Ziyu Guan

CONTACT INFORMATION

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SHORT BIO

Ziyu Guan is currently a full professor in Xidian University. His research work is focused on social media computing and pattern recognition, with an emphasis on developing novel machine learning and data mining techniques for exploiting the wisdom of crowd in social media, to solve problems such as classification, recommendation, retrieval, etc. He has published over 70 high quality journal/conference papers, out of which 51 papers were published in leading journals/conferences, such as IEEE TKDE, IEEE TPAMI, IEEE TIP, VLDB, SIGMOD, SIGIR, ICDE, CVPR, WWW, AAAI, IJCAI and SIGKDD. According to Google Scholar, his research work has been cited over 2300 times (h-index 25). In 2015, he acquired support from the National Excellent Youth Science Foundation (China). He is an associated editor of IEEE TKDE, Neurocomputing, the International Journal of Machine Learning and Cybernetics, and Knowledge and Information Systems. He has served or is serving as (senior) program committees members of many leading international conferences, e.g., SIGKDD, AAAI, IJCAI, NeurIPS, ICML, ICLR, SIGIR.

WORKING EXPERIENCE

Xidian University Dec., 2017 - present
Professor, School of Computer Science and Technology

Northwest University of China Jan., 2014 - Nov. 2017
Professor, College of Information Science and Technology

Northwest University of China Sep., 2012 - Dec., 2013
Researcher, College of Information Science and Technology

University of California at Santa Barbara (UCSB) Aug., 2010 - Aug., 2012
Assistant project scientist, Department of Computer Science
Advisor: Prof. Xifeng Yan

EDUCATION

Zhejiang University Sept., 2004 - Mar. 2010
PhD in Computer Science and Technology
Advisor: Prof. Chun Chen

Zhejiang University Sept., 2000 - Jul., 2004
BS in Computer Science and Technology

RESEARCH WORKS

Weakly supervised deep learning: The success of deep learning heavily relies on sufficiently large labeled datasets. However, as the rapid development of various deep learning applications, this becomes a serious bottleneck since acquiring large amounts of labeled data is very time-consuming (prohibitively costly in some domains). Fortunately, the social media users generate a huge quantity of weakly labeling information, e.g., social tags. The weakly labeling information offers both opportunities and challenges: on the one hand, it can provide abundant semantic training information for various deep learning tasks; on the other hand, there are also problems (e.g., noise, granularity mismatch) which hinder direct supervised training. We are among the first to explore leveraging user-generated weakly labeling information for deep learning, and developed novel weakly supervised

deep learning techniques to enable effective exploitation of user-generated weakly labeling information. Specifically, we proposed weakly supervised learning solutions for two common problems: noisy and coarse-grained labeling. When integrated with supervised learning on a few labeled data, the model performance can be largely boosted compared to supervised learning only. Related papers were published in top journals/conferences such as IEEE TPAMI, IEEE TIP, IEEE TKDE, AAAI and IJCAI (cited 200+).

Learning on heterogeneous graphs: Traditional graph-based learning such as spectral methods are mainly focused on modeling structures among homogeneous objects, i.e., homogeneous graphs. However, real-world scenarios often show complex structures among multiple types of objects. For example, in a social network a user can interact with other users and various resource objects. Learning on such heterogeneous graphs has received a lot of attention in recent years. Along this research direction, we took the first step to extend the manifold learning ideas to heterogeneous graphs. Specifically, we designed embedding, ranking and alignment learning algorithms for heterogeneous graphs/hypergraphs and also provided necessary theoretical analysis. This significantly improves the applicability of graph-based learning in real-world problems. Recently, we also developed scalable graph neural networks for representation learning on heterogeneous graphs. Related papers were published in top journals/conferences such as IEEE TKDE, IEEE TNNLS, AAAI, SIGKDD, WWW and SIGIR (cited 600+).

Multi-view learning: Many real-world recognition problems involve rich data which consists of multiple modalities or views of data instances. For example, a tweet usually consists of a text snippet and several images. The multiple views provide a more comprehensive description of data instances. Multi-view learning has become a hot research area in recent years. The key research question is, how to effectively combine multiple views to achieve better performance. Since different views of a data instance usually show both consistent and complementary features for that instance, it is important that we comprehensively capture those features. However, traditional multi-view learning methods simply fused different views without explicitly modeling consistent and complementary features. Our main contribution here is that we propose a novel mechanism based on group sparsity to automatically learn consistent and complementary features from multi-view data. The proposed method achieved the state-of-art performance at that time. Subsequently, we extended the idea to deep models to obtain higher level consistent and complementary features, proposed a generative adversarial framework for missing-view completion, and explored applications such as recommendation. This series of works were published in IEEE TKDE, IEEE TNNLS, IEEE TCby and IJCAI (cited 300+).

Agent learning in unstable environments: As a typical online social application, e-commerce is growing into a major industry nowadays. In e-commerce platforms, advertising is an important component that is beneficial for not only online merchants and the platform, but also the users (improving user experience by showing them proper ADs). Its auction environment poses a multi-agent cooperative problem where reinforcement learning seems to be a plausible solution. However, the auction environment is quite unstable due to the randomness of users' query behaviors, making it difficult to use the Markov decision process for environmental modeling. To this end, we studied such unstable environments in detail and found that the environment is more stable when we aggregate the data based on more coarse-grained time intervals. This motivates us to design a new reinforcement learning framework based on data aggregation. Since generating one action for an aggregated time interval is unreasonable for the underlying auctions, we instead generate a model for each interval and use the model to generate actions for the underlying auctions. This framework significantly improved bidding optimization. Subsequently, we further formulated bidding optimization more comprehensively as a multi-objective optimization problem. An evolutionary strategy was developed for agents learning to avoid explicitly modeling unstable environments. The performance was again boosted. These works were published in SIGKDD, and helped the Alibaba Group obtain a daily revenue increase of at least 3 million rmb.

Dynamic behavior modeling of social media users: Online social networks play a more and more important role in people's daily life. Consequently, the demand for understanding user behaviors is also increasing. However, users' behaviors evolve and interplay, which poses challenges for traditional machine learning methods. To make user behavior analysis easier, we developed new probabilistic graphical models for addressing two important challenges: (1) automatic causality detection. Users' behaviors could be driven by outside influence or inside motives. We first studied how to detect the cause of users' behavioral change at macro-level, e.g., what causes the sentiment change of people towards an entity. Then a method was developed at micro-level to discern whether a user's action is due to friend influence or self-interest. (2) dynamic expertise summarization. We designed a method to enable dynamically summarizing the fine-grained expertise of users from their Web activities. Furthermore, we also proposed a time-sensitive recurrent neural network which can explicitly model a user's long-term and short-term behaviors. Related papers were published in IEEE TKDE and IJCAI (cited 400+).

Invited Book Chapters

1. **Ziyu Guan**, Xifeng Yan. Measuring Structural Correlations in Graphs, Chapter 2 of Computational Network Theory: Theoretical Foundations and Applications, Wiley VCH, 2015.

Journal Publications

1. Wei Zhao, Cai Xu, **Ziyu Guan** (corresponding author), Xunlian Wu, Wanqing Zhao, Qiguang Miao, Xiaofei He, Quan Wang. *TelecomNet: Tag-based Weakly-supervised Modally Cooperative Hashing Network for Image Retrieval.* IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**), accepted, 2021.
2. Yaming Yang, **Ziyu Guan** (corresponding author), Jianxin Li, Wei Zhao, Jiangtao Cui, Quan Wang. *Interpretable and efficient heterogeneous graph convolutional network.* IEEE Transactions on Knowledge and Data Engineering (**TKDE**), accepted, 2021.
3. Cai Xu, Hongmin Liu (corresponding author), **Ziyu Guan**, Xunlian Wu, Jiale Tan, Beilei Ling. *Adversarial Incomplete Multiview Subspace Clustering Networks.* IEEE Transactions on Cybernetics, accepted, 2021.
4. Xiangyu Song, Jianxin Li, Yifu Tang, Taige Zhao, Yunliang Chen, **Ziyu Guan**. *JKT: A joint graph convolutional network based deep knowledge tracing.* Information Sciences, Vol. 580, pages 510-523, 2021.
5. Wanqing Zhao, **Ziyu Guan** (corresponding author), Hangzai Luo, Jinye Peng, Jianping Fan. *Deep Multiple Instance Hashing for Fast Multi-Object Image Search.* IEEE Transactions on Image Processing (**TIP**), Vol. 30, pages 7995-8007, 2021.
6. Xiang Zhang, Lei Tang, Hangzai Luo, Sheng Zhong, **Ziyu Guan**, Long Chen, Chao Zhao, Jinye Peng, Jianping Fan. *Hierarchical bilinear convolutional neural network for image classification.* IET Computer Vision, Vol. 15, No. 3, pages 197-207, 2021.
7. Qiong Wang, Zhipeng Li, Wanqing Zhao, Hao Wu, Fei Xie, **Ziyu Guan**, Wei Zhao (corresponding author). *Enhanced three-dimensional U-Net with graph-based refining for segmentation of gastrointestinal stromal tumours.* IET Computer Vision, Vol. 15, No. 8, pages 549-560, 2021.
8. Cai Xu, **Ziyu Guan** (corresponding author), Wei Zhao, Quanzhou Wu, Meng Yan, Long Chen, and Qiguang Miao. *Recommendation by Users' Multi-modal Preferences for Smart City Applications.* IEEE Transactions on Industrial Informatics (**TII**), Vol. 17, No. 6, pages 4197-4205, 2021.
9. Wei Zhao, Cai Xu (corresponding author), **Ziyu Guan** (corresponding author), Ying Liu. *Multiview Concept Learning via Deep Matrix Factorization.* IEEE Transactions on Neural Networks and Learning Systems (**TNNLS**), Vol. 32, No. 2, pages 814-825, 2021.
10. Yaming Yang, Hongmin Liu (corresponding author), **Ziyu Guan**, Xiaofei He, and Gaoliang Liu. *CoHomo: A cluster-attribute correlation aware graph clustering framework.* Neurocomputing, Vol. 412, pages 327-338, 2020.

11. Shuwen Xiao, Zhou Zhao, Zijian Zhang, **Ziyu Guan**, Deng Cai. *Query-biased Self-attentive Network for Query-focused Video Summarization.* IEEE Transactions on Image Processing (**TIP**), Vol. 29, pages 5889-5899, 2020.
12. Wanqing Zhao, Shaobo Zhang, **Ziyu Guan**, Hangzai Luo, Lei Tang, Jinye Peng, Jianping Fan. *6D object pose estimation via viewpoint relation reasoning.* Neurocomputing, Vol. 389, pages 9-17, 2020.
13. Pengfei Xu, Fei Xie, Tongsheng Su, Zhaoxin Wan, Zhaoyong Zhou, Xiaoyu Xin, **Ziyu Guan** (corresponding author). *Automatic Evaluation of Facial Nerve Paralysis by Dual-Path LSTM with Deep Differentiated Network.* Neurocomputing, Vol. 388, pages 70-77, 2020.
14. Wei Zhao, **Ziyu Guan** (corresponding author), Yuhui Huang, Tingting Xi, Huan Sun, Zhiheng Wang, Xiaofei He. *Discerning Influence Patterns with Beta-Poisson Factorization in Microblogging Environments.* IEEE Transactions on Knowledge and Data Engineering (**TKDE**), Vol. 32, No. 6, pages 1092-1103, 2020.
15. Yu Zhu, Jinghao Lin, Shibi He, Beidou Wang, **Ziyu Guan**, Haifeng Liu, Deng Cai. *Addressing the Item Cold-start Problem by Attribute-driven Active Learning.* IEEE Transactions on Knowledge and Data Engineering (**TKDE**), Vol. 32, No. 4, pages 631-644, 2020.
16. Zhou Yang, Heli Sun, Jianbin Huang, Zhongbin Sun, Hui Xiong, Shaojie Qiao, **Ziyu Guan**, Xiaolin Jia. *An Efficient Destination Prediction Approach Based on Future Trajectory Prediction and Transition Matrix Optimization.* IEEE Transactions on Knowledge and Data Engineering (**TKDE**), Vol. 32, No. 2, pages 203-217, 2020.
17. Jinye Peng, Peng Luo, **Ziyu Guan**, Jianping Fan. *Graph-regularized multi-view semantic subspace learning.* International Journal of Machine Learning and Cybernetics, Volume 10, Issue 5, pages 879-895, 2019.
18. Wei Zhao, Shulong Tan, **Ziyu Guan** (corresponding author), Boxuan Zhang, Maoguo Gong, Zhengwen Cao, Quan Wang. *Learning to map social network users by unified manifold alignment on hypergraph.* IEEE Transactions on Neural Networks and Learning Systems (**TNNLS**), Vol. 29, No. 12, pages 5834-5846, 2018.
19. Wei Zhao, **Ziyu Guan** (corresponding author), Long Chen, Xiaofei He, Deng Cai, Beidou Wang, Quan Wang. *Weakly-supervised Deep Embedding for Product Review Sentiment Analysis.* IEEE Transactions on Knowledge and Data Engineering (**TKDE**), Vol. 30, No. 1, pages 185-197, 2018.
20. Peng Luo, Jinye Peng, **Ziyu Guan**, Jianping Fan. *Dual regularized multi-view non-negative matrix factorization for clustering.* Neurocomputing, Vol. 294, pages 1-11, 2018.
21. Yu Zhu, **Ziyu Guan**, Shulong Tan, Haifeng Liu, Deng Cai, Xiaofei He. *Heterogeneous hypergraph embedding for document recommendation.* Neurocomputing, Vol. 216, pages 150-162, 2016.
22. Wei Zhao, **Ziyu Guan**, Zhengwen Cao, Zheng Liu. *Mining and Harvesting High Quality Topical Resources from the Web.* Chinese Journal of Electronics, Vol. 25, No. 1, pages 48-57, 2016.
23. Wei Zhao, Zheng Liu, **Ziyu Guan** (corresponding author), Binbin Lin, Deng Cai. *Orthogonal Projective Sparse Coding for Image Representation.* Neurocomputing, Vol. 173, pages 270-277, 2016.
24. **Ziyu Guan**, Lijun Zhang, Jinye Peng, Jianping Fan. *Multi-view Concept Learning for Data Representation.* IEEE Transactions on Knowledge and Data Engineering (**TKDE**), Vol. 27, No. 11, pages 3016-3028, 2015.
25. **Ziyu Guan**, Shengqi Yang, Huan Sun, Mudhakar Srivatsa, Xifeng Yan. *Fine-Grained Knowledge Sharing in Collaborative Environments.* IEEE Transactions on Knowledge and Data Engineering (**TKDE**), Vol. 27, No. 8, pages 2163-2174, 2015.
26. Wei Zhao, **Ziyu Guan** (corresponding author), Zheng Liu. *Ranking on heterogeneous manifolds for tag recommendation in social tagging services.* Neurocomputing, Vol. 148, pages 521-534, 2015.

27. Shulong Tan, Yang Li, Huan Sun, **Ziyu Guan** (corresponding author), Xifeng Yan, Jiajun Bu, Chun Chen, Xiaofei He. *Interpreting the public sentiment variations on twitter.* IEEE Transactions on Knowledge and Data Engineering (**TKDE**), Vol. 26, No. 5, pages 1158-1170, 2014
28. **Ziyu Guan**, Gengxin Miao, Russell McLoughlin, Xifeng Yan, Deng Cai. *Co-Occurrence Based Diffusion for Expert Search on the Web.* IEEE Transactions on Knowledge and Data Engineering (**TKDE**), Vol. 25, No. 5, pages 1001-1014, 2013
29. Jian Wu, **Ziyu Guan**, Qing Zhang, Ambuj Singh, Xifeng Yan. *Static and Dynamic Structural Correlations in Graphs.* IEEE Transactions on Knowledge and Data Engineering (**TKDE**), Vol. 25, No. 9, pages 2147-2160, 2013.
30. Longfei Zhang, **Ziyu Guan**, Alexander Hauptmann. *The co-attention model for tiny activity analysis.* Neurocomputing, Vol. 105, pages 51-60, 2013.
31. Can Wang, Xiaofei He, Jiajun Bu, Zhengguang Chen, Chun Chen, **Ziyu Guan**. *Image representation using Laplacian regularized nonnegative tensor factorization.* Pattern Recognition, Vol. 44, No. 10, pages 2516-2526, 2011.
32. **Ziyu Guan**, Can Wang, Zhengguang Chen, Jiajun Bu, Chun Chen. *Efficient Face Recognition Using Tensor Subspace Regression.* Neurocomputing, Vol. 73, No. 13, pages 2744-2753, 2010.
33. Can Wang, **Ziyu Guan**, Chun Chen, Jiajun Bu, Junfeng Wang and Huaizhong Lin. *On-line Topical Importance Estimation: An effective focused crawling algorithm combining link and content analysis.* Journal of Zhejiang University, Vol. 10, No. 8, pages 1114-1124, 2009.

Selected Conference Publications

1. Hang Yu, Yufei Xu, Jing Zhang, Wei Zhao, **Ziyu Guan**, Dacheng Tao. *AP-10K: A Benchmark for Animal Pose Estimation in the Wild.* 35th Conference on Neural Information Processing Systems (**NeurIPS**), 2021.
2. **Ziyu Guan**, Hongchang Wu, Qingyu Cao, Hao Liu, Wei Zhao, Sheng Li, Cai Xu, Guang Qiu, Jian Xu, Bo Zheng. *Multi-Agent Cooperative Bidding Games for Multi-Objective Optimization in e-Commercial Sponsored Search.* Proceedings of the 27th ACM SIGKDD conference on knowledge discovery and data mining (**SIGKDD**), 2021.
3. Ruijing Yang, **Ziyu Guan** (corresponding author), Zitong Yu, Xiaoyi Feng, Jinye Peng, Guoying Zhao. *Non-contact Pain Recognition from Video Sequences with Remote Physiological Measurements Prediction.* Proceedings of the 30th International Joint Conference on Artificial Intelligence (**IJCAI**), pages 1231-1237, 2021.
4. Shaobo Zhang, Wanqing Zhao, **Ziyu Guan**, Xianlin Peng, Jinye Peng. *Keypoint-graph-driven learning framework for object pose estimation.* Proceedings of the 2021 IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), pages 1065-1073, 2021.
5. Wanqing Zhao, Shaobo Zhang, **Ziyu Guan** (corresponding author), Wei Zhao, Jinye Peng, Jianping Fan. *Learning deep network for detecting 3D object keypoints and 6D poses.* Proceedings of the 2020 IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), pages 14134-14142, 2020.
6. Long Chen, **Ziyu Guan** (corresponding author), Qibin Xu, Qiong Zhang, Huan Sun, Guangyue Lu, Deng Cai. *Question-driven Purchasing Propensity Analysis for Recommendation.* Proceedings of the 34th AAAI Conference on Artificial Intelligence (**AAAI**), pages 35-42, 2020.
7. Yu Zhu, Yu Gong, Qingwen Liu, Yingcai Ma, Wenwu Ou, Junxiong Zhu, Beidou Wang, **Ziyu Guan**, Deng Cai. *Query-based Interactive Recommendation by Meta-Path and Adapted Attention-GRU.* Proceedings of the 28th ACM international conference on Information and knowledge management (**CIKM**), pages 2585-2593, 2019.
8. Cai Xu, **Ziyu Guan** (corresponding author), Wei Zhao, Hongchang Wu, Yunfei Niu, Beilei Ling. *Adversarial Incomplete Multi-view Clustering.* Proceedings of the 28th International Joint Conference on Artificial Intelligence (**IJCAI**), pages 3933-3939, 2019.

9. Wei Zhao, Boxuan Zhang, Beidou Wang, **Ziyu Guan** (corresponding author), Wanxian Guan, Guang Qiu, Wei Ning, Jiming Chen, Hongmin Liu. *Personalized Attraction Enhanced Sponsored Search with Multi-task Learning.* Proceedings of the 25th ACM SIGKDD conference on knowledge discovery and data mining (**SIGKDD**), pages 2632-2642, 2019.
10. Yu Gong, Yu Zhu, Lu Duan, Qingwen Liu, **Ziyu Guan** (corresponding author), Fei Sun, Wenwu Ou, Kenny Zhu. *Exact-K Recommendation via Maximal Clique Optimization.* Proceedings of the 25th ACM SIGKDD conference on knowledge discovery and data mining (**SIGKDD**), pages 617-626, 2019.
11. Jun Zhao, Zhou Zhou, **Ziyu Guan** (corresponding author), Wei Zhao, Ning Wei, Guang Qiu, Xiaofei He. *IntentGC: a Scalable Graph Convolution Framework Fusing Heterogeneous Information for Recommendation.* Proceedings of the 25th ACM SIGKDD conference on knowledge discovery and data mining (**SIGKDD**), pages 2347-2357, 2019.
12. Jie Zhao, **Ziyu Guan**, Huan Sun. *Riker: Mining Rich Keyword Representations for Interpretable Product Question Answering.* Proceedings of the 25th ACM SIGKDD conference on knowledge discovery and data mining (**SIGKDD**), pages 1389-1398, 2019.
13. Long Chen, **Ziyu Guan** (corresponding author), Wei Zhao, Wanqing Zhao, Xiaopeng Wang, Zhou Zhao, Huan Sun. *Answer Identification from Product Reviews for User Questions by Multi-task Attentive Networks.* Proceedings of the 33rd AAAI Conference on Artificial Intelligence (**AAAI**), 2019.
14. Beidou Wang, Xin Guo, Martin Ester, **Ziyu Guan**, Bandeep Singh, Yu Zhu, Jiajun Bu, Deng Cai. *Device-Aware Rule Recommendation for the Internet of Things.* Proceedings of the 27th ACM international conference on Information and knowledge management (**CIKM**), pages 2037-2045, 2018.
15. Jun Zhao, Guang Qiu, **Ziyu Guan**, Wei Zhao, Xiaofei He. *Deep reinforcement learning for sponsored search real-time bidding.* Proceedings of the 24th ACM SIGKDD conference on knowledge discovery and data mining (**SIGKDD**), pages 1021-1030, 2018.
16. Cai Xu, **Ziyu Guan** (corresponding author), Wei Zhao, Yunfei Niu, Quan Wang, Zhiheng Wang. *Deep Multi-View Concept Learning.* Proceedings of the 27th International Joint Conference on Artificial Intelligence (**IJCAI**), pages 2898-2904, 2018.
17. **Ziyu Guan**, Fei Xie, Wanqing Zhao, Xiaopeng Wang, Long Chen, Wei Zhao, Jinye Peng. *Tag-based Weakly-supervised Hashing for Image Retrieval.* Proceedings of the 27th International Joint Conference on Artificial Intelligence (**IJCAI**), pages 3776-3782, 2018.
18. Yu Zhu, Junxiong Zhu, Jie Hou, Yongliang Li, Beidou Wang, **Ziyu Guan**, Deng Cai. *A brand-level ranking system with the customized attention-GRU model.* Proceedings of the 27th International Joint Conference on Artificial Intelligence (**IJCAI**), pages 3947-3953, 2018.
19. Pengfei Xu, Lei Wang, **Ziyu Guan**, Xia Zheng, Xiaojiang Chen, Zhanyong Tang, Dingyi Fang, Xiaoqing Gong, Zheng Wang. *Evaluating brush movements for Chinese calligraphy: a computer vision based approach.* Proceedings of the 27th International Joint Conference on Artificial Intelligence (**IJCAI**), pages 1050-1056, 2018.
20. Xiaohan Zhao, Bo Zong, **Ziyu Guan**, Kai Zhang, Wei Zhao. *Substructure Assembling Network for Graph Classification.* Proceedings of the 32nd AAAI Conference on Artificial Intelligence (**AAAI**), pages 4514-4521, 2018.
21. Jie Zhao, Yu Su, **Ziyu Guan**, Huan Sun. *An End-to-End Deep Framework for Answer Triggering with a Novel Group-Level Objective.* Proceedings of the 2017 Conference on Empirical Methods in Natural Language Processing, 2017.
22. Yu Zhu, Hao Li, Yikang Liao, Beidou Wang, **Ziyu Guan**, Haifeng Liu, Deng Cai. *What to Do Next: Modeling User Behaviors by Time-LSTM.* Proceedings of the 26th International Joint Conference on Artificial Intelligence (**IJCAI**), 2017.

23. Wanqing Zhao, **Ziyu Guan**, Hangzai Luo, Jinye Peng, Jianping Fan. *Deep Multiple Instance Hashing for Object-based Image Retrieval.* Proceedings of the 26th International Joint Conference on Artificial Intelligence (**IJCAI**), 2017.
24. Beidou Wang, Martin Ester, Yikang Liao, Jiajun Bu, Yu Zhu, **Ziyu Guan**, Deng Cai. *The Million Domain Challenge: Broadcast Email Prioritization by Cross-domain Recommendation.* Proceedings of the 22nd ACM SIGKDD conference on knowledge discovery and data mining (**SIGKDD**), pages 1895-1904, 2016.
25. **Ziyu Guan**, Long Chen, Wei Zhao, Yi Zheng, Shulong Tan, Deng Cai. *Weakly-supervised Deep Learning for Customer Review Sentiment Classification.* Proceedings of the 25th International Joint Conference on Artificial Intelligence (**IJCAI**), pages 3719-3725, 2016.
26. Beidou Wang, Martin Ester, Jiajun Bu, Yu Zhu, **Ziyu Guan**, Deng Cai. *Which to View: Personalized Prioritization for Broadcast Emails.* Proceedings of the 25th international conference on World wide web (**WWW**), pages 1181-1190, 2016.
27. Shulong Tan, **Ziyu Guan**, Deng Cai, Xuzhen Qin, Jiajun Bu, Chun Chen. *Mapping Users across Networks by Manifold Alignment on Hypergraph.* Proceedings of the Twenty-Eighth AAAI Conference on Artificial Intelligence (**AAAI**), pages 159-165, 2014.
28. Nan Li, **Ziyu Guan**, Lijie Ren, Jian Wu, Jiawei Han, Xifeng Yan. *gIceberg: Towards Iceberg Analysis in Large Graphs.* Proceedings of the 29th IEEE International Conference on Data Engineering (**ICDE**), pages 1021-1032, 2013.
29. Gengxin Miao, **Ziyu Guan**, Louise Moser, Xifeng Yan, Shu Tao, Nikos Anerousis. *Latent Association Analysis of Document Pairs.* Proceedings of the 18th ACM SIGKDD conference on knowledge discovery and data mining (**SIGKDD**), pages 1415-1423, 2012.
30. **Ziyu Guan**, Xifeng Yan, Lance M. Kaplan. *Measuring Two-Event Structural Correlations on Graphs.* Proceedings of the 38th international conference on very large databases (**VLDB**), pages 1400-1411, 2012.
31. Jiejun Xu, Vishwakarma Singh, **Ziyu Guan**, B.S. Manjunath. *Unified hypergraph for image ranking in a multimodal context.* Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), pages 2333-2336, 2012.
32. **Ziyu Guan**, Jian Wu, Qing Zhang, Ambuj Singh, Xifeng Yan. *Assessing and Ranking Structural Correlations in Graphs.* Proceedings of the 2011 international conference on management of data (**SIGMOD**), pages 937-948, 2011.
33. Arijit Khan, Nan Li, Xifeng Yan, **Ziyu Guan**, Supriyo Chakraborty, Shu Tao. *Neighbor-hood Based Fast Graph Search in Large Networks.* Proceedings of the 2011 international conference on management of data (**SIGMOD**), pages 901-912, 2011.
34. **Ziyu Guan**, Can Wang, Kun Yang, Jiajun Bu, Chun Chen, Deng Cai. *Document Recommendation in Social Tagging Services.* Proceedings of the 19th international conference on World wide web (**WWW**), pages 391-400, 2010.
35. Jun Zhao, Jiajun Bu, Chun Chen, **Ziyu Guan**, Can Wang, Cheng Zhang. *Learning a user-thread alignment manifold for thread recommendation in online forum.* Proceedings of the 19th ACM international conference on Information and knowledge management (**CIKM**), pages 559-568, 2010.
36. **Ziyu Guan**, Jiajun Bu, Qiaozhu Mei, Chun Chen and Can Wang. *Personalized Tag Recommendation Using Graph-based Ranking on Multi-type Interrelated Objects.* Proceedings of the 32nd annual international ACM SIGIR conference (**SIGIR**), pages 540-547, 2009.
37. Junfeng Wang, Chun Chen, Can Wang, Jian Pei, Jiajun Bu, **Ziyu Guan**, Wei Vivian Zhang. *Can We Learn a Template-Independent Wrapper for News Article Extraction from a Single Training Site*? Proceedings of the 15th ACM SIGKDD conference on knowledge discovery and data mining (**SIGKDD**), pages 1345-1354, 2009.

38. Can Wang, Junfeng Wang, Chun Chen, Li Lin, **Ziyu Guan**, Junyan Zhu, Cheng Zhang, Jiajun Bu. *Learning to Extract Web News Title in Template Independent Way.* Proceedings of the 4th International Conference on Rough Sets and Knowledge Technology (RSKT), pages 192-199, 2009.
39. Junfeng Wang, Xiaofei He, Can Wang, Jian Pei, Jiajun Bu, Chun Chen, **Ziyu Guan**, Lu Gang. *News Article Extraction with Template-Independent Wrapper.* Proceedings of the 18th international conference on World Wide Web (**WWW**), pages 1085-1086, 2009.
40. **Ziyu Guan**, Can Wang, Chun Chen, Jiajun Bu and Junfeng Wang. *Guide Focused Crawler Efficiently and Effectively Using On-line Topical Importance Estimation.* Proceedings of the 31st annual international ACM SIGIR conference (**SIGIR**), pages 757-758, 2008.

Grants

- Key Program of Natural Science Foundation of China, 2020-2024, 3,010,000 rmb, PI
- The Key Research and Development Program of Shaanxi, 2020-2022, 800,000 rmb, PI
- General Program of Natural Science Foundation of China, 2019-2022, 620,000 rmb, PI
- Program of National Excellent Youth Science Foundation of China, 2016-2018, 1,500,000 rmb, PI
- General Program of Natural Science Foundation of China, 2014-2017, 790,000 rmb, PI

Professional Activities

Journal Associate Editor:

- IEEE Transactions on Knowledge and Data Engineering 2020-
- Knowledge and Information Systems 2020-
- Neurocomputing 2015-
- International Journal of Machine Learning and Cybernetics 2015-

Conference Senior Program Committee Member:

- 2021 International Conference on Information and Knowledge Management (CIKM)
- 2021 International Joint Conferences on Artificial Intelligence (IJCAI)
- 2020 International Joint Conferences on Artificial Intelligence (IJCAI)
- 2019 International Joint Conferences on Artificial Intelligence (IJCAI)
- 2018 International Joint Conferences on Artificial Intelligence (IJCAI)
- 2017 International Joint Conferences on Artificial Intelligence (IJCAI)

Conference Program Committee Member:

- 2022 the 21st ACM SIGKDD conference on knowledge discovery and data mining (SIGKDD)
- 2022 International Joint Conferences on Artificial Intelligence (IJCAI)
- 2022 the Conference on Uncertainty in Artificial Intelligence (UAI)
- 2022 the International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR)
- 2022 SIAM International Conference on Data Mining (SDM)
- 2022 the International Conference on Learning Representations (ICLR)
- 2021 the Annual Conference on Neural Information Processing Systems (NeurIPS)
- 2021 International Conference on Multimedia Modeling (MMM)
- 2021 the Conference on Uncertainty in Artificial Intelligence (UAI)
- 2021 the 21st ACM SIGKDD conference on knowledge discovery and data mining (SIGKDD)
- 2021 the International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR)

- 2021 AAAI Conference on Artificial Intelligence (AAAI)
- 2021 the International Conference on Learning Representations (ICLR)
- 2021 the ACM International Web Search and Data Mining conference (WSDM)
- 2021 SIAM International Conference on Data Mining (SDM)
- 2020 the Annual Conference on Neural Information Processing Systems (NeurIPS)
- 2020 the International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR)
- 2020 AAAI Conference on Artificial Intelligence (AAAI)
- 2020 SIAM International Conference on Data Mining (SDM)
- 2020 the Conference on Information and Knowledge Management (CIKM)
- 2019 the Annual Conference on Neural Information Processing Systems (NeurIPS)
- 2019 AAAI Conference on Artificial Intelligence (AAAI)
- 2019 SIAM International Conference on Data Mining (SDM)
- 2019 the International Conference on Machine Learning (ICML)
- 2018 the Annual Conference on Neural Information Processing Systems (NIPS)
- 2018 AAAI Conference on Artificial Intelligence (AAAI)
- 2018 the International Conference on Machine Learning (ICML)
- 2018 the Conference on Information and Knowledge Management (CIKM)
- 2018 International Conference on MultiMedia Modeling (MMM)
- 2017 the Annual Conference on Neural Information Processing Systems (NIPS)
- 2017 the ACM International Conference on Information and Knowledge Management (CIKM)
- 2017 International Conference on Behavioral, Economic, and Socio-cultural Computing (BESC)
- 2017 AAAI Conference on Artificial Intelligence (AAAI)
- 2017 SIAM International Conference on Data Mining (SDM)
- 2017 the Thirtieth Annual Conference on Neural Information Processing Systems (NIPS)
- 2017 International Conference on MultiMedia Modeling (MMM)
- 2016 the Thirtieth Annual Conference on Neural Information Processing Systems (NIPS)
- 2016 SIAM international conference on data mining (SDM)
- 2015 the 21st ACM SIGKDD conference on knowledge discovery and data mining (SIGKDD)
- 2015 international joint conferences on artificial intelligence (IJCAI)
- 2015 SIAM international conference on data mining (SDM)
- 2014 international conference on behavioral, economic, and socio-cultural computing (BESC)
- 2014 SIAM international conference on data mining (SDM)
- 2012 the 4th asian conference on machine learning (ACML)

Conference Organizing Chair:

- 2016 Pacific Rim Conference on Multimedia (PCM)

Conference External Reviewer:

- 2012 the 18th ACM SIGKDD conference on knowledge discovery and data mining (SIGKDD)
- 2012 the 21st international conference on World Wide Web (WWW)
- 2011 the 20th ACM international conference on information and knowledge management (CIKM)
- 2011 international conference on management of data (SIGMOD)
- 2011 the 11th SIAM international conference on data mining (SDM)
- 2011 IEEE international conference on data mining (ICDM)

Journal Reviewer:

- IEEE Transactions on Cybernetics (TCyb)
- IEEE Transactions on Neural Networks and Learning Systems (TNNLS)
- IEEE Transactions on Knowledge and Data Engineering (TKDE)
- ACM Transactions on Knowledge Discovery from Data (TKDD)
- Information Sciences
- Signal Processing
- Information Systems
- Neurocomputing