
- Invited talk at Standard & Tech Salon on AI Fairness, Alibaba, 2022
- Invited talk at Global AI Accelerator at Ericsson Silicon Valley, 2022
4. **"NetFair: Towards Fair Network Mining"**
- Keynote talk at Graphs @ Facebook/Mata, 2021
- Keynote talk at Deep Learning on Graphs: Method and Applications (DLG-AAAI'21), at AAA 2021
- Invited talk at Brandeis University, 2021
- Invited talk at University of Nebraska–Lincoln, 2021

- Invited talk at University of Science and Technology of China, 2021
- Keynote talk at the International Workshop on Fair and Interpretable Learning Algorithms (FILA 2020), at IEEE BigData 2020
- Invited talk at Yahoo! Research FREP talk series, 2020

5.   "Networks-as-a-Context: A New Frontier in Network Mining"

- Keynote talk at University of Iowa Computing Conference (UICC), 2020

6.   "Deep Network Mining: Exploring the Power and Beauty of Network of Networks"

- Invited talk at University of Illinois at Urbana-Champaign, 2018
- Invited talk at Stony Brook University, 2018
- Invited talk at Syracuse University, 2019
- Invited talk at University of Notre Dame, 2019
- Invited talk at University of Texas Health, 2019
- Invited talk at the 3rd International Workshop on Critical Infrastructure Network Security (CINS 2019), at SIGMETRICS 2019
- Invited talk at Lake Michigan Workshop on Data Science, 2019

7. "Towards Optimal Teams in Big Networks"

- Invited talk at SDM 2016 workshop on the 2nd International Workshop on Machine Learning Methods for Recommender Systems (MLRec 2016), Miami, FL, 2016

8.   "Inside the Atom: Mining a Network of Networks and Beyond"

- Invited talk at Dartmouth College, NH, 2018
- Keynote talk at ICDM 2017 workshop on High Performance Graph Data Mining and Machine Learning
- Invited talk at University of New Mexico, NM, 2017
- Invited talk at Talking Data, Beijing, 2017
- Invited talk at Nanjing University, Nanjing, 2017
- Invited talk at Fudan University, Shanghai, 2017
- Invited talk at Beihang University, Beijing, 2017
- Invited talk at Alibaba, Hangzhou, 2017
- Keynote talk at KDD 2016 workshop on the 5th International Workshop on Big Data, Streams and Heterogeneous Source Mining (BigMine 16), San Francisco, CA, 2016
- Invited talk at HRL, Malibu, CA, 2016
- Invited talk at GraphEx 2016, Dedham, Massachusetts
- Invited talk at Asilomar 2015 special session on "Statistical Signal Processing for Social and Information Networks", Pacific Grove, CA, 2015
- Invited talk at Baidu USA, Google, LinkedIn, and Yahoo! Labs
- Keynote talk at ICDM 2015 Workshop on "Representation Learning for Semantic Data", Atlantic City, NJ, 2015
- Keynote talk at SDM 2015 Workshop on "Adaptive Learning On-a-chip: Hardware and Algorithms (ALOHA)", Vancouver, Canada, 2015

9.   "Query Complex Graph Patterns: Tools and Applications"

- Keynote talk at WWW 2014 Workshop on "The First WWW Workshop on Big Scholarly Data: Towards the Web of Scholars (BigScholar 2014)", Seoul, Korea, 2014

10. "The Dynamics of Dissemination on Graphs: Theory and Algorithms"

- DIMACS Workshop on "Statistical Analysis of Network Dynamics and Interactions", Rutgers University, NJ, 2013

11. "Graph Enhancement: Theory and Algorithms"

- EECS, Case Western Reserve University, OH, 2013

12. "Optimal Dissemination on Graphs: Theory and Algorithms"

- Keynote talk at ICDM 2013 workshop on "Mining and Understanding from Big Data (BigMUD)", Dallas, TX, 2013
- Keynote talk at the 8th Workshop on "Optimization Based Techniques for Emerging Data Mining Problems (OEDM)" at ICDM2013, Dallas, TX, 2013
- CIDSE, Arizona State University, AZ, 2014
- DCS, Tsinghua University, Beijing, 2014
- CS, Stony Brook University, NY, 2013
- MSIS, Business School, Rutgers University, NJ 2013
- EECS, Case Western Reserve University, OH, 2013
- Math & Computer Science Department, Emory University, GA 2013

13. "Influence Propagation on Large Graphs: Theory and Algorithms"

- Department of Automation, Tsinghua University, Beijing, 2012

14. "Algorithms to Affect Influence Propagation on Large Graphs"

- Department of Computer Science, Rutgers University, NJ, 2012
- Department of Computer Science, Purdue University, IN, 2012
- Computer Science Department, The City College of New York, NY, 2012

15. "Mining Large Graphs: Querying, Detecting and Affecting"

- Computer Science Department, University of California at Santa Barbara, CA, 2011

16. "People and Network Analytics at IBM Research"

- Computer Science Department, Carnegie Mellon University, PA, 2010

17. "Fast Algorithms for Querying and Mining Large Graphs"

- Department of Computer Science, University of Maryland, College Park, MD, 2009
- IBM T.J. Watson Research Center, Hawthorne, NY, 2009
- Department of Electric Engineering, Zhejiang University, Hongzhou, China, 2009
- Department of Computer Science, Peking University, Peking, China, 2009
- Department of Computer Science, Tsinghua University, Peking, China, 2009
- Microsoft Research Asia, Beijing, China, 2009
- IBM T.J. Watson Research Center, Yorktown Heights, NY, 2010
- School of Computational Science and Engineering, Gatech, Atlanta, GA, 2010
- Yahoo! Labs, Sunnyvale, CA, 2010

RESEARCH GRANTS

Summary & Highlights (as of 9/5/2023)
- Total Funding: $77M ($37M at UIUC)
- Total Funding as PI: $8.6M ($5.2M at UIUC)
- Total Personal Share: $8.1M ($5.7M at UIUC)

2013-present (at CUNY & ASU & UIUC)

- *PI* in an NSF grant: "Collaborative Research: III: Small: Reconstruction of Diffusion History in Cyber and Human Networks with Applications in Epidemiology and Cybersecurity" ($600,000, 2023-2026, PIs: Ying (lead) and Tong, *personal share: $300,000)*
- *PI* in a VISA Research gift: "Invariant Graph Transformer" (2023, $75,000, *personal share: $75,000*)
- *PI* in an Amazon research award: "Graph Algorithms for Personalized Recommendation" (2023, $50,000, plus $40,000 AWS credit, *personal share: $50,000*)
- *PI* in a VISA Research gift: "Graph Augmentation" (2022, $75,000, *personal share: $75,000*)
- *PI* in an NSF grant: "Towards a Theoretic Foundation for Optimal Deep Graph Learning" ($1,050,000, 1/2022 – 12/2024, PIs: Tong (lead), Chi and Ying, *personal share*: *$350,000*)
- *PI* in a Meta grant: "Multi-dimensional User Understanding" ($116,829, 7/20/2022 – 12/31/2022, *personal*

share: $116,829)

- *Co-PI* in an NSF grant: "Collaborative Research: PPoSS: LARGE: General-Purpose Scalable Technologies for Fundamental Graph Problems" (UIUC budget: $3,900,000, 2023-2028, PI: Torrellas, *personal share: $487K)*
- *Co-PI* in a DHS grant: "Privacy-Preserving Analytics for Non-IID Data" ($651,927, 2/1/2023 – 6/30/2025, PI: He, *personal share: $200K*)
- *Co-PI* in an IBM-Illinois Discovery Accelerator Institute grant*:* "Climate Runtime: Programming Fabric for Geospatial Representation, Fusion and Federation" ($600,000, 2023-2025, PI: He, *personal share: $200K)*
- *Senior personnel* in a USDA grant: "Graduate Studies In Artificial Intelligence for Animal Agriculture (AI4AAg)", ($238,500, 9/2022 – 9/2027, PI: Zas, *personal share: 0*)
- *Co-PI* in a C3.AI grant: "Statistical Learning Theory and Graph Neural Networks for Identifying Attack Sources" ($250,000, 6/2022-5/2023, PI: Poor, *personal share: $83K*)
- *PI* in a VISA Research gift: "Dynamic Graph Neural Networks" (2021, $75,000, *personal share: $75,000*)
- *PI* in a Facebook grant: "Towards Trustworthy User Profiling" ($116,829, 7/2021-12/2021, *personal share: $116,829*)
- *PI* in an ARO-DURIP grant: "A GPU/CPU Hybrid Cluster for Accelerating Network-of-X Research and Education" ($200,000, 1/1/2021-12/31/2021, *personal share: $200,000*)
- *Co-PI* in an IBM-Illinois Discovery Accelerator Institute grant: "Deep Climate Anomaly Modeling and Impact Analysis" ($75,000, 2022-2023, PI: He, *personal share: $37,500*)
- *Co-PI* in a DARPA grant: "Analytics of Information Influence: Effect Characterization" ($5.8M, 2021-2025, PI: Abdelzaher, *personal share: $753,049*)
- *PI* in a Facebook gift: "Graph+X Learning: Models, Algorithms and Applications" ($40,000, *personal share: $40,000,* 2019)
- *Senior Personnel* in an NSF/USDA grant: "The Artificial Intelligence for Future Agricultural Resilience, Management, and Sustainability (AIFARMS)" (*$20M* (expected), 2020 – 2025, *personal share: ~ $470K*)
- *PI* in an NSF-Amazon grant: "FAI: Towards a Computational Foundation for Fair Network Learning" (*$1,035,000*, 12/1/2019-11/30/2022, PI: Tong, co-PIs: My and Maciejewski, *personal share*: *$391,341*)
- *PI* in an NSF grant: "CAREER: Network Robustification: Theories, Algorithms and Applications" ($511,827, 8/1/2017 – 7/31/2022, *personal share: $511,827*)
- *PI* in a Futurewei gift: "Towards the Next Generation of AI Framework based on Cognitive Graph Computing" ($260,001, 8/1/2017-7/31/2018, *personal share: $260,001*)
- *PI* in an ARO grant: "Towards Optimal Teams in Composite Networks" ($366,027, 4/2016-3/2019, *personal share: $366,027*)
- *PI* in a DTRA grant: "Towards a Theory of Closed-Loop Robustness for Real-Time Learning and Control of Multilayered Networks under Cascading Failures" ($451,091, 2/2/2016-2/1/2019, PI: Tong, co-PI: Ying, *personal share: $225,548*)
- *PI* in a Baidu USA gift: "Mining Health Related Websites" ($25,000, *personal share: $25,000*)
- *Lead PI* in an NSF grant: "EAGER: Collaborative Research: Correspondence Discovery in Disparate Networks" ($100,000, 8/1/2017-7/31/2018, PIs: Tong (lead) and Koutra, *personal share: $50,000)*
- *ASU PI* in a DARPA grant: "Complex Analytics of Network of Networks for Modeling of Adversarial Activity" (total budget for ASU: $2,748,468, 9/8/2017-9/7/2021, PI: Tong, co-PI: He and Bliss, *personal share: $1,374,234*)
- Co-PI in an Allstate grant: "Tools and Algorithms for Complex Cyber-Anomaly Detection" ($468,843, 10/8/2018 – 02/10/2022, PI: He, personal share: *$234,421*)
- *Co-I* in a DHS grant: "Center of Excellence for Accelerating Operational Efficiency (CAOE)" ($20M (expected), 9/1/2017-8/31/2022, PI: Maciejewski*, personal share: ~$800,000*)
- *Co-PI* in an NSF grant: "III: Small: Towards a Theoretical Foundation for Diffusion Source Localization" ($500,000, 9/1/2017-8/31/2020, *personal share: $250,000*)
- *Senior Personnel* in an NSF grant: "CRI: An Energy-Efficient Big Data Research Infrastructure with Heterogeneous Computing and Storage Resources" ($749,999, 9/1/2016-8/31/2019, PI: Zhao, *personal share: $67,499*)
- *Co-I* in an NIH RO1 grant: "Drug discovery by integrating chemical genomics and structural systems biology" (~$1M, 9/1/2014-8/31/2018, PI: Xie, co-PIs: Bourne, Krinkman, Honig and Tong, *personal share: $42,651*)
- *Co-PI* in an UTRC2 proposal: "Smarter Multi-modal Traffic Signal Control with Both Floating Sensor Network and Fixed Sensor Network" ($80K, 1/1/2015-8/31/2015, PI: Q. He, co-PI: H. Tong, *personal share: $29,021*)

- *PI* and *task lead* in Social and Cognitive Networks Academic Research Center (SCNARC) by ARL: "Composite Networks in Organization and Team Performance". Contract No. W911NF-09-2-0053: ($86K, 9/1/2013-8/31/2014)

2010-2012 (at CMU & IBM)

- *PI, task lead* and *project lead* in Social and Cognitive Networks Academic Research Center (SCNARC) by ARL: "Composite Networks in Organization and Team Performance". Contract No. W911NF-09-2-0053: ($240K, 9/2012-8/2013)
- *Co-PI* and *task lead* in a DARPA grant: "Multi-Aspect Abnormal Behavior Detection". Contract No. W911NF-11-C-0200 ($4,789,938, 5/2011-4/2013, PI: C. Lin, co-PI: H. Tong)
- *Co-PI* and *task lead* in a DARPA grant: "Understand and Utilize Context-Aware Information Dissemination in Social Media". Contract No. W911NF-12-C-0028, ($8,987,156, 2/2012-1/2015, PI: C. Lin, co-PIs: Z. Wen, H. Tong)
- *PI* and *task lead* in Social and Cognitive Networks Academic Research Center (SCNARC) sponsored by ARL: "Composite Networks in Organization and Team Performance". Contract No. W911NF-09-2-0053: ($219,220, 9/2011-8/2012)
- *PI* in Social and Cognitive Networks Academic Research Center (SCNARC) sponsored by ARL: "Scientific Challenges of Large-Scale and Real-Time Network Mining Infrastructure". Contract No. W911NF-09-2-0053: ($319,634, 9/2010-8/2011)
- *Co-PI* in a NSF grant: "III:Small: Influence and Virus Propagation in Large Graphs - Theory and Algorithms", ($499K, 6/2010-5/2012, PI: C. Faloutsos, co-PI: H. Tong)

TEACHING AND MENTORING

Summary & Highlights (as of 9/5/2023)

- Ph.D. Students: 8 Graduated, 10 Current
- M.S. Students: 12 Graduated, 3 Current
- Undergraduate Students (Research): 15
- High-School Students (Research): 4
- Student Fellowships and Awards: 49

Course Instructor

- CS514: Advanced Topics in Network Science (Fall 2023)
- CS512: Data Mining Principles (Spring 2021, Fall 2022)
- CS598: Network Mining (Spring 2020)
- CS412: Introduction to Data Mining (Fall 2019, Fall 2020, Spring 2022, Spring 2023)
- CSE 575 Statistical Machine Learning, ASU (Spring 2016, Spring 2017, Fall 2017, Fall 2018)
- CSE 310 Data Structures and Algorithms, ASU (Fall 2015)
- CSE 591 Semantic Web Mining, ASU (Spring 2015)
- CS I1900 Pattern Recognition and Machine Learning, City College, CUNY (Spring 2014)
- CS 84010 Big Data Analytics, at Graduate Center, CUNY (Fall, 2013)

Post-doc Mentoring

- Dr. Jun-Gi Jang, 2023 –, UIUC, tensor mining
- Dr. Yunyong Ko, 2022 –, UIUC, hypergraph learning
- Dr. Shweta Jian, 2020 – 2021, UIUC, recipient of CI fellowship in 2021, now post-doc at University of Utah
- Dr. Rui Zhang, 2018 – 2020, ASU, now associate professor at Northwestern Polytechnical University China
- Dr. Xing Su, 2019 – 2019, ASU, now software engineer at Amazon

Ph.D Student Advising

- Xiao Lin, current Ph.D student since fall 2023
- Zhichen Zeng, current Ph.D student since fall 2023
- Eunice Chee-Kay Chan, current Ph.D student since 2022

- Hyunsik Yoo, current Ph.D student since 2022
- Zhining Liu, current Ph.D student since 2022
- Xinyu He, current Ph.D student since 2022
- Zhe Xu, current Ph.D student since 2021
- Yuchen Yan, current Ph.D student since 2019 (passed prelim exam in 5/2023)
- Baoyu Jing, current Ph.D student since 2019(LOA since 2022)
- Lihui Liu, current Ph.D student since 2018 (transferred to UIUC in 2019, passed prelim exam in 7/2023, recipient of Mavis Future Faculty Fellow)
- Dr. Qinghai Zhou, Ph.D in 2023 (transferred to UIUC in 2019, thesis: Closed-Loop Network Anomaly Detection
- Dr. Jian Kang, Ph.D in 2023 (transferred to UIUC in 2019), thesis: Algorithmic Foundation of Fair Graph Mining, recipient of Mavis Future Faculty Fellow, Rising Stars in Data Science by University of Chicago, now assistant professor at University of Rochester
- Dr. Boxin Du, Ph.D in 2021, UIUC (transferred from ASU in 2019), thesis: Multi-Network Association: Algorithms and Applications, now applied scientist at Amazon
- Dr. Si Zhang, Ph.D in 2021, UIUC (transferred from ASU in 2019), thesis: Network Alignment on Big Networks, now AI research scientist at Meta
- Dr. Chen Chen, Ph.D in 2019, ASU, thesis: Connectivity in Complex Networks: Measures, Inference and Optimization, EECS rising star 2019, now research assistant professor at UVA
- Dr. Liangyue Li, Ph.D in 2018, ASU, thesis: Harnessing Teamwork in Networks: Prediction, Optimization and Explanation, now senior algorithm engineer at Alibaba
- Dr. Zhen Chen, Ph.D in 2018, ASU (co-advised with Lei Ying), thesis: Diffusion in Networks: Source Localization, History Reconstruction and Real-Time Network Robustification, now software engineer at Google
- Dr. Xing Su, Ph.D in 2017, CUNY, thesis: Travel Mode Detection with Smartphone Sensors, now software engineer at Amazon

Master Student Advising
- Ishika Agarwal, current master student since fall 2022
- Blaine Hill, current master student since fall 2022
- Jiezhong Qiu, current master student since fall 2022
- Dingsu (Derek) Wang, master in 2023, thesis: Networked Time Series Imputation via Position-aware Graph Enhanced Variational Autoencoders. now senior applied machine learning scientist at Grainger
- Zhichen Zeng, master in 2023, thesis: Position-aware Regularized Optimal Transport for Network Alignment. now Ph.D student at UIUC
- Yian Wang, master in 2023, thesis: Fair and Robust Graph Mining. now Ph.D student at UIUC
- Weikai Xu, master in 2022, UIUC, thesis: ABM: Attention-based Message Passing Network for Knowledge Graph Completion, now software engineering at Tiktok
- Yuheng Zhang, master in 2022, UIUC, thesis: Active Heterogeneous Graph Neural Networks with Per-step Meta-Q-Learning. now Ph.D student at UIUC
- Shengyu Feng, master in 2022, UIUC, thesis: Adversarial Graph Contrastive Learning with Information Regularization, now Ph.D student at UIUC, recipient of Siebel Scholar
- Zhe Xu, master in 2021, UIUC, thesis: Dense Subgraph Detection on Multi-Layered Networks, now Ph.D student at UIUC
- Haichao Yu, master in 2018, ASU, thesis: Multi-layered HITS on Multi-sourced Networks, now software engineer at Google
- Scott Freitas, master in 2018, ASU, thesis: Mining Marked Nodes in Large Graphs, recipient of NSF Graduate Research Fellowship Program (GRFP) Fellowship, now Ph.D student at Gatech
- Rongyu Lin, master in 2018, ASU, thesis: MASON: Real-time NBA Matches Outcome Prediction, now software engineer at Microsoft

- Xiaoyu Zhang, master in 2017, ASU, thesis: Network Effects in NBA Teams: Observations and Algorithms, now software engineer at Uber
- Ruiyue Peng, master in 2016, ASU, thesis: TiCTak: Target-Specific Centrality Manipulation on Large Networks, now senior software engineer at Hura Imaging

Undergraduate Student Mentoring

- Xing Shen, 2023, UIUC, graph structure learning
- Anjali Kumar, 2023, UIUC, fair graph mining
- Xianghe (Jade) Xu, 2022, UIUC, graph contrastive learning
- Ke Xu, since 2022, UIUC, active graph learning
- Yueyi Shen, 2022, UIUC, graph neural networks
- Xuanyu Chen, 2022, UIUC, multi-network mining
- Praneet Rathi, 2022, UIUC, self-supervised learning
- Anushka Kansal, 2022, UIUC, spatial-temporal data analysis
- Ruining Zhao, 2022, UIUC, knowledge graphs
- Chuxuan Hu, 2021-2022, UIUC, subteam replacement
- Zhenning Zhang, 2021, UIUC, bundle recommendation
- Billy (Zhendao) Li, 2020-2021, UIUC, team replacement
- Abdul Hakim Johnson, 2021, UIUC, senior thesis on brain data analysis
- Xinyi Liu, 2019, ASU, network science of teams
- Scott Freitas, 2017, ASU, network connectivity

High-school Student Mentoring

- Firmiana Yi-Tong Wang, 2023, Uni High, fair graph mining
- Ruchi Banerjee, 2016, Basha High School, information dissemination on networks
- Nikash Hari, 2016, Basis Chandler, social collaboration networks
- Evan Kaminsky, 2013, Paul D. Schreiber High School, text data mining of CQA sites

Teaching Assistant

- Machine Learning (10-701), Instructor: E.P. Xing (Fall, 2008)
- Multimedia Databases and Data Mining (15-826), Instructor: C. Faloutsos (Spring, 2008)

Guest Lecture Instructor

- Query Complex Graph Patterns: Tools and Applications, at "MIS G5010: Seminar in Information Systems Management", CCNY (Fall, 2014)
- Matrix Tools for Large Network Analytics, at "MIS G5010: Seminar in Information Systems Management", CCNY (Fall, 2014)
- Mining Large Graphs, at "Selected Topics in Data Analytics", University of Southern California (Fall, 2011)
- Proximity on Large Graphs, at "Multimedia Databases and Data Mining", Carnegie Mellon University (Spring, 2010)

Conference Tutorial Instructor

- Knowledge Graph Reasoning and Its Applications at KDD 2023 (with L. Liu, August 2023)
- Natural and Artificial Dynamics in GNNs: A Tutorial at WSDM 2023 (with D. Fu, Z. Xu and J. He, February 2023)
- Algorithmic Fairness on Graphs: Methods and Trends at SDM 2023 (with J. Kang, April 2023)
- Algorithmic Fairness on Graphs: Methods and Trends at KDD 2022 (with J. Kang, August 2022)
- Fair Graph Mining at CIKM 2021 (with J. Kang, October 2021)
- New Frontiers of Multi-Network Mining: Recent Developments and Future Trend at KDD 2021 (with B. Du, S. Zhang and Y. Yan, August 2021)
- Network Alignment: Recent Advances and Future Directions at ACM CIKM 2020 (with S. Zhang, October 2020)
- Network Science of Teams, at ACM KDD 2018 (with L. Li, August 2018)

- Network Science of Teams, at ACM WSDM 2018 (with L. Li, February 2018)
- Optimal Connectivity on Big Graphs: Measures, Algorithms and Applications, at IEEE Big Data 2015 and SIAM SDM 2016
- Applied Matrix Analytics: Recent Advance and Case Studies, at ICDM 2013 (with F. Wang, C. Ding, December 2013)
- Recent Advance in Applied Matrix Technologies, at SDM 2013 (with F. Wang, May, 2013)
- Large Graph Mining: Patterns, Tools, and Case Studies, at ICDE 2009 (with C. Faloutsos, April, 2009)
- Large Graph Mining: Patterns, Tools, and Case Studies, at CIKM 2008 (with C. Faloutsos, October, 2008)

Student Awards & Recognitions (under my advising at the time of recognition)

- UIUC CS Siebel Scholar (Ruizhong Qiu, 2023)
- Mavis Future Faculty Fellow (Lihui Liu, 2023)
- IEEE ICDM Student Travel Award (Zhe Xu, 2022)
- IEEE ICDM Student Travel Award (Yuheng Zhang, 2022)
- CIKM Student Travel Award (Yuchen Yan, 2022)
- David J. Kuck Outstanding MS Thesis Award (Yuheng Zhang, 2022)
- NeurIPS Scholar Award (Ruizhong Qiu, 2022)
- LOG Top Reviewers (Jian Kang, 2022)
- NeurIPS Top Reviewers (Jian Kang, 2022)
- Rising Stars in Data Mining and Management by Frontiers in Big Data (Jian Kang, 2022)
- Rising Stars in Data Science by University of Chicago (Jian Kang, 2022)
- Mavis Future Faculty Fellow (Jian Kang, 2022)
- UIUC Graduate College Conference Presentation Award (Shengyu Feng, 2022)
- UIUC Graduate College Conference Presentation Award (Yuheng Zhang, 2022)
- UIUC CS Siebel Scholar (Shengyu Feng, 2021)
- The Web Conference Student Scholarship (Baoyu Jing, 2021)
- University Nomination for Apple Scholars in AI/ML (Jian Kang, 2021)
- CIKM Best Reviewer (Jian Kang, 2021)
- CIKM Best Reviewer (Yuheng Zhang, 2021)
- ICLR Outstanding Reviewer (Jian Kang, 2021)
- CI fellowship from the Computing Community Consortium (Shweta Jain, 2021)
- ICML Top Reviewer (Jian Kang, 2020)
- KDD Student Travel Award (Jian Kang, 2020)
- EECS Rising Star (Chen Chen, 2019)
- CIKM Student Travel Award (Jian Kang, 2019)
- SIGIR Student Travel Award (Boxin Du, 2019)
- IEEE Big Data Student Travel Award (Lihui Liu, 2019)
- ASU CIDSE Outstanding MS Student Award (Scott Freitas, 2018)
- NSF 2018 Graduate Research Fellowship Program (GRFP) Fellowship (Scott Freitas, 2018)
- IEEE Big Data Student Travel Award (Jian Kang, 2018)
- KDD Student Travel Award (Boxin Du, 2018)
- KDD Student Travel Award (Boxin Du, 2017)
- SDM17 Student Travel Award (Si Zhang, 2017)
- KDD17 Student Travel Award (Liangyue Li, 2017)
- KDD17 Student Travel Award (Boxin Du, 2017)
- CIKM17 Student Travel Award (Scott Freitas, 2017)
- SBP-BRiMS 2017 Doctoral Consortium program travel scholarship (Chen Chen, 2017)
- SBP-BRiMS 2017 Doctoral Consortium program travel scholarship (Liangyue Li, 2017)
- ASU FURI Luncheon Keynote Speaker, 2017 (Scott Freitas, 2017)

- Scholarship for ACM's Celebration of 50 Years of the Turing Award, 2017 (Liangyue Li, 2017)
- KDD16 Student Travel Award (Si Zhang, 2016)
- KDD16 Student Travel Award (Chen Chen, 2016)
- KDD16 Student Travel Award (Liangyue Li, Ph.D 2016)
- "Bests of KDD16" (Chen Chen, 2016)
- CIKM17 Best Demo Candidate (Second Place, Scott Freitas, 2016)
- Best Paper Award, Tsinghua Science and Technology, 2015 (Xing Su, 2015)
- "Bests of SDM15" (Chen Chen, 2015)
- ICDM15 Student Travel Award (Chen Chen, 2015)
- KDD15 Student Travel Award (Liangyue Li, 2015)

PROFESSIONAL ACTIVITIES AND SERVICE

Summary & Highlights

- Editor-in-Chief: 1
- Associate editor or action editor for peer-reviewed journals: 5
- International/national conferences chaired: 4
- International/national conferences committees: 100+
- Member of editorial board: 3
- Peer reviewer for journals: 16

Editor-ship & Chair-ship

- *Program Co-chair* in the 11th IEEE International Conference on Data Science and Advanced Analytics (research track, IEEE DSAA 2024)
- *Awards Committee Chair* in SIAM International Conference on Data Mining (SDM23)
- *Program Co-chair* in the 30th ACM International Conference on Information & Knowledge Management (CIKM 2021)
- *Program Co-chair* in the 8th International Conference on Computational Data and Social Networks (CSoNet 2019)
- *Editor-in-Chief* in ACM SIGKDD Explorations (8/2018-7/2022)
- *Associate Editor* in ACM Computing Surveys (2020-)
- *Associate Editor* in Springer Knowledge and Information Systems (KAIS) (10/2018-)
- *Associate Editor* in Big Data (Mary Ann Liebert Inc. & Publisher) (10/2018-)
- *Editorial Board* of Data Mining and Management, a specialty of Frontiers in Big Data (2018-)
- *Poster co-chair* in the 24th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2018)
- *Program Co-chair* in the 2016 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)
- *Associate Editor* in ACM SIGKDD Explorations (2014-2018)
- *Associate Editor* in Elsevier Neurocomputing Journal (2016-2020)
- *Action Editor* in Data Mining and Knowledge Discovery (DMKD) (2016-2020)
- *Associate Editor* in Springer Social Network Analysis and Mining (SNAM) (2018-2020)
- *Associate Editor* in IEEE Big Data Mining and Analytics (2018-)
- *Award Committee* in SIAM SDM 2022
- *Award Committee* in ACM KDD 2019
- *Award Committee Chair* in IEEE ICDM 2017
- *Hands-on Tutorial co-chair* in the 23rd ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2017)
- *Tutorial co-chair* in the 22nd ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2016)
- *Tutorial co-chair* in the IEEE Big Data 2016

- *Editorial Board* in 10K Award Committee of IEEE ICME (2016-)
- *Editorial Board* in Data Mining and Knowledge Discovery (DMKD) (2015-2016)
- *Editorial Board* in Social Network Analysis and Mining Journal, Springer (SNAM) (2017-)
- *Exhibits and Demos Co-chair* in The IEEE International Conference on Data Mining (ICDM) 2014 and 2015
- *Local Arrangement Chair* in the 3rd Multimedia/Vision meeting in Greater New York Area, 2013
- *Sponsorship Co-chair* in the 2012 International Conference on Advances in Social Networks Analysis and Mining (ASONAM) 2012
- *Guest Editor* in IEEE Transactions on Big Data (TBD) Special Issue on "Big Scholar Data Discovery and Collaboration", 2015
- *Guest Editor* in ELSEVIER Big Data Research Special Issue on "Big Data Analytics and Applications", 2014
- *Guest Editor* in ACM Transactions on Knowledge Discovery from Data (TKDD) Special Issue on "Connected Health at Big Data Era", 2014
- *Guest Editor* in Data Mining and Knowledge Discovery Special Issue on "Data Mining Technologies for Computational Social Science", 2012
- *Section Editor* in "Social Network Applications in Homeland Security, Terrorism, Fraud Detection, Public Sector, Politics and Case studies", in Encyclopedia of Social Network Analysis and Mining (ESNAM) by Springer
- *Program Co-chair* in ACM-BCB 2016 Workshop on BrainKDD
- *Program Co-chair* in the workshop on "DAVA: DAta mining meets Visual Analytics at Big Data Era", in CIKM 2016
- *Program Co-chair* in CIKM 2016 Workshop on Big Network Analytics (BigNet 2016)
- *Program Co-chair* in the workshop on "DAVA: DAta mining meets Visual Analytics at Big Data Era", in ICDM 2015
- *Program Co-chair* in the workshop on "Connected Health at Big Data Era (BigChat)", in KDD 2015
- *Best Paper Award Committee* in the 19th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD 2015)
- *General Co-chair* in the Workshop on "Interactive Mining for Big Data (ImBig)", in CIKM 2014
- *Program Co-chair* in the workshop on "Connected Health at Big Data Era (BigChat)", in KDD 2014
- *Program Co-chair* in the workshop on "Diffusion Networks and Cascade Analytics", in WSDM 2014
- *Program Co-chair* in the 2nd international workshop on "Large Scale Network Analysis (LSNA)", in WWW 2013
- *Program Co-chair* in IBM workshop of "Frontiers in AI and KDD", 2012
- *Program Co-chair* in the 10th workshop on "Mining and Learning with Graphs (MLG)", in ICML 2012
- *Program Co-chair* in the workshop on "Data Mining Technologies for Computational Collective Intelligence (DMCCI)", in ICDM 2011
- *Session chair* in the IEEE International Conference on Data Mining (ICDM 2013) (ICDM 2013) "Graph and Network Mining"
- *Session chair* in the 2013 ACM SIGMOD/PODS Conference (SIGMOD 2013) "Graph Connectivity"
- *Session chair* in the 19th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2013) "Graph Mining and Sampling"
- *Session chair* in the 18th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2012) "Social and Web Mining Applications"

Program Committee in Conferences

- Senior Program Committee in the Seventeenth International Conference on Web Search and Data Mining (WSDM 2024)
- Senior Program Committee in the 28th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD 2024)
- Area Chair in the 29th SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2023, research track)
- Area Chair in the 29th SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2023, applied data science track)
- Senior Program Committee in the Sixteenth International Conference on Web Search and Data Mining (WSDM 2023)

- Senior Program Committee in the 32nd ACM International Conference on Information and Knowledge Management (CIKM 2023, full paper track)
- Senior Program Committee in the 32nd ACM International Conference on Information and Knowledge Management (CIKM 2023, short paper track)
- Senior Program Committee in the International World Wide Web Conference 2023 (TheWebConf 2023, Social Network Analysis and Graph Algorithms track)
- Area Chair in the Thirty-seventh AAAI Conference on Artificial Intelligence (AAAI 2023)
- Senior Program Committee in the 28th SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2022, research track)
- Senior Program Committee in the 31st International Joint Conference on Artificial Intelligence (IJCAI 2022)
- Senior Program Committee in the 26th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD 2022)
- Senior Program Committee in the Fifteenth International Conference on Web Search and Data Mining (WSDM 2022)
- Senior Program Committee in the 31st ACM International Conference on Information and Knowledge Management (CIKM 2022, full paper track)
- Senior Program Committee in the International World Wide Web Conference 2022 (TheWebConf 2022, Social Network Analysis and Graph Algorithms track)
- Senior Program Committee in the Thirty-sixth AAAI Conference on Artificial Intelligence (AAAI 2022)
- Senior Program Committee in the International World Wide Web Conference 2021 (TheWebConf 2021, Social Network Analysis and Graph Algorithms track)
- Senior Program Committee in the 30th International Joint Conference on Artificial Intelligence (IJCAI 2021)
- Senior Program Committee in the Thirty-Fifth AAAI Conference on Artificial Intelligence (AAAI 2021)
- Senior Program Committee in the 25th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD 2021)
- Program Committee in the International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR 2021, full paper track)
- Program Committee in the International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR 2021, short paper track)
- Senior Program Committee in the 26th SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2020, research track)
- Program Committee in the International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR 2020, full paper track)
- Area Chair in the IEEE International Conference on Data Mining (ICDM 2019)
- Senior Program Committee in the 28th ACM International Conference on Information and Knowledge Management (CIKM 2019)
- Senior Program Committee in the 28th International Joint Conference on Artificial Intelligence (IJCAI 2019)
- Program Committee in the 14th ACM International Conference on Web Search and Data Mining (WSDM 2020)
- Program Committee in the 25th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2019) (Research track)
- Program Committee in the 39th IEEE International Conference on Distributed Computing Systems (ICDCS 2019)
- Senior Program Committee/Associate Editor in the 13rd International Conference on Weblogs and Social Media (ICWSM 2019)
- Program Committee in the 33rd AAAI Conference on Artificial Intelligence (AAAI-19)
- Senior Program Committee in the Web Conference 2019 (TheWebConf 2019, Social Network Analysis and Graph Algorithms Track)
- Program Committee in the 13th ACM International Conference on Web Search and Data Mining (WSDM 2019)
- Program Committee in 45th International Conference on Very Large Data Bases (VLDB'19)
- Area Chair in the IEEE International Conference on Data Mining (ICDM 2018)

- Program Committee in the 5th IEEE International Conference on Data Science and Advanced Analytics (DSAA'18)
- Program Committee in ACM Multimedia Conference 2018 (ACM MM 2018)
- Program Committee in the 27th ACM International Conference on Information and Knowledge Management (CIKM 2018) (demo track)
- Program Committee in the 24th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2018) (Research track)
- Program Committee in the 12nd International Conference on Weblogs and Social Media (ICWSM 2018)
- Senior Program Committee in the 22nd Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD 2018)
- Program Committee in the 23rd International Conference on Database Systems for Advanced Applications (DASFAA2018)
- Program Committee in the 11th International Conference on Similarity Search and Applications (SISAP 2018)
- Senior Program Committee in the 2018 SIAM International Conference on Internet on Data Mining (SDM 2018)
- Program Committee in the 27th International World Wide Web Conference (WWW 2018, Poster Track)
- Senior Program Committee in the 27th International World Wide Web Conference (WWW 2018, Social Network Analysis and Graph Algorithms Track)
- Senior Program Committee in the 31st AAAI Conference on Artificial Intelligence (AAAI-18)
- Area Chair in the IEEE International Conference on Data Mining (ICDM 2017)
- Program Committee in ACM Multimedia Conference 2017 (Engagement - Big Data, MM 2017)
- Program Committee in 2017 International Conference on Behavior, Economic and Socio-Cultural Computing (BESC 2017)
- Senior Program Committee in the 26th ACM International Conference on Information and Knowledge Management (CIKM 2017) (KM track)
- Area Chair in the 6th CCF Conference on Natural Language Processing & Chinese Computing (Social Network, NLPCC 2017)
- Program Committee in the 30th International Conference on Industrial, Engineering & Other Applications of Applied Intelligent Systems (IEA/AIE 2017)
- Senior Program Committee in the 21st Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD 2017)
- Program Committee in the 22nd International Conference on Database Systems for Advanced Applications (DASFAA2017)
- Program Committee in the 11st International Conference on Weblogs and Social Media (ICWSM 2017)
- Program Committee in the 29th International Teletraffic Congress (ITC 29), 2017
- Program Committee in the 3rd IEEE Conference on Cloud and Big Data Computing (CBDCom 2017)
- Area Chair in the IEEE International Conference on Data Mining (ICDM 2016)
- Program Committee in the 2017 SIAM International Conference on Internet on Data Mining (SDM 2017)
- Senior Program Committee in the 31st AAAI Conference on Artificial Intelligence (AAAI-17)
- Program Committee in the 26th International World Wide Web Conference (WWW 2017, Web Mining & Content Analysis track and Poster track)
- Program Committee in the 11th ACM International Conference on Web Search and Data Mining (WSDM 2017)
- Program Committee in 2016 International Conference on Behavior, Economic and Socio-Cultural Computing (BESC 2016)
- Senior Program Committee in the 25th ACM International Conference on Information and Knowledge Management (CIKM 2016) (KM track)
- Program Committee in the 25th ACM International Conference on Information and Knowledge Management (CIKM 2016) (Industrial track)
- Senior Program Committee in the International Joint Conference on Artificial Intelligence (IJCAI 2016) (main track)
- Senior Program Committee in the 2016 SIAM International Conference on Internet on Data Mining (SDM 2016)

- Program Committee in IEEE BigData 2016
- Program Committee in the 30th AAAI Conference on Artificial Intelligence (AAAI-16)
- Program Committee in the 25th International World Wide Web Conference (WWW 2016, Social Networks and Graph Analysis track)
- Senior Program Committee in the 20th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD 2016)
- Program Committee in the 10th ACM International Conference on Web Search and Data Mining (WSDM 2016)
- Program Committee in the 22nd ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2016) (Research track)
- Program Committee in IEEE Big Data 2016
- Senior Program Committee in the 24th ACM International Conference on Information and Knowledge Management (CIKM 2015) (KM track)
- Senior Program Committee in the International Joint Conference on Artificial Intelligence (IJCAI 2015) (main track)
- Senior Program Committee in the 2015 SIAM International Conference on Internet on Data Mining (SDM 2015)
- Senior Program Committee in the 19th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD 2015)
- Program Committee in the 21st ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2015) (Research track)
- Program Committee in Conference on Complex Systems 2015 (CCS'15)
- Program Committee in IEEE Big Data 2015
- Program Committee in the 9th ACM International Conference on Web Search and Data Mining (WSDM 2015)
- Program Committee in the IEEE International Conference on Data Mining (ICDM 2015)
- Program Committee in the 8th International Conference on Similarity Search and Applications (SISAP 2015)
- Program Committee in 2015 International Conference on Behavior, Economic and Socio-Cultural Computing (BESC 2015)
- Program Committee in the 24th International World Wide Web Conference (WWW 2015, Social Networks and Graph Analysis track)
- Program Committee in the 23rd ACM International Conference on Information and Knowledge Management (CIKM 2014) (KM track)
- Program Committee in IEEE BigData 2014
- Program Committee in the IEEE International Conference on Data Mining (ICDM 2014)
- Program Committee in the 2014 International Conference on Behavioral, Economic, Socio-Cultural Computing (BESC 2014)
- Program Committee in the 2014 International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2014)
- Program Committee in the 8th International Conference on Weblogs and Social Media (ICWSM 2014)
- Program Committee in the 20th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2014) (Research track and Industrial track)
- Program Committee in the 7th International Conference on Similarity Search and Applications (SISAP 2014)
- Senior Program Committee in the 18th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD 2014)
- Senior Program Committee in the 22nd ACM International Conference on Information and Knowledge Management (CIKM 2013) (KM track)
- Program Committee in the 23rd International World Wide Web Conference (WWW 2014, Social Networks and Graph Analysis track)
- Program Committee in The 31st International Conference on Machine Learning (ICML 2014)
- Program Committee in the 2014 SIAM International Conference on Internet on Data Mining (SDM 2014)

- Program Committee in the 19th International Conference on Database Systems for Advanced Applications (DASFAA2014)
- Program Committee in the 10th International Conference on Advanced Data Mining and Applications (ADMA'14)
- Senior Program Committee in the 17th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD 2013)
- Program Committee in the 19th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2013) (Research track)
- Program Committee in the 2013 ACM SIGMOD/PODS Conference (SIGMOD 2013)
- Program Committee in the 27th AAAI Conference on Artificial Intelligence (AAAI-13)
- Program Committee in the 29th International Conference on Data Engineering (ICDE 2013)
- Program Committee in the 6th ACM International Conference on Web Search and Data Mining (WSDM 2013)
- Program Committee in the IEEE International Conference on Data Mining (ICDM 2013) (ICDM 2013)
- Program Committee in the 2013 International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2013)
- Program Committee in the 9th International Conference on Advanced Data Mining and Applications (ADMA'13)
- Program Committee in the 5th International Conference on Internet Multimedia Computing and Service (ICIMCS 2013)
- Program Committee in the 2013 SIAM International Conference on Internet on Data Mining (SDM 2013)
- Program Committee in the 9th International Conference on Advanced Data Mining and Applications (ADMA'13)
- Program Committee in the 21st International World Wide Web Conference (WWW 2012)
- Program Committee in the 18th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2012) (for both Research track and Industry track)
- Program Committee in European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML/ PKDD 2012)
- Program Committee in the 5th ACM International Conference on Web Search and Data Mining (WSDM 2012)
- Program Committee in the 2012 International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2012)
- Program Committee in the 8th International Conference on Advanced Data Mining and Applications (ADMA'12)
- Program Committee in the 17th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2011) (for both Research track and Industry track)
- Program Committee in the 20th International World Wide Web Conference (WWW 2011)
- Program Committee in the 7th International Conference on Advanced Data Mining and Applications (ADMA'11)
- Program Committee in the 16th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2010) (Research track)
- Program Committee in European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD 2009)

Program Committee in Workshops

- Program Committee in the 7th International Workshop on Big Data, IoT Streams and Heterogeneous Source Mining: Algorithms, Systems, Programming Models and Applications (BigMine-18), in KDD 2018
- Program Committee in ACM SIGKDD Workshop on Interactive Data Exploration and Analytics (IDEA), in KDD 2018
- Program Committee in International Workshop on Big Data Visual Exploration and Analytics 2018 (BigVis 2018)
- Program Committee in the 13th International Workshop on Mining and Learning with Graphs (MLG), in KDD 2017
- Program Committee in the 12th International Workshop on Mining and Learning with Graphs (MLG), in KDD 2016
- Program Committee in the 4th Interactive Data Exploration and Analytics (IDEA), in KDD 2016

- Program Committee in the 5th International Workshop on Big Data, Streams and Heterogeneous Source Mining: Algorithms, Systems, Programming Models and Applications (Big-Mine), in KDD 2016
- Program Committee in ACM SIGKDD Workshop on Interactive Data Exploration and Analytics (IDEA), in KDD 2015
- Program Committee in the 4th International Workshop on Big Data, Streams and Heterogeneous Source Mining: Algorithms, Systems, Programming Models and Applications (Big-Mine), in KDD 2015
- Program Committee in Big-O(Q): Big-Graphs Online Querying, 2015
- Program Committee in the 1st Workshop on Connecting Online and Offline Social Network Analysis (COOL-SNA), in ICDM 2014
- Program Committee in The 8th Social Network Mining and Analysis Workshop (SNAKDD), in KDD 2014
- Program Committee in the 2nd Interactive Data Exploration and Analytics (IDEA), in KDD 2014
- Program Committee in the 3rd International Workshop on Big Data, Streams and Heterogeneous Source Mining: Algorithms, Systems, Programming Models and Applications (BigMine14), in KDD 2014
- Program Committee in the 2nd Outlier Detection & Description under Data Diversity workshop (ODD), in KDD 2014
- Program Committee in the 2nd Dynamic Networks Management and Mining (DyNetMM 2014) workshop, in ECML/PKDD 2014
- Program Committee in the WWW 2014 Workshop on Big Graph Mining (BGM 2014)
- Program Committee in the 13th International Workshop on "Multimedia Data Mining" (MDMKDD 2013), in KDD 2013
- Program Committee in the 7th International Workshop on "Social Network Mining and Analysis" (SNAKDD), in KDD 2013
- Program Committee in the 2nd International Workshop on "Big Data, Streams and Heterogeneous Source Mining: Algorithms, Systems, Programming Models and Applications" (BigMine), in KDD 2013
- Program Committee in the 11th workshop on "Mining and Learning with Graphs (MLG)", in KDD 2013
- Program Committee in "ODD: Outlier Detection and Description", in KDD 2013
- Program Committee in the 1st Dynamic Networks Management and Mining (DyNetMM 2013) workshop, in SIGMOD/PODS 2013
- Program Committee and best paper award committee in the 1st International Workshop on Big Data, Streams and Heterogeneous Source Mining: Algorithms, Systems, Programming Models and Applications (BigMine-12), in KDD2012.
- Program Committee in the 6th Workshop on Social Network Mining and Analysis (SNAKDD-12), in KDD2012.
- Program Committee in the workshop on "International Workshop on Finding Patterns of Human Behaviors in Network and Mobility Data", in ECML/PKDD 2011
- Program Committee in the 11th International Workshop on "Multimedia Data Mining", in KDD 2011
- Program Committee in the workshop on "Complex Networks in Information & Knowledge Management" (CNIKM 2009), in CIKM 2009

Reviewer

- NSF Panel (2012, 2015, 2016, 2017, 2020, 2021, 2022)
- ACM Computing Surveys Review
- Neural Information Processing Systems (NIPS 2012, 2013, 2015)
- Book Proposal Review for Cambridge University Press, Morgan & Claypool publishers
- Springer Journal on Data Mining and Knowledge Discovery (DMKD)
- Springer Journal on Information Retrieval
- Springer Journal on Information Technology and Management
- The International Journal on Very Large Data Bases (by Springer)
- IEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- ACM Transactions on Knowledge Discovery from Data (TKDD)

- IEEE Transactions on Knowledge and Data Engineering (TKDE)
- IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)
- IEEE Transactions on Database Systems (TODS)
- IEEE Transactions on Computational Social Systems
- IEEE Transactions on Information Forensics and Security
- Advances in Complex Systems (ACS) (by World Scientific Publishing Co. Pte. Ltd.)
- Journal of Visual Communication and Image Representation (Elsevier)

Other Committees

- Graduate Student Award Committee, UIUC (2021-2023, chair)
- Graduate Admission Committee, UIUC (2023-2024, vice-chair)
- Graduate Admission Committee, UIUC (2021-2023)
- AI and Social Responsibility Planning Committee, UIUC (2021-2022)
- Graduate Student Award Committee, UIUC (2020-2021, 2023-2024)
- Academic Appeals Committee, UIUC (2019-2020)
- Tenure Track Faculty Recruit Committee, UIUC (2019-2020)
- Data Science Subcommittee, UIUC (2019-2020)
- Undergraduate Curriculum Committee, UIUC (2019-2020)
- Ad-hoc Committee for New Course Proposal on CS 582 : Machine Learning for Bioinformatics (2019-2020)
- The Achievement Rewards for College Scientists (ARCS) Fellowship Committee, ASU (2018)
- Ph.D Admission Committee (CSE), CIDSE, ASU (2014-2018)
- Curriculum Committee, Graduate Center, CUNY (2013-2014)
- Admission Committee, Machine Learning Department, CMU. (2008, 2009)

REFERENCES – UPON REQUEST