Xiao HUANG

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APPOINTMENTS:

- Assistant Professor, The Hong Kong Polytechnic University   July 2020 - present
  Department of Computing
- Research intern at Microsoft Research Lab - Redmond   May 2019 - Aug 2019
- Research intern at Baidu USA   May 2018 - Aug 2018

ACADEMIC QUALIFICATIONS:

- Texas A&M University   Ph.D., Computer Engineering   Aug 2015 - May 2020
- Illinois Institute of Technology   M.S. with Thesis, EE   Aug 2013 - July 2015
- Shanghai Jiao Tong University   B.S. in Engineering   Sept 2008 - June 2012

RESEARCH INTERESTS:

Large language models, knowledge graphs, graph neural networks, attributed graphs, network anomaly detection, question answering

PUBLICATION RECORDS:

SUMMARY	**71** publications (**48** conference papers, **17** journal papers, **6** arXiv preprint), **3000+** citations, h-index **25**, i10-index **36**

REWARDS
[C9]: Best Paper Award Honorable Mention at SIGIR 2023
[C16]: International Conference On Web-Based Learning (ICWL) 2022 Best Paper
[J15]: 2019 INFORMS QSR Best Student Paper Finalist
[C39]: 2019 INFORMS QSR Best Refereed Paper Finalist
[C45]: Doctoral Forum Best Poster Runner-Up Award in SDM 2017

AREAS
- Learning representations for networked data:
  - graph neural networks (cross-correlation GNNs [C15][J8], over-smoothing [C33][C27])
  - attributed networks [C45][C44][C40][J15][C38][C36][J8]
  - large-scale networks [C7]
  - user-item interactions [C31][C6][C8]
  - applications (network anomaly detection [C47][C39][C29][C26][C25][J9], traffic forecasting [J4], protein function prediction [A6])
- Knowledge graphs (KGs):
  - Question answering over KGs [C37][C10]
  - KG completion [C28][C3]
  - KG error detection [C19][C14], error-aware KG learning [C28][J3]
  - KG for education [C22][C16][J7]
- Recommender systems:
  - cold start [C24][C9]
  - debiasing [C8]
  - click-through rate prediction [C20][C6]
  - session-based recommendation [C31][C13]
  - sequential recommendation [C32]

REFEREED CONFERENCE PUBLICATIONS

[C1] Hao Chen, Yuanchen Bei, Qijie Shen, Yue Xu, Sheng Zhou, Wenbing Huang, Feiran Huang, Senzhang Wang, **Xiao Huang**, Online Billion-Scale Recommender Systems with Macro Graph Neural Networks, TheWebConf, 2024.

[C2] Xuansheng Wu, Huachi Zhou, Yucheng Shi, Wenlin Yao, **Xiao Huang**, Ninghao Liu, Could Small Language Models Serve as Recommenders? Towards Data-centric Cold-start Recommendation, TheWebConf, 2024.

[C3] Shengyuan Chen, Yunfeng Cai, Huang Fang, **Xiao Huang**, Mingming Sun, Differentiable Neuro-Symbolic Reasoning on Large-Scale Knowledge Graphs, *NeurIPS*, 2023.

[C4] Qiaoyu Tan, Xin Zhang, Jiahe Du, **Xiao Huang**, Graph Neural Networks with Non-Recursive Message Passing, *ICDMW*, 2023.

[C5] Junnan Dong, Wentao Li, Yaowei Wang, Qing Li, George Baciu, Jiannong Cao, **Xiao Huang**, Richard Chen Li, Peter H. F. Ng, Gradual Study Advising with Course Knowledge Graphs, *ICWL*, 2023.

[C6] Yuanchen Bei, Hao Chen, Shengyuan Chen, **Xiao Huang**, Sheng Zhou, Feiran Huang, Non-Recursive Cluster-Scale Graph Interacted Model for Click-Through Rate Prediction, *CIKM*, 2023.

[C7] Zirui Liu, Shengyuan Chen, Kaixiong Zhou, Daochen Zha, **Xiao Huang**, Xia Hu, RSC: Accelerating Graph Neural Networks Training via Randomized Sparse Computation, *ICML*, 2023.

[C8] Huachi Zhou, Hao Chen, Junnan Dong, Daochen Zha, Chuang Zhou, **Xiao Huang**, Adaptive Popularity Debiasing Aggregator for Graph Collaborative Filtering, *SIGIR*, 2023.

[C9] Feiran Huang, Zefan Wang, **Xiao Huang**, Yufeng Qian, Zhetao Li, Hao Chen, Aligning Distillation For Cold-start Item Recommendation, *SIGIR*, 2023.

[C10] Junnan Dong, Qinggang Zhang, **Xiao Huang**, Keyu Duan, Qiaoyu Tan, Zhimeng Jiang, Hierarchy-Aware Multi-Hop Question Answering over Knowledge Graphs, *TheWebConf*, 2023.

[C11] Yezi Liu, Qinggang Zhang, Mengnan Du, **Xiao Huang**, Xia Hu, Error Detection on Knowledge Graphs with Triple Embedding, *EUSIPCO*, 2023.

[C12] Rui Chen, Guotao Liang, Chenrui Ma, Qilong Han, Li Li, **Xiao Huang**, HTP: Exploiting Holistic Temporal Patterns for Sequential Recommendation, *IJCNN*, 2023.

[C13] Huachi Zhou, Shuang Zhou, Keyu Duan, **Xiao Huang**, Qiaoyu Tan, Zailiang Yu, Interest Driven Graph Structure Learning for Session-Based Recommendation, *PAKDD*, 2023.

[C14] Junnan Dong, Qinggang Zhang, **Xiao Huang**, Qiaoyu Tan, Daochen Zha, Zihao Zhao, Active Ensemble Learning for Knowledge Graph Error Detection, *WSDM*, 2023.

[C15] Qiaoyu Tan, Ninghao Liu, **Xiao Huang**, Soo-Hyun Choi, Li Li, Rui Chen, Xia Hu, S2GAE: Self-Supervised Graph Autoencoders Are Generalizable Learners with Graph Masking, *WSDM*, 2023.

[C16] Jerry Cheuk Kin Chan, Yaowei Wang, Qing Li, George Baciu, Jiannong Cao, **Xiao Huang**, Richard Chen Li, Peter H. F. Ng, Intelligent Instructional Design via Interactive Knowledge Graph Editing, *ICWL*, 2022.

[C17] Wentao Li, Huachi Zhou, Junnan Dong, Qinggang Zhang, Qing Li, George Baciu, Jiannong Cao, **Xiao Huang**, Constructing Low-Redundant and High-Accuracy Knowledge Graphs for Education, *ICWL*, 2022.

[C18] Zackary P. T. Sin, Isaac Dan Zhao, Astin C. H. Wu, Richard Chen Li, Peter H. F. Ng, **Xiao Huang**, George Baciu, Jiannong Cao, Qing Li, Towards a Metaverse of Knowledge: A Constructivist Proposition on Immersive Learning and Visual Literacy, *ICWL*, 2022.

[C19] Qinggang Zhang, Junnan Dong, Keyu Duan, **Xiao Huang**, Yezi Liu, Linchuan Xu, Contrastive Knowledge Graph Error Detection, *CIKM*, 2022.

[C20] Huachi Zhou, Jiaqi Fan, **Xiao Huang**, Ka Ho Li, Zhenyu Tang, Dahai Yu, Multi-Interest Refinement by Collaborative Attributes Modeling for Click-Through Rate Prediction, *CIKM*, 2022.

[C21] Kaixiong Zhou, Zhenyu Zhang, Shengyuan Chen, Tianlong Chen, **Xiao Huang**, Zhangyang Wang, Xia Hu, QuanGCN: Noise-Adaptive Training for Robust Quantum Graph Convolutional Networks, *QTML*, 2022.

[C22] Qing Li, George Baciu, Jiannong Cao, **Xiao Huang**, Richard Chen Li, Peter HF Ng, Junnan Dong, Qinggang Zhang, Zackary Sin, Yaowei Wang, KCUBE: A Knowledge Graph University Curriculum Framework for Student Advising and Career Planning, *International Conference on Blended Learning*, 2022.

[C23] Song Wang, Yushun Dong, **Xiao Huang**, Chen Chen, Jundong Li, FAITH: Few-Shot Graph Classification with Hierarchical Task Graphs, *IJCAI*, 2022.

[C24] Hao Chen, Zefan Wang, Feiran Huang, **Xiao Huang**, Yue Xu, Yishi Lin, Peng He, Zhoujun Li, Generative Adversarial Framework for Cold-Start Item Recommendation, *SIGIR*, 2022.

[C25] Zhiming Xu, **Xiao Huang**, Yue Zhao, Yushun Dong, Jundong Li, Contrastive Attributed Network Anomaly Detection with Data Augmentation, *PAKDD*, 2022.

[C26] Shuang Zhou, **Xiao Huang**, Ninghao Liu, Qiaoyu Tan, Fu-Lai Chung, Unseen Anomaly Detection on Networks via Multi-Hpersphere Learning, *SDM*, 2022.

[C27] Kaixiong Zhou, **Xiao Huang**, Daochen Zha, Rui Chen, Li Li, Soo-Hyun Choi, Xia Hu, Dirichlet Energy Constrained Learning for Deep Graph Neural Networks, *NeurIPS*, 2021.

[C28] Song Wang, **Xiao Huang**, Chen Chen, Liang Wu, Jundong Li, REFORM: Error-Aware Few-Shot Knowledge Graph Completion, *CIKM*, 2021.

[C29] Shuang Zhou, Qiaoyu Tan, Zhiming Xu, **Xiao Huang**, Fu-Lai Chung, Subtractive Aggregation for Attributed Network Anomaly Detection, *CIKM*, 2021.

[C30] Ji Gao, **Xiao Huang**, Jundong Li, Unsupervised Graph Alignment with Wasserstein Distance Discriminator, *KDD*, 2021.

[C31] Huachi Zhou, Qiaoyu Tan, **Xiao Huang**, Kaixiong Zhou, Xiaoling Wang, Temporal Augmented Graph Neural Networks for Session-Based Recommendations, *SIGIR*, 2021.

[C32] Qiaoyu Tan, Jianwei Zhang, Ninghao Liu, **Xiao Huang**, Hongxia Yang, Jingren Zhou, Xia Hu, Dynamic Memory based Attention Network for Sequential Recommendation, *AAAI*, 2021.

[C33] Kaixiong Zhou, **Xiao Huang**, Yuening Li, Daochen Zha, Rui Chen, Xia Hu, Towards Deeper Graph Neural Networks with Differentiable Group Normalization, *NeurIPS*, 2020.

[C34] Yan Zhong, **Xiao Huang**, Jundong Li, Xia Hu, Scalable Social Tie Strength Measuring, *ASONAM*, 2020.

[C35] Kaixiong Zhou, Qingquan Song, **Xiao Huang**, Daochen Zha, Na Zou, Xia Hu, Multi-Channel Graph Neural Networks, *IJCAI*, pages 1352–1358, 2020.

[C36] **Xiao Huang**, Qingquan Song, Yuening Li, Xia Hu, Graph Recurrent Networks with Attributed Random Walks, *KDD*, pages 732–740, 2019.

[C37] **Xiao Huang**, Jingyuan Zhang, Dingcheng Li, Ping Li, Knowledge Graph Embedding Based Question Answering, *WSDM*, pages 105–113, 2019.

[C38] **Xiao Huang**, Qingquan Song, Fan Yang, Xia Hu, Large-Scale Heterogeneous Feature Embedding, *AAAI*, volume 33, 2019.

[C39] Yuening Li, **Xiao Huang**, Jundong Li, Mengnan Du, Na Zou, SpecAE: Spectral Autoencoder for Anomaly Detection in Attributed Networks, *CIKM*, 2019.

[C40] **Xiao Huang**, Qingquan Song, Jundong Li, Xia Hu, Exploring Expert Cognition for Attributed Network Embedding, *WSDM*, pages 270–278, 2018.

[C41] Ninghao Liu, **Xiao Huang**, Jundong Li, Xia Hu, On Interpretation of Network Embedding via Taxonomy Induction, *KDD*, pages 1812–1820, 2018.

[C42] Zepeng Huo, **Xiao Huang**, Xia Hu, Link Prediction with Personalized Social Influence, *AAAI*, 2018.

[C43] Qingquan Song, Haifeng Jin, **Xiao Huang**, Xia Hu, Multi-Label Adversarial Perturbations, *ICDM*, 2018.

[C44] **Xiao Huang**, Jundong Li, Xia Hu, Label Informed Attributed Network Embedding, *WSDM*, pages 731–739, 2017.

[C45] **Xiao Huang**, Jundong Li, Xia Hu, Accelerated Attributed Network Embedding, *SDM*, pages 633–641, 2017.

[C46] Qingquan Song, **Xiao Huang**, Hancheng Ge, James Caverlee, Xia Hu, Multi-Aspect Streaming Tensor Completion, *KDD*, pages 435–443, 2017.

[C47] Ninghao Liu, **Xiao Huang**, Xia Hu, Accelerated Local Anomaly Detection via Resolving Attributed Networks, *IJCAI*, pages 2337–2343, 2017.

[C48] **Xiao Huang**, Salim El Rouayheb, Index Coding and Network Coding via Rank Minimization, *IEEE Information Theory Workshop*, pages 14–18, 2015.

REFEREED JOURNAL PUBLICATIONS

[J1] Beiyu Song, Huachi Zhou, **Xiao Huang**, Wei Ma, Collaborative Parking Vacancy Prediction for Cities With Partial Sensors Missing, *IEEE Transactions on Intelligent Transportation Systems*, 2024.

[J2] Xin Zhang, Qiaoyu Tan, **Xiao Huang**, Bo Li, Graph Contrastive Learning with Personalized Augmentation, *IEEE Transactions on Knowledge and Data Engineering*, 2024.

[J3] Song Wang, Yushun Dong, **Xiao Huang**, Chen Chen, Jundong Li, Learning Hierarchical Task Structures for Few-shot Graph Classification, *ACM Transactions on Knowledge Discovery from Data*, 2024.

[J4] Qinggang Zhang, Junnan Dong, Qiaoyu Tan, **Xiao Huang**, Integrating Entity Attributes for Error-Aware Knowledge Graph Embedding, *IEEE Transactions on Knowledge and Data Engineering*, 2023.

[J5] Hanyu Sun, **Xiao Huang**, Wei Ma, Beyond Prediction: On-street Parking Recommendation using Heterogeneous Graph-based List-wise Ranking, IEEE Transactions on Intelligent Transportation Systems, 2023.

[J6] Liqiao Xia, Zheng Pai, Jinjie Li, **Xiao Huang**, Robert Gao, Histogram-Based Gradient Boosting Tree: A Federated Learning Approach for Collaborative Fault Diagnosis, *IEEE/ASME Transactions on Mechatronics*, 2023.

[J7] Zeping Feng, Newman Lau, Mengxiao Zhu, Mengru Liu, Rehe Refati, **Xiao Huang**, Kun-pyo Lee, Behavioural design of gamification elements and exploration of player types in youth basketball training, *Smart Learning Environments*, 2023.

[J8] Zackary P. T. Sin, Ye Jia, Astin C. H. Wu, Isaac Dan Zhao, Richard Chen Li, Peter H. F. Ng, **Xiao Huang**, George Baciu, Jiannong Cao, Qing Li, Towards an Edu-Metaverse of Knowledge: Immersive Exploration of University Courses, *IEEE Transactions on Learning Technologies*, 2023.

[J9] Qiaoyu Tan, Xin Zhang, **Xiao Huang**, Hao Chen, Jundong Li, Xia Hu, Collaborative Graph Neural Networks for Attributed Network Embedding, *IEEE Transactions on Knowledge and Data Engineering*, 2023.

[J10] Shuang Zhou, **Xiao Huang**, Ninghao Liu, Huachi Zhou, Fu-Lai Chung, Long-Kai Huang, Improving Generalizability of Graph Anomaly Detection Models via Data Augmentation, *IEEE Transactions on Knowledge and Data Engineering*, 2023.

[J11] Cheng Peng, Hao Jiang, Junnan Dong, **Xiao Huang**, College-Related Question Answering based on Knowledge Graph, *IEEE Data Engineering Bulletin*, pages 60–71, 2022.

[J12] Liqiao Xia, Yongshi Liang, Pai Zheng, **Xiao Huang**, Residual-Hypergraph Convolution Network: A Model-Based and Data-Driven Integrated Approach for Fault Diagnosis in Complex Equipment, *IEEE Transactions on Instrumentation and Measurement*, 2022.

[J13] Kaixiong Zhou, **Xiao Huang**, Qingquan Song, Rui Chen, Xia Hu, Auto-GNN: Neural Architecture Search of Graph Neural Networks, *Frontiers in Big Data*, 2022.

[J14] Zhihao Guo, Shengyuan Chen, **Xiao Huang**, Zhiqiang Qian, Chunsing Yu, Yan Xu, Fang Ding, Fair Benchmark for Unsupervised Node Representation Learning, *Algorithms*, volume 15, issue 10, 2022.

[J15] Liqiao Xia, Pai Zheng, **Xiao Huang**, Chao Liu, A novel hypergraph convolution network-based approach for predicting the material removal rate in chemical mechanical planarization, *Journal of Intelligent Manufacturing*, 2021.

[J16] **Xiao Huang**, Jundong Li, Na Zou, Xia Hu, A General Embedding Framework for Heterogeneous Information Learning in Large-Scale Networks, *ACM Transactions on Knowledge Discovery from Data*, volume 12, issue 6, 2018.

[J17] Na Zou, **Xiao Huang**, Empirical Bayes Transfer Learning for Uncertainty Characterization in Predicting Parkinson's Disease Severity, *IISE Transactions on Healthcare Systems Engineering*, volume 8, issue 3, 2018.

ARXIV PREPRINT

[A1] Junnan Dong, Qinggang Zhang, Huachi Zhou, Daochen Zha, Pai Zheng, **Xiao Huang**, Modality-Aware Integration with Large Language Models for Knowledge-based Visual Question Answering, arXiv preprint arXiv:2402.12728, 2024.

[A2] Qinggang Zhang, Junnan Dong, Hao Chen, Wentao Li, Feiran Huang, **Xiao Huang**, Structure Guided Large Language Model for SQL Generation, arXiv preprint arXiv:2402.13284, 2024.

[A3] Zijin Hong, Zheng Yuan, Hao Chen, Qinggang Zhang, Feiran Huang, **Xiao Huang**, Knowledge-to-SQL: Enhancing SQL Generation with Data Expert LLM, arXiv preprint arXiv:2402.11517, 2024.

[A4] Qinggang Zhang, Junnan Dong, Hao Chen, Daochen Zha, Zailiang Yu, **Xiao Huang**, KnowGPT: knowledge injection for large language models, arXiv preprint arXiv:2312.06185, 2024.

[A5] Yijie Zhang, Yuanchen Bei, Hao Chen, Qijie Shen, Zheng Yuan, Huan Gong, Senzhang Wang, Feiran Huang, **Xiao Huang**, Multi-Behavior Collaborative Filtering with Partial Order Graph Convolutional Networks, arXiv preprint arXiv:2402.07659, 2024.

[A6] Cameron Diao, Kaixiong Zhou, **Xiao Huang**, Xia Hu, Molcpt: Molecule continuous prompt tuning to generalize molecular representation learning, arXiv preprint arXiv:2212.10614, 2022.

PROFESSIONAL SERVICE:

- PC member: ICLR 2022-2024, IJCAI 2020-2024, NeurIPS 2021-2023, AAAI 2021-2023, KDD 2019-2023, TheWebConf 2022-2023, ICML 2021-2023, CIKM 2019-2022, WSDM 2021-2023, SDM 2022, ICKG 2020-2021
- Topical Advisory Panel and Guest editor: Algorithms - MDPI
- Editorial Board member: Computers & Education: X Reality
- Reviewer: IEEE TKDE, ACM TKDD, ACM Computing Surveys, ACM TOIS, IEEE Transactions on Cybernetics, IEEE Transactions on Big Data, IEEE TCSS, ACM TIST, International Journal of Machine Learning and Cybernetics - Springer

RESEARCH PROJECTS:

- Error-Aware and Contrastive Knowledge Graph Learning, *Early Career Scheme (UGC)*, PI
- Design and formulation of behavioural user profile of teenage sports player with AI model and analysis methods from basketball training, *SD/COMP Joint Research Scheme*, co-PI
- Cognition-aware 3D Content Design for User-centered Metaverses, *SD/COMP Joint Research Scheme*, Co-I
- Image-based Unsupervised 3D Scene Understanding and Editing, *NSFC General Program*, Co-I
- Development of an Augmented Reality-Assisted Head-up Display (AR-HUD) mechanism for recommending driving strategy, *Smart Traffic Fund*, Co-I
- Human-Centric Attributed Network Learning, *Start-up*, PI
- Integrating Contrastive Error Detection and Accelerated Completion for Large-Scale Knowledge Graph Refinement, *Departmental General Research Fund*, PI
- Development and Deployment of an AI-enabled Parking Vacancy Prediction Framework using Multi-source Data, *Smart Traffic Fund*, Co-I

ADVISEES:

- Ph.D. Students
  - *Shengyuan CHEN, Fall 2019 -*
  - *Qinggang ZHANG, Fall 2021 -*
  - *Junnan DONG, Summer 2022 -*
  - *Huachi ZHOU, Fall 2022 -*
  - *Chuang ZHOU, Fall 2022 -*
  - *Jiahe DU, Fall 2022 -*
  - *Chang YANG, Summer 2023 -*
  - *Yuxuan XIE, Summer 2023 -*
  - *Zheng YUAN, Fall 2023 -*
  - *Zhu WANG, Fall 2023 -*
  - *Yilin XIAO, Fall 2024 -*
  - *Yujing ZHANG, Fall 2024 -*
  - *Su DONG, Fall 2024 -*

- Postdoctoral Fellow
  - *Hao CHEN, March 2023 -*

- Ph.D.

- *Shuang ZHOU, Fall 2020 - Spring 2024 co-advised with Dr. Fu-Lai Chung*
- *Liqiao XIA, Fall 2020 - Spring 2024 co-advised with Dr. Pai Zheng*

- M.S. Students (with Thesis)
  - *Tongzhou ZHOU, graduated in 2023*
  - *Wanying WANG, graduated in 2023*
  - *Wanqi ZHUANG, graduated in 2023*
  - *Jiahuan WANG, graduated in 2023*
  - *Chongyuan SUN, graduated in 2023*
  - *Jingwen WU, graduated in 2023*
  - *Yanjing ZHOU, graduated in 2023*
  - *Yong SHEN, graduated in 2023*
  - *Wentao LI, graduated in 2023*
  - *Maiqi JIANG, graduated in 2023*
  - *Xin ZHANG, graduated in 2022*
  - *Tiange XIANG, graduated in 2022*
  - *Zihao ZHAO, graduated in 2021*
  - *Zhihao GUO, graduated in 2021*