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GENERAL RESEARCH INTERESTS

- Human-Centered Artificial Intelligence, Cognition in Interactive Systems, Natural User Interface Design, Visualization and Visual Analytics, 3D Virtual Environments, Spatial Cognition and Wayfinding

EDUCATION

- University of Michigan, Ann Arbor, Michigan
Ph.D., Information Science: Human-Computer Interaction (HCI), 2003
- Tsinghua University, Beijing, China
M.E. in Mechano-Electronic Control and Automation, 1994
- Tsinghua University, Beijing, China
B.E. in Machine Design and Manufacturing, 1992

PROFESSIONAL HISTORY

- Associate Professor July 2011 – Present
College of Information Sciences and Technology (IST)
The Pennsylvania State University, University Park, Pennsylvania
- Courtesy Appointment November 2012 – 2018
Department of Industrial and Manufacturing Engineering
The Pennsylvania State University, University Park, Pennsylvania
- Visiting Professor November 2012 – July 2015
College of Computer Science and Technology
Taiyuan University of Technology, Taiyuan, China
- Visiting Researcher July 2012 – July 2013
Institute of Software, Chinese Academy of Sciences, Beijing, China
- Visiting Researcher June 2012 – August 2012
XEROX Research Centre Europe, Meylan, France
- Assistant Professor July 2005 – June 2011
College of IST
The Pennsylvania State University, University Park, Pennsylvania
- Assistant Professor August 2003 – June 2005
School of Information Resources and Library Science
University of Arizona, Tucson, Arizona

PUBLICATIONS (* Denotes a graduate student or visiting scholar under my supervision)

Articles Published in Refereed Journals

Journal Article

1. Shao, Z., Shan, Y., He, Y., Yao, Y., Wang, J., **Zhang, X.** (Co-Author, 20%), Zhang, Y., & Chen, S. (2025). Do Language Model Agents Align with Humans in Rating Visualizations? An Empirical Study. *IEEE Computer Graphics and Applications* 45(6), 14-28. DOI: 10.1109/MCG.2025.3586461
2. Xia, J., Zhao, X., Xie, K., Hou, Y., **Zhang, X.** (Co-Author, 25%), Kui, X., Zhao, Y., Li, C., & Qin, H. (2025). TransportMap: Visual Transport Analysis for Spatiotemporal Data without Trajectory Information. *Computers & Graphics* 132, 18 pages. DOI: 10.1016/j.cag.2025.104387
3. Xia, J., Huang, L., Sun, Y., Deng, Z., **Zhang, X.** (Co-Author, 10%), & Zhu, M. (2024). A Parallel Framework for Streaming Dimensionality Reduction. *IEEE Transactions on Visualization and Computer Graphics* 30(1), 142-152. DOI: 10.1109/TVCG.2023.3326515
4. Wu, H., Sun, X., Tu, H., & **Zhang, X.** (Primary Author, 40%) (2024). ClockRay: A Wrist-Rotation Based Technique for Occluded-Target Selection in Virtual Reality. *IEEE Transactions on Visualization and Computer Graphics* 30(7), 3767-3778. DOI: 10.1109/TVCG.2023.3239951
5. Li, S., Yu, J., Li, M., Liu, L., **Zhang, X.** (Co-Author, 30%), & Yuan, X. (2023). A Framework for Multiclass Contour Visualization. *IEEE Transactions on Visualization and Computer Graphics* 29(1), 353-362. DOI: 10.1109/TVCG.2022.3209482
6. Wang, J., Wu, Y., **Zhang, X.** (Co-Author, 20%), Zeng, Y., Zhou, Z., Zhang, H., Xie, X., & Wu, Y. (2023). Tac-Anticipator: Visual Analytics of Anticipation Behaviors in Table Tennis Matches. *Computer Graphics Forum* 42(3), 223-234. DOI: 10.1111/CGF.14825
7. Cao, A., Lan, J., Xie, X., Chen, H., **Zhang, X.** (Co-Author, 15%), Zhang, H., & Wu, Y. (2023). Team-Builder: Toward More Effective Lineup Selection in Soccer. *IEEE Transactions on Visualization and Computer Graphics* 29(12), 5178-5193. DOI: 10.1109/TVCG.2022.3207147
8. Wei, D., Liu, C., **Zhang, X.** (Co-Author, 5%), & Yuan, X. (2023). Understanding Transitions in Animated Bar Charts. *Visual Intelligence* 1(13), 15 pages. DOI: 10.1007/S44267-023-00015-W
9. Wang, J., Li, Y., Zhou, Z., Wang, C., Hou, Y., Li Zhang, Xue, X., Kamp, M., **Zhang, X.** (Co-Author, 20%), & Chen, S. (2023). When, Where and How Does It Fail? A Spatial-Temporal Visual Analytics Approach for Interpretable Object Detection in Autonomous Driving. *IEEE Transactions on Visualization and Computer Graphics* 29(12), 5033-5049. DOI: 10.1109/TVCG.2022.3201101
10. Hou, Y., Wang, C., Wang, J., Xue, X., **Zhang, X.** (Co-Author, 15%), Zhang, J., Wang, D., & Chen, S. (2022). Visual Evaluation for Autonomous Driving. *IEEE Transactions on Visualization and Computer Graphics* 28(1), 1030-1039. DOI: 10.1109/TVCG.2021.3114777
11. Zhang, H., Chen, J., Qiang, Y., Zhao, J., Xu, J., Fan, X., Yang, Y., & **Zhang, X.** (Primary Author, 50%) (2021). DART: A Visual Analytics System for Understanding Dynamic

- Association Rule Mining. *The Visual Computer* 37(2), 341-357. DOI: 10.1007/S00371-020-01803-X
12. Wu, H., Deng, Y., Pan, J., Han, T., Hu, Y., Huang, K., & **Zhang, X.** (Co-author, 30%) (2021). User Capabilities in Eyes-Free Spatial Target Acquisition in Immersive Virtual Reality Environments. *Applied Ergonomics* 94, 12 pages. DOI: 10.1016/j.apergo.2021.103400
 13. Wu, H., Fu, S., Yang, L., & **Zhang, X.** (Primary Author, 50%) (2020). Exploring Frame-Based Gesture Design for Immersive VR Shopping Environments. *Behaviour & Information Technology* 41(1), 96-117. DOI: 10.1080/0144929X.2020.1795261
 14. Wu, H.*, Gai, J.*, Wang, Y., Liu, J., Qiu, J., Wang, J., & **Zhang, X.** (Primary Author, 50%) (2020). Influence of Cultural Factors on Freehand Gesture Design. *International Journal of Human-Computer Studies* 143, 14 pages. DOI: 10.1016/J.IJHCS.2020.102502
 15. Zhang, H., Chen, J., & **Zhang, X.** (Primary Author, 50%) (2020). 利用问题求解理论来研究交互式复杂信息的可视分析行为 (Using Problem-Solving Theories to Investigate User Behaviors in Interactive Visual Analytics of Complex Information). *Tuxing Xuebao/Journal of Graphics* 41(3), 325-334. DOI: 10.11996/JG.j.2095-302X.2020030325
 16. Liu, J., Wang, J., Wang, W., & **Zhang, X.** (Co-Author, 10%) (2020). 基于驾驶模拟器的HMI可用性测试实验环境研究 (Experiment Research on HMI Usability Test Environment Based on Driving Simulator). *Beijing Ligong Daxue Xuebao/Transactions of Beijing Institute of Technology* 40(9), 949-955. DOI: 10.15918/j.tbit1001-0645.2019.176
 17. Wu, H., Wang, Y., Liu, J., Qiu, J., & **Zhang, X.** (Co-Author, 15%) (2020). User-Defined Gesture Interaction for In-Vehicle Information Systems. *Multimedia Tools and Applications* 79(1-2), 263-288. DOI: 10.1007/s11042-019-08075-1
 18. Wu, H., Yang, L., Fu, S., & **Zhang, X.** (Co-Author, 20%) (2019). Beyond Remote Control: Exploring Natural Gesture Inputs for Smart TV Systems. *Journal of Ambient Intelligence and Smart Environments* 11(4), 335-354. DOI: 10.3233/AIS-190528
 19. Chen, W., Xia, J., Guo, F., Han, D., Pan, J., Nie, X., & **Zhang, X.** (Co-Author, 10%) (2019). Structure-Based Suggestive Exploration: A New Approach for Effective Exploration of Large Networks. *IEEE Transactions on Visualization and Computer Graphics* 25(1), 555-565. DOI: 10.1109/TVCG.2018.2865139
 20. Wu, H.*, Zhang, S., Liu, J., Qiu, J., & **Zhang, X.** (Primary Author, 50%) (2019). The Gesture Disagreement Problem in Free-Hand Gesture Interaction. *International Journal of Human-Computer Interaction* 35(12), 1102-1114. DOI: 10.1080/10447318.2018.1510607
 21. Wu, H., Wang, Y., Qiu, J., Liu, J., & **Zhang, X.** (Co-Author, 15%) (2019). User-Defined Gesture Interaction for Immersive VR Shopping Applications. *Behaviour & Information Technology* 38(7), 726-741. DOI: 10.1080/0144929X.2018.1552313
 22. Wu, H., Liu, J., Qiu, J., & **Zhang, X.** (Primary Author, 40%) (2019). Seeking Common Ground While Reserving Differences in Gesture Elicitation Studies. *Multimedia Tools and Applications* 78(11), 14989-15010. DOI: 10.1007/s11042-018-6853-0
 23. Xiao, X., Zhao, J., Qiang, Y., Wang, H., Xiao, Y., **Zhang, X.** (Co-Author, 5%), & Zhang, Y. (2018). An Automated Segmentation Method for Lung Parenchyma Image Sequences Based on Fractal Geometry and Convex Hull Algorithm. *Applied Sciences (Switzerland)* 8(5), 16 pages. DOI: 10.3390/app8050832

24. Wong, J.*, & **Zhang, X.** (Co-Author, 50%) (2018). MessageLens: A Visual Analytics System to Support Multifaceted Exploration of MOOC Forum Discussions. *Visual Informatics* 2(1), 37-49. DOI: 10.1016/J.VISINF.2018.04.005
25. Zhang, H., & **Zhang, X.** (Primary Author, 70%) (2018). 可视分析中的复杂认知活动研究 (Complex Cognitive Activity in Visual Analytic). *Jisuanji Fuzhu Sheji Yu Tuxingxue Xuebao/Journal of Computer-Aided Design & Computer Graphics* 30(1), 57-67. DOI: 10.3724/SP.J.1089.2018.16922
26. **Zhang, X.** (Corresponding Author, 60%), Lv, F., & Cheng, S. (2018). 智能时代的人机交互范式 (An Interaction Paradigm in Intelligent Systems). *Zhongguo Kexue: Xinxi Kexue/Science China: Information Sciences* 48(4), 406-418. DOI: 10.1360/N112017-00217
27. Wu, H., Wang, J., & **Zhang, X.** (Co-Author, 15%) (2017). Combining Hidden Markov Model and Fuzzy Neural Network for Continuous Recognition of Complex Dynamic Gestures. *The Visual Computer* 33(10), 1265-1278. DOI: 10.1007/S00371-015-1147-2
28. Qiang, Y., Ge, L., Zhao, X., **Zhang, X.** (Co-Author, 5%), & Tang, X. (2017). Pulmonary Nodule Diagnosis Using Dual-Modal Supervised Autoencoder Based on Extreme Learning Machine. *Expert System* 34(6). DOI: 10.1111/EXSY.12224
29. Zhao, J., Ma, R., & **Zhang, X.** (Co-Author, 15%) (2017). 基于决策树和改进 SVM 混合模型的语音情感识别 (Speech Emotion Recognition Based on Decision Tree and Improved SVM Mixed Model). *Beijing Ligong Daxue Xuebao/Transactions of Beijing Institute of Technology* 37(4), 386-390. DOI: 10.15918/j.tbit1001-0645.2017.04.011
30. Tian, F., Lv, F., **Zhang, X.** (Co-Author, 25%), Ren, X., & Wang, H. (2017). An Empirical Study on the Interaction Capability of Arm Stretching. *International Journal of Human-Computer Interaction* 33(7), 565-575. DOI: 10.1080/10447318.2016.1265782
31. Zhao, H., Zhang, H., Liu, Y., Zhang, Y., & **Zhang, X.** (Primary Author, 60%) (2017). Pattern Discovery: A Progressive Visual Analytic System Design to Support Categorical Data Analysis. *Journal of Visual Languages and Computing* 43, 42-49. DOI: 10.1016/j.jvlc.2017.05.004
32. Zhang, W., **Zhang, X.** (Co-Author, 5%), Zhao, J., Qiang, Y., Tian, Q., & Tang, X. (2017). A Segmentation Method for Lung Nodule Image Sequences Based on Superpixels and Density-Based Spatial Clustering of Applications with Noise. *PLoS One* 12(9), 25 pages. DOI: 10.1371/journal.pone.0184290
33. Chen, S., Yuan, X., Wang, Z., Guo, C., Liang, J., Wang, Z., **Zhang, X.** (Co-Author, 10%), & Zhang, J. (2016). Interactive Visual Discovering of Movement Patterns from Sparsely Sampled Geo-Tagged Social Media Data. *IEEE Transactions on Visualization and Computer Graphics* 22(1), 270-279. DOI: 10.1109/TVCG.2015.2467619
34. Wu, H., Wang, J., & **Zhang, X.** (Primary Author, 50%) (2016). User-Centered Gesture Development in TV Viewing Environment. *Multimedia Tools and Applications* 75(2), 733-760. DOI: 10.1007/s11042-014-2323-5
35. Yi, Q., Li, C., **Zhang, X.** (Co-Author, 10%), Liu, F., & Tang, Y. (2015). An Optimization Model of Machining Process Route for Low Carbon Manufacturing. *International Journal of Advanced Manufacturing Technology* 80(5-8), 1181-1196. DOI: 10.1007/s00170-015-7064-8
36. Zhao, J., Ji, G.-h., Xia, Y., & **Zhang, X.** (Co-Author, 5%) (2015). Cavitory Nodule Segmentation in Computed Tomography Images Based on Self-Generating Neural

- Networks and Particle Swarm Optimisation. *International Journal of Bio-Inspired Computation* 7(1), 62-67. DOI: 10.1504/IJBIC.2015.067999
37. Ren, L., Wei, Y., Du, Y., **Zhang, X.** (Co-Author, 15%), & Dai, G. (2015). 面向信息可视化的语义 Focus + Context 人机交互技术 (Human-Computer Interaction Based on Semantic Focus+Context for Information Visualization). *Jisuanji Xuebao/Chinese Journal of Computers* 38(12), 2488-2498. DOI: 10.11897/SP.J.1016.2015.02488
 38. Li, B., Zhu, K., Zhang, W., Wu, A., & **Zhang, X.** (Co-Author, 30%) (2014). A Comparative Study of Two Wayfinding Aids for Simulated Driving Tasks—Single-Scale and Dual-Scale GPS Aids. *Behaviour & Information Technology* 33(4), 361-371. DOI: 10.1080/0144929X.2012.719032
 39. Qiang, Y., Zhang, J., Liu, Y., & **Zhang, X.** (Co-Author, 5%) (2014). A Multi-Level Data Fusion Algorithm for Wireless Sensor Networks. *Sensor Letters* 12(1), 123-128. DOI: 10.1166/sl.2014.3235
 40. Zhao, J., Wu, W., **Zhang, X.** (Co-Author, 5%), Qiang, Y., Liu, T., & Wu, L. (2014). A Short-Term Trend Prediction Model of Topic over Sina Weibo Dataset. *Journal of Combinatorial Optimization* 28(3), 613-625. DOI: 10.1007/s10878-013-9674-0
 41. Qiang, Y., Pei, B., Wu, W., Zhao, J., **Zhang, X.** (Co-Author, 5%), Li, Y., & Wu, L. (2014). Improvement of Path Analysis Algorithm in Social Networks Based on HBase. *Journal of Combinatorial Optimization* 28(3), 588-599. DOI: 10.1007/S10878-013-9675-Z
 42. Ren, L., Du, Y., Ma, S., **Zhang, X.** (Co-Author, 15%), & Dai, G. (2014). 大数据可视分析综述 (Visual Analytics Towards Big Data: A Review). *Ruanjian Xuebao/Journal of Software* 25(9), 1909-1936. DOI: 10.13328/j.cnki.jos.004645
 43. Li, B., Zhu, K., Zhang, W., Wu, A.*, & **Zhang, X.** (Co-Author, 15%) (2013). A Comparative Study of Two Wayfinding Aids with Simulated Driving Tasks—GPS and a Dual-Scale Exploration Aid. *International Journal of Human-Computer Interaction* 29(3), 169-177. DOI: 10.1080/10447318.2012.702634
 44. Tian, F., Lv, F., Jiang, Y., **Zhang, X.** (Co-Author, 30%), Cao, X., Dai, G., & Wang, H. (2013). An Exploration of Pen Tail Gestures for Interactions. *International Journal of Human-Computer Studies* 71(5), 551-569. DOI: 10.1016/j.ijhcs.2012.12.004
 45. Song, H., Fu, Y., Zhang, L., & **Zhang, X.** (Co-Author, 10%) (2013). Cursor Caging: Enhancing Focus Targeting in Interactive Fisheye Views. *Science China: Information Sciences* 56(5), 16 pages. DOI: 10.1007/s11432-013-4868-8
 46. Zhang, L., Song, H., Ou, Z., Fu, Y., & **Zhang, X.** (Co-Author, 10%) (2013). Image Retargeting with Multifocus Fisheye Transformation. *The Visual Computer* 29(5), 407-420. DOI: 10.1007/s00371-012-0744-6
 47. Wu, A.*, Convertino, G., Ganoë, C., Carroll, J., & **Zhang, X.** (Corresponding Author, 40%) (2013). Supporting Collaborative Sense-Making in Emergency Management through Geo-Visualization. *International Journal of Human Computer Studies* 71(1), 4-23. DOI: 10.1016/j.ijhcs.2012.07.007
 48. **Zhang, X.** (Corresponding Author, 70%), Simpson, T., Frecker, M., & Lesieutre, G. (2012). Supporting Knowledge Exploration and Discovery in Multi-Dimensional Data with Interactive Multiscale Visualisation. *Journal of Engineering Design* 23(1), 23-47. DOI: 10.1080/09544828.2010.487260

49. Ren, L., Zhang, L., Tao, F., **Zhang, X.** (Co-Author, 10%), Luo, Y., & Zhang, Y. (2012). A Methodology Towards Virtualization-Based High Performance Simulation Platform Supporting Multidisciplinary Design of Complex Products. *Enterprise Information Systems* 6(3), 267-290. DOI: 10.1080/17517575.2011.592598
50. Gupta, S., Xu, H., & **Zhang, X.** (Co-Author, 25%) (2011). Balancing Privacy Concerns in the Adoption of Location-Based Services: An Empirical Analysis. *International Journal of Electronic Business* 9(1/2), 118-137. DOI: 10.1504/IJEB.2011.040358
51. Squicciarini, A. C., Xu, H., & **Zhang, X.** (Co-Author, 25%) (2011). CoPE: Enabling Collaborative Privacy Management in Online Social Networks. *Journal of the American Society for Information Science and Technology* 62(3), 521-534. DOI: 10.1002/asi.21473
52. Wolf, D., Hyland, J., Simpson, T. W., & **Zhang, X.** (Co-Author, 20%) (2011). The Importance of Training for Interactive Trade Space Exploration: A Study of Novice and Expert Users. *Journal of Computing and Information Science in Engineering* 11(3), 11 pages. DOI: 10.1115/1.3615685
53. Gou, L.*, & **Zhang, X.** (Corresponding Author, 60%) (2011). Treenetviz: Revealing Patterns of Networks over Tree Structures. *IEEE Transactions on Visualization and Computer Graphics* 17(12), 2449-2458. DOI: 10.1109/TVCG.2011.247
54. Jiang, Y., Tian, F., **Zhang, X.** (Co-Author, 15%), Dai, G., & Wang, H. (2011). Understanding, Manipulating and Searching Hand-Drawn Concept Maps. *ACM Transactions on Intelligent Systems and Technology* 3(1), 11:1-11:21. DOI: 10.1145/2036264.2036275
55. Ren, L., Tian, F., **Zhang, X.** (Co-Author, 20%), & Zhang, L. (2010). DaisyViz: A Model-Based User Interface Toolkit for Interactive Information Visualization Systems. *Journal of Visual Languages and Computing* 21(4), 209-229. DOI: 10.1016/j.jvlc.2010.05.003
56. Wu, A.*, Zhang, W., & **Zhang, X.** (Corresponding Author, 40%) (2009). Evaluation of Wayfinding Aids in Virtual Environment. *International Journal of Human-Computer Interaction* 25(1), 1-21. DOI: 10.1080/10447310802537582
57. **Zhang, X.** (2009). Multiscale Traveling: Crossing the Boundary between Space and Scale. *Virtual Reality* 13(2), 101-115. DOI: 10.1007/s10055-009-0114-5
58. **Zhang, X.** (2008). A Multiscale Progressive Model on Virtual Navigation. *International Journal of Human Computer Studies* 66(4), 243-256. DOI: 10.1016/j.ijhcs.2007.09.004
59. **Zhang, X.** (2007). M²S Maps: Supporting Real-World Navigation with Mobile VR. *Virtual Reality* 11(2-3), 161-173. DOI: 10.1007/s10055-006-0062-2
60. **Zhang, X.** (Corresponding Author, 80%), & Furnas, G. W. (2005). mCVEs: Using Cross-Scale Collaboration to Support User Interaction with Multiscale Structures. *Presence: Teleoperators and Virtual Environments* 14(1), 31-46. DOI: 10.1162/1054746053890288

Parts of Books

Book Chapter

- Yu, M.*, **Zhang, X.** (Co-Author, 30%), Lee, D., & Kreager, D. A. (2018). Community-Based Recommendation for Cold-Start Problem: A Case Study of Reciprocal Online Dating Recommendation. In Kaya, Mehmet; Kawash, Jalal; Khoury, Suheil;

Day, Min-Yuh (Eds.), *Social Network Based Big Data Analysis and Applications* (pp. 201-222). Cham: Springer. Peer-reviewed/refereed. DOI: 10.1007/978-3-319-78196-9_10, ISBN/ISSN: 978-3-319-78195-2

Zhang, X. (Corresponding Author, 90%), & Furnas, G. W. (2005). Multiscale Space and Place. In Turner, P., Davenport, E. (Eds.), *Spaces, Spatiality and Technology* (pp. 261-280). Dordrecht: Springer. Peer-reviewed/refereed. DOI: 10.1007/1-4020-3273-0_18, ISBN/ISSN: 978-1-4020-3272-1

Refereed Conference Proceedings

Zhang, X. (2025). 复杂认知：可视分析系统设计与评估的新理论基础 (Complex Cognition: A New Theoretical Foundation for Designing and Evaluating Visual Analytics Systems). *Proceedings of the 12th China Visualization and Visual Analytics Conference (ChinaVis 2025) [Best Paper Award]*. (pp. 18 pages).

Wang, Y., Qi, Y., **Zhang, X.** (Co-Author, 40%), & Chen, S. (2024). Graph-Neural-Network-Based User Intent Understanding for Visual Analytics. *Proceedings of the 2024 IEEE Pacific Visualization Symposium (PacificVis 2024)*. (pp. 11-21). DOI: 10.1109/PACIFICVIS60374.2024.00011

Gautam, S., **Zhang, X.** (Co-Author, 20%), & Rosson, M. B. (2024). Towards Dynamic Learning: A Framework for Simulating Adaptive Learning Systems. *Companion Publication of the 2024 Conference on Computer-Supported Cooperative Work and Social Computing (CSCW Companion 2024)*. (pp. 603-608). DOI: 10.1145/3678884.3681913

Han, D., Chen, W., Pan, R., Liu, Y. L., Zhou, J., Tao, J., & **Zhang, X.** (Co-Author, 10%) (2024). GraphFederator: Federated Visual Analysis for Multi-party Graphs. *Proceedings of the 2024 IEEE Pacific Visualization Symposium (PacificVis 2024)*. (pp. 172-181). DOI: 10.1109/PACIFICVIS60374.2024.00027

Tan, S., Lai, C., **Zhang, X.** (Co-Author, 15%), & Yuan, X. (2023). An Empirical Guide for Visualization Consistency in Multiple Coordinated Views. *Proceedings of the 2023 IEEE Pacific Visualization Symposium (PacificVis 2023)*. (pp. 31-40). DOI: 10.1109/PACIFICVIS56936.2023.00011

Lu, J., Chen, W., Ye, H., Wang, J., Mei, H., Gu, Y., Wu, Y., **Zhang, X.** (Co-Author, 5%), & Ma, K. (2021). Automatic Generation of Unit Visualization-Based Scrollytelling for Impromptu Data Facts Delivery. *Proceedings of the 2021 IEEE Pacific Visualization Symposium (PacificVis 2021)*. (pp. 21-30). DOI: 10.1109/PACIFICVIS52677.2021.00011

Deng, D., Wu, J., Wang, J., Wu, Y., Xie, X., Zhou, Z., Zhang, H., **Zhang, X.** (Co-Author, 30%), & Wu, Y. (2021). EventAnchor: Reducing Human Interactions in Event Annotation of Racket Sports Videos. *Proceedings of the 2021 ACM SIGCHI Conference on Human Factors in Computing Systems (CHI 2021)*. (pp. 73:1-73:13). DOI: 10.1145/3411764.3445431

Wei, D., Yang, C., **Zhang, X.** (Co-Author, 20%), & Yuan, X. (2021). Predicting Mouse Click Position Using Long Short-Term Memory Model Trained by Joint Loss Function. *Extended Abstracts of the 2021 ACM SIGCHI Conference on Human Factors in Computing Systems (CHI EA 2021)*. (pp. 214:1-214:6). DOI: 10.1145/3411763.3451651

- Han, Y., Wang, Z., Chen, S., Li, G., **Zhang, X.** (Co-Author, 5%), & Yuan, X. (2020). Interactive Assigning of Conference Sessions with Visualization and Topic Modeling. *Proceedings of the 2020 IEEE Pacific Visualization Symposium (PacificVis 2020)*. (pp. 236-240). IEEE. DOI: 10.1109/PACIFICVIS48177.2020.1027X
- Xia, J., Chen, T., Zhang, L., Chen, W., Chen, Y., **Zhang, X.** (Co-Author, 25%), Xie, C., & T. S. (2020). SMAP: A Joint Dimensionality Reduction Scheme for Secure Multi-Party Visualization. *Proceedings of the 2020 IEEE Conference on Visual Analytics Science and Technology (VAST 2020)*. (pp. 107-118). DOI: 10.1109/VAST50239.2020.00015
- Gong, J., You, F., Wang, J., & **Zhang, X.** (Co-Author, 20%) (2019). Understanding Behavioural Conflict between the Drivers and Adaptive Cruise Control (ACC) System in Cut-In Scenario. *Proceedings of the 3rd International Conference on Computer-Human Interaction Research and Applications (CHIRA 2019)*. (pp. 97-103). DOI: 10.5220/0008053600970103
- Huang, J., Tian, F., Fan, X., **Zhang, X.** (Co-Author, 15%), & Zhai, S. (2018). Understanding the Uncertainty in 1D Unidirectional Moving Target Selection. *Proceedings of the 2018 ACM SIGCHI Conference on Human Factors in Computing Systems (CHI 2018)*. (pp. 237:1-237:12). DOI: 10.1145/3173574.3173811
- Lyu, F., Tian, F., Feng, W., Cao, X., **Zhang, X.** (Co-Author, 30%), Dai, G., & Wang, H. (2017). EnseWing: Creating an Instrumental Ensemble Playing Experience for Children with Limited Music Training. *Proceedings of the 2017 ACM SIGCHI Conference on Human Factors in Computing Systems (CHI 2017)*. (pp. 4326-4330). DOI: 10.1145/3025453.3025583
- Chen, S., Chen, S., Lin, L., Yuan, X., Liang, J., & **Zhang, X.** (Co-Author, 10%) (2017). E-Map: A Visual Analytics Approach for Exploring Significant Event Evolutions in Social Media. *Proceedings of the 2017 IEEE Conference on Visual Analytics Science and Technology (VAST 2017)*. (pp. 36-47). DOI: 10.1109/VAST.2017.8585638
- He, N., **Zhang, X.** (Co-Author, 5%), Zhao, J., Zhao, H., & Qiang, Y. (2017). Pulmonary Parenchyma Segmentation in Thin CT Image Sequences with Spectral Clustering and Geodesic Active Contour Model Based on Similarity. *Proceedings of the 9th International Conference on Digital Image Processing (ICDIP 2017)*. (pp. 9 pages). DOI: 10.1117/12.2281942
- Yu, M.*, **Zhang, X.** (Co-Author, 20%), & Kreager, D. A. (2016). New to Online Dating? Learning from Experienced Users for a Successful Match. *Proceedings of the 2016 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2016)*. (pp. 467-470). DOI: 10.1109/ASONAM.2016.7752276
- Chen, Y., Su, X., Tian, F., Huang, J., **Zhang, X.** (Co-Author, 5%), Dai, G., & Wang, H. (2016). Pactolus: A Method for Mid-Air Gesture Segmentation within EMG. *Extended Abstracts of the 2016 ACM SIGCHI Conference on Human Factors in Computing Systems (CHI EA 2016)*. (pp. 1760-1765). DOI: 10.1145/2851581.2892492
- Burns, M., Ritter, F. E., & **Zhang, X.** (Co-Author, 20%) (2016). Using Naturalistic Typing to Update Architecture Typing Constants. *Proceedings of the 14th International Conference on Cognitive Modeling (ICCM 2016)*. (pp. 169-174).

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Other Works

Book Translation

Tian, F., & **Zhang, X.** (Primary Author, 60%) (2018). 以用户为中心的系统设计 (Foundations for Designing User-Centered Systems by Frank E. Ritter, Gordon D. Baxter, Elizabeth F. Churchill; Springer, 2014; ISBN: 978-1-4471-5133-3). (pp. 287 pages). Beijing: China Machine Press. ISBN/ISSN: 978-7-111-57939-7.

Manuscripts in Progress

Book Chapter

Zhang, X. (Author, 70%), & Brandenburg, S. Chapter 16: Ethics Considerations in Designing Interactive Systems. In Ritter, F. E., Churchill, E. F., Brandenburg, S., **Zhang, X.**, *Foundations for Designing User-Centered Systems: What system designers need to know about people*. (2nd ed.) (30 pp). Springer. [Expected submission November 2026].

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Giles, C. L., **Zhang, X.**, Gou, L.*, Kim, J., Chen, H. (2009). MobiSNA: a Mobile Video Social Network Application. White Paper for Alcatel-Lucent. 14 pages.

PRESENTATIONS, TALKS, PANELS, AND WORKSHOPS

Keynote Addresses, Plenary Panels, and Distinguished Lectures

- **Zhang, X.** (Plenary Address). (June 28, 2025). "Challenges and Opportunities of the Visual Analytics Research Paradigm." *The Visualization Summit 2025*, China Society of Image and Graphics, Guiyang, China.
- **Zhang, X.** (Distinguished Guest Lecturer). (May 21, 2024 - June 3, 2024). "Research Paradigms in Human-Computer Interaction." *Lecture Series on Advanced Research of Computer Science*, School of Software, Taiyuan University of Technology, Taiyuan, China.
- **Zhang, X.** (Distinguished Guest Lecturer). (November 7, 2023 - November 28, 2023). "Recent Research Development in Human-Computer Interaction." *Academic Lectures of the "111" Innovation and Intelligence Base*, Qinghai Normal University, Xining, China.
- **Zhang, X.** (Plenary Address). (July 25, 2018). "On the Pursuit of a Cognitive Foundation in Visual Analytics Research." The 5th China Visualization and Visual Analytics Conference, China Society of Image and Graphics, Shanghai, China.
- **Zhang, X.** (Plenary Address). (July 22, 2016). "Evaluation Methods in Visual Analytics Systems." The 3rd China Visualization and Visual Analytics Conference, China Society of Image and Graphics, Changsha, China.

- **Zhang, X.** (Distinguished Guest Lecturer). (May 16, 2016 - May 17, 2016). "Research Methods and Practices in Human-Computer Interaction." *Distinguished Lecture Series*, School of Mechanical and Engineering, Beijing University of Science and Technology, Beijing, China.
- **Zhang, X.** (Plenary Address). (July 17, 2014). "Using Visualization to Support Sensemaking in Collaborative Emergency Management." *The China HCI Summit*, Shandong University, Linyi, China.
- **Zhang, X.** (Distinguished Guest Lecturer). (April 2013). "Relation Strength Similarity and Its Applications." *Lecture Series in the Frontier of Engineering Science*, Chongqing University, Chongqing, China.
- **Zhang, X.** (Plenary Address). (November 2012). "The Integration of User-Centered Interactive Design and Data-Oriented Algorithms in Interactive Analytics of Complex Data." The 8th Joint Conference on Harmonious Human Machine Environment, China Computer Federation, Guangzhou, China.
- **Zhang, X.** (Plenary Address). (June 15, 2011). "Design in HCI: Bridging Technology and People." *Forum on the Frontiers on Interaction Design*, SIGCHI China, Guangzhou, China.

Invited Lectures, Seminars, and Panels

- **Zhang, X.** (Invited Panelist). (July 22, 2025). "Panel Discussion: Development Strategy of Visualization Discipline." The 12th China Visualization and Visual Analytics Conference, China Society of Image and Graphics, Hangzhou, China.
- **Zhang, X.** (Invited Lecturer). (July 17, 2025). "Research Thinking in Action." The Global Summer School of Data Visualization, Zhejiang University, Hangzhou, China.
- **Zhang, X.** (Invited Lecturer). (July 8, 2025). "Visual Analytics for Humanity: Research Methods and Challenges." The Visualization Summer School, Peking University, Beijing, China.
- **Zhang, X.** (Invited Lecturer). (July 13, 2024). "User Evaluation in Visual Analytics for Humanity." The Visualization Summer School, Peking University, Beijing, China.
- **Zhang, X.** (Invited Lecturer). (June 5, 2024). "Research Paradigms in Human-Computer Interaction." Invited Lecture Series, Department of Computer Science and Technology, Taiyuan University, Taiyuan, China.
- **Zhang, X.** (Lead Invited Tutorial Lecturer) & Yu, L. (July 21, 2023). "Tutorial: Interactive Visualization Design and Evaluation." The 10th China Visualization and Visual Analytics Conference, China Society of Image and Graphics, Chongqing, China.
- **Zhang, X.** (Invited Lecturer). (June 30, 2023). "Research Methods in Interactive System Design." Invited Seminar Series, Fudan Visualization Research Group, Fudan University, Shanghai, China.
- **Zhang, X.** (Invited Lecturer). (May 23, 2023). "Challenges and Opportunities in Visual Analytics Research." *Lecture Series on Plateau Science and Sustainable Development*, Qinghai Normal University, Xining, China.

- **Zhang, X.** (Invited Lecturer). (October 12, 2022). "On Human-Centered Design of Metaverse Museums." *Advanced Training Program on Metaverse Museum Design and Development*, Beijing Academy of Science and Technology, Beijing, China.
- **Zhang, X.** (Invited Lecturer). (March 16, 2022). "Experimental Research in Human-Computer Interaction." Research Method Lecture Series, User Experience/Car Interaction Design Lab, Tongji University, Shanghai, China.
- **Zhang, X.** (Invited Lecturer). (December 9, 2019). "Understanding Interaction Design: A Research-Paradigm Perspective." Research Seminar, Jinan University, Guangzhou, China.
- **Zhang, X.** (Invited Lecturer). (December 8, 2019). "Understanding Interaction Design: A Research-Paradigm Perspective." Invited Seminar Series, School of Journalism and Communication, Sun Yat-sen University, Guangzhou, China.
- **Zhang, X.** (Invited Lecturer). (December 3, 2019). "Understanding Interaction Design: A Research-Paradigm Perspective." Research Seminar, The Future Laboratory, Tsinghua University, Beijing, China.
- **Zhang, X.** (Invited Lecturer). (October 23, 2019). "Design of Visual Analytics Systems: An Interaction Design Perspective." Invited Seminar Series, Visualization and Visual Analytics Group, Peking University, Beijing, China.
- **Zhang, X.** (Invited Lecturer). (October 15, 2019). "Challenges and Future Directions of Visual Analytics Research." Invited Lecture Talks, Zhejiang Lab, Hangzhou, China.
- **Zhang, X.** (Invited Lecturer). (October 14, 2019). "Challenges and Future Directions of Visual Analytics Research." Research Seminar, Interactive Data Group, Zhejiang University, Hangzhou, China.
- **Zhang, X.** (Invited Lecturer). (October 9, 2019). "Understanding Interaction Design: A Research-Paradigm Perspective." Invited Lecture Series, Beijing Normal University, Beijing, China.
- **Zhang, X.** (Invited Address). (June 16, 2019). "Seeking for New Research Paradigms for Visual Analytics." *Visualization and Visual Analytics Summit*, China Society of Image and Graphics, Urumqi, China.
- **Zhang, X.** (Invited Lecturer). (July 17, 2018). "On the Pursuit of a Cognitive Foundation in Visual Analytics Research." Invited Seminar Series, Visualization and Visual Analytics Group, Peking University, Beijing, China.
- **Zhang, X.** (Invited Lecturer). (June 14, 2018). "Evaluation Methods in Interactive System Research." Research Method Lecture Series, User Experience/Car Interaction Design Lab, Tongji University, Shanghai, China.
- **Zhang, X.** (Invited Lecturer). (July 31, 2017 - August 4, 2017). "Visual Design and Interaction." 2017 NUS SeSame Summer Workshop on Visual Analytics, National University of Singapore, Singapore.
- **Zhang, X.** (Invited Lecturer). (August 1, 2016). "Evaluation Methods in Visual Analytics Systems." Invited Seminar Series, Visualization and Visual Analytics Group, Peking University, Beijing, China.
- **Zhang, X.** (Invited Lecturer). (July 7, 2016). "Interaction Design in Visual Analytics Research." Invited Lecture, Southwest University of Science and Technology, Mianyang, China.

- **Zhang, X.** (Invited Address). (July 5, 2016). "Theoretical and Methodological Challenges in Visual Analytics Research." *Summit on Big Data and Visual Analytics*, Chinese Computer Federation, Chengdu, China.
- **Zhang, X.** (Invited Lecturer). (May 25, 2016). "Beyond Visualization and Computation: Some Theoretical and Methodological Challenges in Visual Analytics Research." Invited Lecture, Beijing Technology and Business University, Beijing, China.
- **Zhang, X.** (Invited Lecturer). (May 19, 2016). "Research Methods in Human-Computer Interaction." Invited Lecture, School of Digital Media and Design Arts, Beijing University of Post and Telecommunication, Beijing, China.
- **Zhang, X.** (Invited Lecturer). (June 2015). "Multiscale and Cross-scale Analysis of Attribute-Rich Social Networks." The Forum on Visual Analytics of Security Data, Peking University, Beijing, China.
- **Zhang, X.** (Invited Lecturer). (August 2014). "Collaborative Visual Analytics in Emergency Management." The First China Visualization and Visual Analytics Conference, China Society of Image and Graphics, Beijing, China.
- **Zhang, X.** (Invited Lecturer). (July 30, 2014). "Evaluation Methods in HCI Research." Software Engineering Summer School, Nanjing University, Nanjing, China.
- **Zhang, X.** (Invited Lecturer). (August 3, 2013). "Information Visualization." Software Engineering Summer School, Nanjing University, Nanjing, China.
- **Zhang, X.** (Invited Lecturer). (July 24, 2013). "Tree and Network Visualization." Visualization Summer School, Zhejiang University, Hangzhou, China.
- **Zhang, X.** (Invited Lecturer). (July 17, 2013). "Actor Similarity in Attribute-Rich Social Networks: A Visual Analytic Approach." Visualization Symposium, Peking University, Beijing, China.
- **Zhang, X.** (Invited Lecturer). (January 10, 2013). "The Integration of User-Centered Interactive Design and Data-Oriented Algorithms in Interactive Analytics of Complex Data." Invited Lecture Series, Shandong University of Technology and Commerce, Yantai, China.
- **Zhang, X.** (Invited Lecturer). (August 15, 2012). "Using Geo-Visualization to Support Sensemaking." The Visualization Summer School, Peking University, Beijing, China.
- **Zhang, X.** (Invited Lecturer). (August 13, 2012). "Visual Analytics of Attribute-Rich Social Networks." *The Advanced Disciplines Lectures (Visual Analytics)*, China Computer Federation, Beijing, China.
- **Zhang, X.** (Invited Speaker). (August 1, 2012). "Using Visualization to Enhance Sensemaking." Research Talk, Xerox Research Centre Europe, Meylan, France.
- **Zhang, X.** (Invited Lecturer). (September 2011). "Visual Analytics of Social Networks." Invited Seminar Series, Visualization and Visual Computing Group, Peking University, Beijing, China.
- **Zhang, X.** (Invited Speaker). (May 18, 2011). "Social Network-based Document Ranking and Recommendation." Penn State – Peking University Multi-Workshops, Penn State University and Peking University, Beijing, China.
- **Zhang, X.** (Invited Lecturer). (March 2011). "The Integration of Interaction Design and Data-Processing Algorithms in Interactive Social Network Analysis." Invited Lecture

Series, College of Information Science and Technology, Beijing Normal University, Beijing, China.

- **Zhang, X.** (Invited Speaker). (May 25, 2010). "Interactive Visualization of Large Data Sets." Invited Lecture Series, Institute of Software, Chinese Academy of Sciences, Beijing, China.
- **Zhang, X.** (Invited Lecturer). (May 17, 2010). "Social Network Analysis and Application: An i-School Perspective." Invited Lecture, School of Information Science and Technology, Sun Yat-sen University, Guangzhou, China.
- **Zhang, X.** (Invited Speaker). (May 13, 2010). "Social Network Analysis and Application: An i-School Perspective." Invited Seminar, School of Information Management, Wuhan University, Wuhan, China.
- **Zhang, X.** (Invited Speaker). (October 6, 2009). "Towards Social Duality in Networking: Content-based Social Network Visualization with ScaleNetVis." NATO Research Task Working Group Workshop on Network Visualization, NATO Research Task Working Group, Penn State, University Park, PA.
- **Zhang, X.** (Invited Speaker). (June 15, 2009). "Support Sensemaking with Visualization and Advanced User Interfaces." Research Talk, Microsoft Research Asia (MSRA), Beijing, China.
- **Zhang, X.** (Invited Lecturer). (June 4, 2009). "Visualization to Support Knowledge Exploration, Acquisition, and Sensemaking." Invited Lecture Series, School of Mass Communication and Design, Sun Yat-sen University, Guangzhou, China.
- **Zhang, X.** (Invited Speaker). (June 2, 2009). "Visualization to Support Knowledge Exploration, Acquisition, and Sensemaking." Invited Colloquia Series, College of Informatics, South China Agricultural University, Guangzhou, China.
- **Zhang, X.** (Invited Lecturer). (April 4, 2008). "Supporting Interaction with Large Information Structures." Seminar, School of Information Resources and Library Science, University of Arizona, Tucson, AZ.
- **Zhang, X.** (Invited Lecturer). (January 3, 2008). "Making Sense of Complex Information Resources." Invited Lecture Series, College of Information Science and Technology, Beijing Normal University, Beijing, China.
- **Zhang, X.** (Invited Speaker). (August 3, 2007). "Making Sense of Complex Information Resources." Invited Research Talk, Sino-European Usability Center, Dalian Maritime University, Dalian, China.
- **Zhang, X.** (Invited Speaker). (July 25, 2007). "Making Sense of Complex Information Resources." Invited Seminar Series, Institute of Software, Chinese Academy of Sciences, Beijing, China.
- **Zhang, X.** (Invited Panelist and Presenter). (November 6, 2006). "Interaction in 3D Virtual Environment." Part of the Panel on Interaction: Beyond Retrieval, at the Annual Meeting of the American Society for Information Science & Technology (ASIS&T), The American Society for Information Science & Technology, Austin, TX.
- **Zhang, X.** (Invited Lecturer). (May 25, 2006). "Multiscale Navigation in Virtual Environments." Seminar, The Virtual Reality and Human Interface Technology Lab, Tsinghua University, Beijing, China.

- **Zhang, X.** (Invited Speaker). (July 6, 2004). "Multiscale Navigation in Virtual Environments: Concepts, Implications, and Evaluation." Colloquia Series, The Lab of Engineering Psychology and Human Factors, Institute of Psychology, Chinese Academy of Sciences, Beijing, China.
- **Zhang, X.** (Invited Lecturer). (May 3, 2004). "Using Multiscale Technology to Support User Interactions with Large Information Structures." Invited Research Seminar, The Artificial Intelligence Lab, University of Arizona, Tucson, AZ.
- **Zhang, X.** (Invited Speaker). (January 6, 2004). "Using Multiscale Technology to Support Cross-Scale Scientific Research." Internet Technology Commerce and Design Institute Collaboration Symposium, University of Arizona, Tucson, AZ.

Papers and Oral Presentations

- **Zhang, X.** (Author and Presenter). (July 21, 2025). "Complex Cognition: A New Theoretical Foundation for the Design and Evaluation of Visual Analytics Systems." The 12th China Visualization and Visual Analytics Conference (ChinaVis 2025), China Society of Image and Graphics, Hangzhou, China.
- Wong, J., & **Zhang, X.** (Co-Author and Presenter). (April 10, 2018 - April 13, 2018). "MessageLens: A Visual Analytics System to Support Multifaceted Exploration of MOOC Forum Discussions." The 11th IEEE Pacific Visualization Symposium (PacificVis 2018), IEEE, Kobe, Japan.
- Wu, A., Yan, X., & **Zhang, X.** (Co-Author and Presenter). (August 4, 2011). "Geo-Tagged Mobile Photo Sharing in Collaborative Emergency Management." 2011 Visual Information Communication - International Symposium (VINCI '11), The Association for Computing Machinery, Hong Kong, China.
- Gou, L., You, F., Guo, J., Wu, L., & **Zhang, X.** (Co-Author and Presenter). (August 4, 2011). "SFViz: Interest-based Friends Exploration and Recommendation in Social Networks." 2011 Visual Information Communication - International Symposium (VINCI '11), The Association for Computing Machinery, Hong Kong, China.
- Wu, A., **Zhang, X.** (Co-Author and Presenter), & Carroll, J. M. (April 4, 2009 - April 5, 2009). "Supporting Synchronous Sensemaking in Geo-Collaboration." Sensemaking Workshop at the 29th Annual CHI Conference on Human Factors in Computing Systems (CHI 2009), The Association for Computing Machinery, Boston, MA.
- **Zhang, X.** (Author and Presenter). (February 4, 2009 - February 8, 2009). "Challenges of Visualization Designs." 2009 Annual Workshop of Human-Computer Interaction Consortium (HCIC 2009), Human-Computer Interaction Consortium, Fraser, CO.
- **Zhang, X.** (Invited Discussant). (February 4, 2009 - February 8, 2009). "Discussion on Supporting Coordination of Interdependent Work." 2009 Annual Workshop of Human-Computer Interaction Consortium (HCIC 2009), Human-Computer Interaction Consortium, Fraser, CO.
- **Zhang, X.** (Author and Presenter), Qu, Y., Song, P., & Giles, C. L. (April 5, 2008 - April 10, 2008). "CiteSense: Supporting Sensemaking of Research Literature." The 26th Annual CHI Conference on Human Factors in Computing Systems (CHI 2008), The Association for Computing Machinery, Florence, Italy.

- Convertino, G., Wu, A., Ganoe, C., **Zhang, X.** (Co-Author and Presenter), & Carroll, J. M. (April 2, 2008). "Modeling and Supporting Common Ground in Geo-Collaboration." The 1st International Workshop on Social Computing, Behavioral Modeling, and Prediction, Air Force Research Laboratory, Arizona State University, Phoenix, AZ.
- **Zhang, X.** (Author and Presenter), & Furnas, G. (April 5, 2003 - April 10, 2003). "The Effectiveness of Multiscale Collaboration in Virtual Environments." The 21st ACM Conference on Human Factors in Computing Systems (CHI 2003), The Association for Computing Machinery, Ft. Lauderdale, FL.
- **Zhang, X.** (Author and Presenter), & Furnas, G. (September 30, 2002 - October 2, 2002). "Social Interactions in Multiscale CVEs." The 4th International Conference on Collaborative Virtual Environments, The Association for Computing Machinery, Bonn, Germany.
- Furnas, G., & **Zhang, X.** (Co-Author and Presenter). (November 6, 2000 - November 8, 2000). "Illusion of Infinity: Feedback for Infinite Worlds." The 13th Annual ACM Symposium on User Interface Software and Technology, The Association for Computing Machinery, San Diego, CA.

RESEARCH GRANTS

- Wu, Q. (Principal Investigator), **Zhang, X.** (Co-Investigator), "Diversity Track: MathMentor: A System for Navigating Concepts and Strategies in Math Problem Solving and Learning with Large Language Models." The Center for Socially Responsible Artificial Intelligence (CSRAI), Penn State University, \$25,000. December 2023 - December 2025.
- **Zhang, X.** (Principal Investigator), "Complex Problem Solving: Toward a New Theoretical Foundation for Visual Analytics Research." College of IST, Penn State University. \$16,000. September 2021 - September 2022.
- Monroe, B. (Principal Investigator), Collins, L. M. (Core Faculty), MacEachren, A. (Co-Principal Investigator), Eaton, J. (Core Faculty), Giles, C. L. (Co-Principal Investigator), Hardy, M. (Co-Principal Investigator), Mitra, P. (Core Faculty), Hunter, D. R. (Core Faculty), Kifer, D. (Core Faculty), Liu, Y. (Core Faculty), Ram, N. (Core Faculty), Slavkovic, A. B. (Co-Principal Investigator), Smith, R. A. (Core Faculty), **Zhang, X.** (Core Faculty), Zorn, C. J. (Core Faculty), "IGERT: Big Data Social Science - An Integrative Education and Research Program in Social Data Analytics." National Science Foundation. \$2,999,713. July 2012 - June 2019.
- **Zhang, X.** (Principal Investigator), Li, J. (Principal Investigator), Lindsay, B. (Co-Principal Investigator), "New Geometric Methods of Mixture Models for Interactive Visualization and Learning." National Science Foundation. \$497,973. September 2009 - August 2012.
- Klippel, A. K. (Principal Investigator), **Zhang, X.** (Co-Principal Investigator), "EAGER: Spatial awareness Through Sapient Interfaces." National Science Foundation. \$149,705, September 2009 - August 2011.
- Simpson, T. W. (Principal Investigator), Lee, D. (Co-Principal Investigator), Mitra, P. (Co-Principal Investigator), Kremer, G. (Co-Principal Investigator), **Zhang, X.** (Co-Principal

Investigator), "CI-TEAM Implementation Project: Collaborative Research - A National Engineering Dissection Cyber-Collaboratory." National Science Foundation. \$160,000. January 2007 - December 2009.

HONORS OR AWARDS

- Best Paper Award, The 12th China Visualization and Visual Analytics Conference (ChinaVis 2025), Hangzhou, China, 2025.
- Faculty Marshall for College of IST, Penn State University, University Park, 2011
- Faculty Fellow, Penn State Institute for CyberScience, Penn State University, University Park, 2011

TEACHING AND CURRICULUM DEVELOPMENT

Teaching

The Pennsylvania State University, University Park, Pennsylvania

- IST 210: Organization of Data (Database)
- IST 220: Networking and Telecommunications
- IST 489H: Research Methods in Information Sciences and Technology
- IST 402: Emerging Issues and Technologies: Visualization Systems
- IST 402: Emerging Issues and Technologies: Visual Analytics for Data Sciences
- IST 402: Emerging Issues and Technologies: Interactive Computer Graphics and VR
- IST 501: Interdisciplinary Research Design for Information Sciences and Technology
- IST 504: Foundations of Theories and Methods of Information Sciences and Technology Research
- IST 505: Foundations of Research Design in Information Sciences and Technology
- IST 526: Information Visualization
- IST 590: Doctoral Colloquium
- IST 594: Social Network and Network Science
- IST 597L: Foundations of Research Design in Information Sciences and Technology
- DS 330: Visual Analytics for Data Sciences
- SRA 468: Visual Analytics for Security Intelligence

The University of Arizona, Tucson, Arizona

- IRLS 506: Research Methods for Information and Library Science
- IRLS 588-002/791: Introduction to Information Technologies
- IRLS 588-003: Collaborative Information Retrieval

Directed Student Learning

Ph.D. Committee Chair and Advisor

Jian-Syuan Wong (2018 – 2021). *Thesis*: Facilitating Learning Analytics of Learner Communication in MOOCs: A Visual Analytics Approach

Neelam Dwivedi (2015 – 2017). *Thesis*: Higher Education as a Cyber-Cultural Institution: An Investigation into the Emerging Institutional Logic

Mo Yu (2015 - 2017). *Thesis*: Understanding User Interactions through Link Analysis in Social Networks
 Liang Gou (2008 - 2012). *Thesis*: A Sensemaking Approach to Visual Analytics of Attribute-rich Social Networks
 Anna Wu (2007 – 2012). *Thesis*: Supporting Place Sensemaking with Multidimensional Information Representation on Mobile Devices
 Gaurav Dubey (2011 – 2013, Discontinued)
 Xin Yan (2008 – 2013, Discontinued)

Master's Thesis/Scholarly Paper Advisor

Ming Chai (2024 – 2026). *Scholarly Paper*: Understanding the Roles of Large Language Models in Supporting Designers' Cognitive Strategies and Metacognitive Control
 Xiaoqian Xia (2024 – 2025). *Scholarly Paper*: Integrating Generative AI Into Business Strategy
 Hao Cai (2023 – 2025). *Scholarly Paper*: Exploring the Role of Large Language Models in Assisting Human Problem Solving
 Kristen Williams (2020 – 2022). *Scholarly Paper*: Research on the Impacts of Data Analytics on Hydroponic Farming
 Jinxuan Gai (2016 – 2019). *Scholarly Paper*: Research on Gesture Disagreement Problem in Freehand Interaction
 Qi Jin (2016 – 2017). *Thesis*: Ensemble Visualization of Hurricane Models
 Hanqing Zhao (2015 – 2017). *Thesis*: Supporting the Understanding of Association Rule With Visualization
 Evan FriedenberG (2015 – 2016). *Thesis*: An Exploration of Collaborative Act Distributions on the Stack exchange Network
 Yan Liu (2015 – 2016). *Department*: Industrial Engineering. *Thesis*: Pattern Discovery: A Progressive Visual Analytic System Design to Support Categorical Data Analysis

Ph.D. Committee Member

Moad Gadi (2025 – Present), Architectural Engineering
 Wanhang Lu (2025), Computer Science and Engineering
 Siyu Wu (2024 – Present), Information Sciences and Technology
 Xiaotian Li (2023 – Present), Information Sciences and Technology
 Shan Wang (2023 – 2024), Information Sciences and Technology
 Eunseo Lee (2021 – 2026), Educational Psychology
 Azzah Eskandrani (2021 – 2025), Architectural Engineering
 Jacob Oury (2021 – 2022), Information Sciences and Technology
 Yanan Xin (2018 – 2020), Geography
 Chulakorn Aritajati (2017 – 2020), Information Sciences and Technology
 Carla Large (2016 – 2020), Information Sciences and Technology
 Feng Sun (2016 – 2018), Information Sciences and Technology
 Dong Chen (2015 – 2021), Information Sciences and Technology
 Yu Wu (2014 – 2018), Information Sciences and Technology
 Changkun Zhao (2014 – 2016), Information Sciences and Technology
 Fan Zhang (2014 – 2015), Information Sciences and Technology

Na Sun (2014 – 2014), Information Sciences and Technology
 Ye Tian (2014 – 2014), Information Sciences and Technology
 Jue Wang (2012 – 2014), Computer Science and Engineering
 Pan Shi (2011 – 2013), Information Sciences and Technology
 Yi Wang (2011 – 2013), Computer Science and Engineering
 Tao Yang (2011 – 2013), Information Sciences and Technology
 Lei Yao (2011 – 2013), Information Sciences and Technology
 Wei Gao (2010 – 2012), Computer Science and Engineering
 Rui Li (2010 – 2012), Geography
 Dev Minotra (2010 – 2012), Information Sciences and Technology
 Mu Qiao (2010 – 2012), Computer Science and Engineering
 Shaoke Zhang (2010 – 2012), Information Sciences and Technology
 Guangyu Sun (2010 – 2011), Computer Science and Engineering
 Bo Yu (2009 – 2013), Information Sciences and Technology
 Mao Ye (2009 – 2012), Computer Science and Engineering
 Bi Chen (2009 – 2011), Information Sciences and Technology
 Meng Zhang (2009 – 2010), Meteorology
 Andrew Reifers (2008 – 2010), Information Sciences and Technology
 Benjamin Hellar (2008 – 2009), Information Sciences and Technology
 Gregorio Convertino (2007 – 2008), Information Sciences and Technology
 Mark Pfaff (2007 – 2008), Information Sciences and Technology
 Lu Xiao (2007 – 2008), Information Sciences and Technology
 Jing Zhao (2007 – 2008), Computer Science and Engineering
 Sue Kase (2006 – 2008), Information Sciences and Technology

Master's Thesis Committee Member/Scholarly Paper Reader

Riley Howard (2024 – 2025), Informatics
 Siqi Liu (2024 – 2025), Informatics
 Amrit Puhan (2024), Informatics
 Mitchell Hoelsing (2023 – 2024), Informatics
 Ho Yin Ng (2023 – 2024), Informatics
 Ephraim Govere (2022 – 2023), Cybersecurity Analytics and Operations
 Marc Burns (2021 – 2023), Informatics
 Rafay Ahmad (2020 – 2021), Informatics
 Pratik Agarwal (2017 – 2018), Informatics
 Luke Metaxas (2017 – 2018), Information Sciences and Technology
 Jun Ge (2015 – 2016), Information Sciences and Technology
 Alex Brown (2015 – 2016), Information Sciences and Technology
 Robert Grace (2015), Information Sciences and Technology
 Kun Chen (2009), Information Sciences and Technology
 David Wolf (2009), Industrial Engineering

Honors Thesis Advisor/Supervisor/Reader

- Rithik Nair (2024 – 2025). *Thesis: Decoding Gen Z: The Global Impact of Data-Driven Social Media Transformations*
- Fangyuan Wen (2017 – 2019). *Thesis: Exploring the Mental Representation of How People Interpret Visual Analytic Tasks, based on Cognitive Foundation*
- Lauren Doutt (2019). *Thesis: A Qualitative Analysis of the Unintended Effects of Food Tracking Applications*
- Adam Jones (2011). *Thesis: A Study of Attitudes Related to the Use of Cyber-Warfare*
- Steven Dodge (2010 – 2011). *Thesis: Holy Information Technology, Batman!*
- Gregory Plumb (2011). *Thesis: The Natural Life of Artificial Mice*

Curriculum and Education Program Development***The Pennsylvania State University, University Park, Pennsylvania***

- Led the design of an undergraduate course on Visual Analytics for Data Sciences (DS 330)
- Led the redesign of an undergraduate honors course on research methods (IST 489H)
- Led and completed the development of research method courses for the Master of Science in Informatics program (IST 504, IST 505)

University of Arizona, Tucson, Arizona

- Developed a technology curriculum for the Master of Arts in Library & Information Science program at the School of Information Resources and Library Science
- Created graduate courses on the Introduction to Information Technologies for LIS Master's Students, Database Management for LIS Master's Students, and Collaborative Information Retrieval for LIS Doctoral Students.

SERVICE ACTIVITIES**Editorship**

- Member of Editor Board, *Journal of the American Society for Information Sciences and Technology*, 2016 - Present
- Managing Guest Editor for the Special Issue of ChinaVis 2016, *Journal of Visual Languages and Computing*, Elsevier, 2016 - 2017
- Guest Editor for the Special Issue of ChinaVis 2015, *Journal of Visualization*, Springer, 2016-2017

Review Activities***Journals***

- *Applied Ergonomics*, Elsevier
- *Behaviour & Information Technology*, Taylor & Francis
- *Data & Knowledge Engineering*, Elsevier

- *Display*, Elsevier
- *Human Factors*, Human Factors and Ergonomics Society
- *Information Visualization*, Palgrave
- *International Journal of Geographical Information Science*, Taylor & Francis
- *International Journal of Human Computer Studies*, Elsevier
- *Journal of Cognitive Engineering and Decision Making*, Human Factors and Ergonomics Society
- *Journal of Computer Languages*, Elsevier
- *Journal of Software*, the Chinese Academy of Sciences
- *Journal of the American Society for Information Science and Technology*, Association for Information Science and Technology
- *Science China*, Science China Press
- *Spatial Cognition and Computation*, Taylor & Francis
- *The Electronic Library*, Emerald
- *Transactions on Human-Machine Systems*, the Institute of Electrical and Electronics Engineers (IEEE)
- *Transactions on Intelligent Transportation Systems*, IEEE
- *Transactions on Interactive Intelligent Systems*, the Association for Computing Machinery (ACM)
- *Transactions on Knowledge Discovery from Data*, ACM
- *Transactions on Visualization and Computer Graphics*, IEEE
- *Virtual Reality and Intelligent Hardware*, KeAi Communications.

Conferences

- *ACM Conference on Computer Supported Cooperative Work (CSCW)*
- *ACM Conference on Human Factors in Computing Systems (CHI)*
- *ACM Symposium on User Interface Software and Technology (UIST)*
- *Eurographics Visualization Symposium (EuroVis)*
- *Graphics Interface Conference (GI)*
- *IEEE Conference on Information Visualization (InfoVis)*
- *IEEE Conference on Visual Analytics Software and Technology (VAST)*
- *IFIP TC13 Conference in Human Computer Interaction (INTERACT)*
- *International Conference on Complex, Intelligent and Software Intensive Systems (CISIS)*
- *International Conference on Intelligent User Interfaces (IUI)*
- *The China Visualization and Visual Analytics Conference (ChinaVIS)*

Book Proposals

- Cambridge University Press
- CRC Press, Taylor & Francis
- SAGE Publications Inc.

Service to University

The Pennsylvania State University, University Park, Pennsylvania

University-Level Services

- Member, Advisor Group on course development for Scholarship and Research Integrity (SARI) and Research Integrity & Scholarly Ethics (RISE), Office for Research Protections the Pennsylvania State University, 2017 – 2018
- Member, Science Steering Committee of the Center for Advanced Data Assimilation and Predictability Techniques, Pennsylvania State University, 2014 – 2019
- Member and the Leader of the “Interactive Environments for Analysis” quad, CyberScience Taskforce, Pennsylvania State University, 2010 – 2011

College/School-Level Services

- Member, Faculty Council, College of IST, 2014 – 2015, 2019 – 2020; 2025 – Present
- Member, Promotion and Tenure Committee, College of IST, 2013 – 2017; 2021 – 2022; 2024 – Present
- Member, HCI Area Annual Review Committee, College of IST, 2024 – 2025
- Chair, HCI Area Review Committee for Tenure Track Promotion, College of IST, 2023 – 2024
- Chair, SOI (Social and Organizational Informatics) Area Review Committee for Tenure Track Promotion, College of IST, 2023
- Leading Faculty, the Committee of developing the program proposal for the Master of Science in Human-Centered Computing, College of IST, 2023 – 2025
- Member, Faculty Search Committee, College of IST, 2013 – 2014, 2016 – 2017, 2023 – 2024
- Chair, Search Committee of Open-Rank Teaching Faculty, College of IST, 2022 – 2023
- Member, Masters Advisory Committee, College of IST, 2018 – 2019
- Member, Graduate Advisory Committee, College of IST, 2006 – 2008, 2011 – 2012, 2018 – 2019
- Chair, IST 489H (Research Methods) Course Committee, 2010 – 2019
- Member, SRA 468 Course Committee, 2010– 2019
- Member, Graduate Recruitment Committee, College of IST, 2007, 2011 – 2012, 2015 – 2017
- Member, Data Analytics Taskforce, College of IST, 2014 – 2015
- Chair, IST 210 (Organization of Data) Course Committee, College of IST, 2010 – 2012
- IST 210 Representative, College of IST, 2008 – 2012
- Alternate Representative of the College of IST in Graduate Council, the Pennsylvania State University, University Park, 2008-2011
- Member, Faculty Advisory Committee, College of IST, 2008 – 2010
- Member, Research Advisory Committee, College of IST, 2008 – 2009
- Member, First Engagement Committee, College of IST, 2009
- Member, Colloquium Committee, School of IST, 2005 – 2006

The University of Arizona, Tucson, Arizona

- Member, Advisory Board of Social & Behavioral Sciences Research Institute, College of Social and Behavioral Sciences, University of Arizona, 2004 – 2005

- Member, Taskforce for the Education and Research Program on Information, Technology and Society, University of Arizona, 2003- 2005
- Chair, Research Committee, School of Information Resources & Library Science, University of Arizona, 2005
- Member, Curriculum Committee, School of Information Resources & Library Science, University of Arizona, 2003 – 2005
- Member, Research Committee, School of Information Resources & Library Science, University of Arizona, 2003 – 2004
- Member, Doctoral Committee, School of Information Resources & Library Science, University of Arizona, 2003 – 2005

Service to Discipline and Profession

- Member, NSF Panel, Faculty Early Career Development Program, 2021
- Program Co-Chair, the Second China Visualization Conference (ChinaVis 2016), Changsha, China, 2016
- General Chair, the Second China Human-Computer Interaction Summit, Taiyuan, China, August 2015
- Program Co-Chair, the Second China Visualization Conference (ChinaVis 2015), Tianjin, China, 2015
- Reviewer, the Initiation into Research Program, the National Fund for Scientific and Technological Development of Chile, 2013
- Associate Chair, International Chinese Association of Computer Human Interaction, 2012
- Member, the Advisory Board, the Databrary Project, the New York University, 2012 – 2015
- Reviewer, the National Basic Research Program, the Ministry of Science and Technology, China, 2012 - 2014
- Reviewer, the START Programme, the Austrian Science Foundation, 2013
- Member, NSF Panel, Faculty Early Career Development Program, 2013
- Member, the Work-in-Progress Program Committee, Conference on Human Factors in Computing Systems (SIGCHI 2012), May 2012, Austin, Texas
- Member, NSF Panel for Social-Computational Systems Program, 2012
- Member, Program Committee, the 2012 Visual Information Communication-International Symposium (VINCI 2012), September 2012, Hangzhou, China
- Member, Program Committee, the 10th Asia Pacific Conference on Computer Human Interaction (APCHI 2012), August 2012, Matsue, Japan
- Program Co-Chair, the 2011 Visual Information Communication - International Symposium (VINCI 2011), August 2011, Hong Kong
- Co-Organizer, the Workshop on “Collaborative Privacy Practices in Social Media” in the 2011 ACM Conference on Computer-Supported Cooperative Work (CSCW 2011), March 2011
- Reviewer, NSF CNIC (Catalyzing New International Collaborations) Program, 2011
- Member, NSF Panel for Social-Computational Systems Program, 2011

- Organization Chair, the 2010 Visual Information Communication - International Symposium (VINCI 2010), September 2010, Beijing, China
- Member, Program Committee, You-Are-Here 2: the 2nd Workshop on Spatial Awareness and Geographic Knowledge Acquisition with Small Mobile Devices (YAH2 2010), Workshop held in conjunction with the International Conference Spatial Cognition 2010, August, 2010, Mt. Hood/Portland, Oregon
- Member, Program Committee, the 2010 IEEE International Conference on Information and Automation (ICIA 2010), June 2010, Harbin, China
- Member, Program Committee, You-Are-Here Maps: Creating a Sense of Place through Map-like Representations, Workshop held in conjunction with the International Conference Spatial Cognition 2008, September 2008, Freiburg, Germany
- Member, Program Committee, Virtual Reality for Safety and Security, Workshop held in conjunction with the International Conference on Cyberworlds 2008, September 2008, Hangzhou, China
- Co-Chair of the Registration Committee, Conference Committee, the 20th ACM Symposium on User Interface and Technology (UIST 2007), October 2007, Newport, Rhode Island
- Chair of the Registration Committee, Conference Committee, the 19th ACM Symposium on User Interface and Technology (UIST 2006), October 2006, Montreux, Switzerland
- Co-Chair of the Registration Committee, Conference Committee, the 18th ACM Symposium on User Interface and Technology (UIST 2005), October 2005, Seattle, Washington
- Member, the Research Grant Committee of Online Computer Library Center (OCLC), 2005 – 2006
- Member, NSF Panel for Human-Computer Interaction program, 2004
- Chair, Arizona Chapter, American Society for Information Science and Technology, 2004 – 2005
- Chair-Elect, Arizona Chapter, American Society for Information Science and Technology, 2003 – 2004

Other Services

Judge, International Science and Engineering Fair, 2005