

# Qi Song

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## Work Experience

- 2022.11-now **(Pre-tenure) Professor**, *University of Science and Technology of China*, Hefei, China.  
2022.01-2022.10 **Associate Professor**, *University of Science and Technology of China*, Hefei, China.  
2020.04-2022.01 **Applied Scientist**, *Amazon.com*, Seattle.

## Education

- 2015.05-2020.04 **Phd**, *School of Electrical Engineering and Computer Science, Washington State University*, Major: Computer science, Mentor: Prof. Yinghui Wu.  
2012.09-2015.02 **Master**, *School of Computer Science and Engineering, Beihang University*, Major: Computer science, Mentor: Prof. Jinpeng Huai.  
2008.09-2012.07 **Bachelor**, *School of Computer Science and Engineering, Beihang University*, Major: Computer science.

## Research Interests

- Knowledge construction, knowledge enhanced LLM/time-series models/multimodal models.
- Deep learning (e.g., deep neural network models like CNN and RNN) for graph analysis (e.g., ranking, anomaly detection).
- (Distributed) graph data mining, (temporal) graph query models and languages.

## Research Experience

- 2015 - 2020 Research Assistant, Washington State University, Supervisor: Prof. Yinghui Wu.  
**Research topic: Towards User-friendly Graph Exploration.**
- 2019 summer Applied scientist intern, Amazon.com  
**Research topic: Time fixed effects for long-running experiments.**
- 2018 summer Intern research assistant, JD AI Research, Silicon Valley, Mentor: Dr. Wei Li, Jin Guo and (Martin) Congmin Min.  
**Research topic: user prompt generation for online e-commerce dialogue system.**
- 2017 summer Intern research assistant, NEC labs America, Mentor: Dr. Bo Zong.  
**Research topic: unsupervised anomaly detection model for network attack detection.**
- 2016 summer Intern research assistant, NEC labs America, Mentor: Dr. Bo Zong.  
**Research topic: temporal graph ranking for system log analysis.**

## Publications

- (41) 2026 Xinyu Wang, Shenyao Jiang, Hao Zhou, Tianjian Yang, Bo Qian, Ying Liu, Qi Song, Yusheng Ji, "*Chunip: Charging-Uninterrupted In-Band Parallel Communication for Magnetic MIMO Wireless Power Transfer System.*", IEEE International Conference on Computer Communications (**INFOCOM**), 2026.
- (40) 2026 Zhenhe Li, Can Lin, Ling Zheng, Wen-Da Wei, Junli Liang, Qi Song, "*GraphIF: Enhancing Multi-Turn Instruction Following for Large Language Models with Relation Graph Prompt.*", The 40th Annual AAAI Conference on Artificial Intelligence (**AAAI**), 2026.
- (39) 2025 Xiang-Yang Li, Yihang Wang, Junli Liang, Xinyu Wang, Pengfei Zhou, Qi Zhao, Yuhang Zhang, Qi Song, "*Knowledge-enhanced AI models for domain-specific application: a survey.*", SCIENCE CHINA Information Sciences (**SCIS**), 2025.
- (38) 2025 Yuhang Zhang, Yiming Xu, Peilin Chen, Shiqi Wang, Qi Song, Lei Yu, Wei Cai, "*Knowledge-Enhanced Medical Image Classification via Descriptive Priors from Large Language Models.*", Health Information Science and Systems (**HISC**), 2025.
- (37) 2025 Yuhang Zhang, Peilin Chen, Keyan Ding, Han Liu, Shiqi Wang, Qi Song, "*MPSol: A Multimodal Prompt Learning Framework for Protein Solubility Prediction.*", IEEE Journal of Biomedical and Health Informatics (**JBHI**), 2025.
- (36) 2025 Can Lin, Zhengwang Jiang, Ling Zheng, Qi Zhao, Yuhang Zhang, Qi Song, Wangqiu Zhou, "*RJE: A Retrieval-Judgment-Exploration Framework for Efficient Knowledge Graph Question Answering with LLMs.*", The Conference on Empirical Methods in Natural Language Processing (**EMNLP**), 2025.
- (35) 2025 Yiming Xu, Qi Song, Yihan Wang, Wangqiu Zhou and Junli Liang, "*LGC-CR: Few-shot Knowledge Graph Completion via Local Global Contrastive Learning and LLM-Guided Refinement.*", The Conference on Information and Knowledge Management (**CIKM**), 2025.
- (34) 2025 Ling Zheng, Qi Song, Yihan Wang, Zhitao Wang, Xiang-Yang Li, "*HE-GAD: A Behavior-Enhanced Contrastive Learning Framework for Graph Anomaly Detection.*", Machine Learning (**ECML-PKDD Journal Track**), 2025.
- (33) 2025 Yihan Wang, Qi Song, Ling Zheng, Xiang-Yang Li, "*Efficient and Tractable Conflict Detection in Knowledge Graphs via Path Analysis.*", IEEE Transactions on Big Data (**TBD**), 2025.
- (32) 2025 Xin-Wei Yao, Junfeng Bai, Chuan He, Qiang Li, Qi Song, "*Leveraging Contrastive Learning to Bridge Semantic Gaps in Multimodal Recommendation.*", International Conference on Intelligent Computing (**ICIC**), 2025.
- (31) 2025 Pengfei Zhou, Yunlong Liu, Junli Liang, Qi Song, Xiangyang Li, "*CrossLinear: Plug-and-Play Cross-Correlation Embedding for Time Series Forecasting with Exogenous Variables.*", Proceedings of the 31th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD**), 2025.
- (30) 2025 Xinyu Wang, Shenyao Jiang, Wangqiu Zhou, Hao Zhou, Zhi Liu, Qi Song, Yusheng Ji, "*In-Band Parallel Feedback Communication for Magnetic MIMO Wireless Power Transfer System.*", IEEE Wireless Communications Magazine, 2025.
- (29) 2025 Xinyu Wang, Wangqiu Zhou, Hao Zhou, Shenyao Jiang, Zhi Liu, Xiaoyan Wang, Yusheng Ji, Qi Song, "*Relip: Reliable In-Band Parallel Communication for Magnetic MIMO Wireless Power Transfer System.*", IEEE Transactions on Mobile Computing (**TMC**), 2025.

- (28) 2025 Qi Zhao, Qi Song, Tian Xie, Haiyue Zhang, Hongyu Yang, Xiangyang Li, *"Improving Pre-trained Language Models with Knowledge Enhancement and Filtering Framework."*, Annual Conference of the Nations of the Americas Chapter of the Association for Computational Linguistics (NAACL), 2025.
- (27) 2025 Pengfei Zhou, Junli Liang, Yunlong Liu, Ji Wu, Qi Song, Xiangyang Li, *"Capacity estimation of retired lithium-ion batteries using random charging segments from massive real-world data."*, Cell Reports Physical Science (CRPS), 2025.
- (26) 2025 Xinyu Wang, Wangqiu Zhou and Hao Zhou, Tianjian Yang, Shenyao Jiang, Zhi Liu, Yusheng Ji, Qi Song, *"Fast and Anti-starvation Charging Device Grouping for Magnetic Wireless Power Transfer."*, IEEE International Conference on Computer Communications (INFOCOM), 2025.
- (25) 2024 Xin-Wei Yao, Wei-Wei Xing, Ke-Chen Zheng, Chu-Feng Qi, Xiang-Yang Li, Qi Song, *"GTDIM: Grid-based Two-stage Dynamic Incentive Mechanism for Mobile Crowd Sensing."*, Pervasive and Mobile Computing (PMC), 2024.
- (24) 2024 Tian Xie, Qi Song, Qi Zhao, Hao Jiang, Yijie Li, Tongjing Zhu, *"Query Exploration based on Knowledge Reasoning."*, International Conference on Advanced Data Mining and Applications (ADMA), 2024.
- (23) 2024 Lingchang Kong, Xinyu Wang, Hao Zhou, Fengyu Zhou, Shenyao Jiang, Peide Zhu, Qi Song, Zhi Liu, *"LAORA: Location-Aware Orientation Adjustment for MIMO Magnetic Wireless Charging System"*, IEEE International Conference on Sensing, Communication, and Networking (SECON), 2024.
- (22) 2023 Miao-Hui Song, Lan Zhang, Mu Yuan, Zichong Li, Qi Song, Yijun Liu and Guidong Zheng, *"CoTel: Ontology-Neural Co-Enhanced Text Labeling"*, ACM The Web Conference (WWW), 2023.
- (21) 2023 Hanchao Ma, Sheng Guan, Mengying Wang, Qi Song, Yinghui Wu, *"Fair Group Summarization with Graph Patterns"*, IEEE International Conference on Data Engineering (ICDE), 2023.
- (20) 2023 Zichong Li, Lan Zhang, Mu Yuan, Miao-Hui Song, **Qi Song**, *"Efficient Deep Ensemble Inference via Query Difficulty-dependent Task Scheduling"*, IEEE International Conference on Data Engineering (ICDE), 2023.
- (19) 2022 **Qi Song**, Mohammad Hossein Namaki, Peng Lin, Yinghui Wu, *"Answering Why-Questions for Subgraph Queries"*, Accepted by IEEE Transactions on Knowledge and Data Engineering (TKDE), 34(10), 4636-4649, (2022).
- (18) 2021 **Qi Song**, Peng Lin, Hanchao Ma, Yinghui Wu, *"Explaining Missing Data in Graphs: A Constraint-based Approach"*, IEEE International Conference on Data Engineering (ICDE), 2021.
- (17) 2021 **Qi Song**, Hanchao Ma, Peng Lin, Yinghui Wu, *"GRIP: Constraint-based Explanation of Missing Entities in Graph Search"*, ACM SIGMOD Conference on Management of Data (SIGMOD(demo)), 2021.
- (16) 2020 Peng Lin, **Qi Song**, Yinghui Wu, *"Repairing Entities using Star Constraints in Multirelational Graphs"*, IEEE International Conference on Data Engineering (ICDE), 2020.
- (15) 2019 Mohammad Hossein Namaki, **Qi Song**, Yinghui Wu, Shengqi Yang, *"Answering Why-questions by Exemplars in Attributed Graphs"*, ACM SIGMOD Conference on Management of Data (SIGMOD), 2019.
- (14) 2019 Mohammad Hossein Namaki, **Qi Song**, Yinghui Wu, Jiaying Pi, *"NAVIGATE: Explainable Visual Graph Exploration by Examples"*, ACM SIGMOD Conference on Management of Data (SIGMOD (demo)), 2019.

- (13) 2019 **Qi Song**, Mohammad Hossein Namaki, Yinghui Wu, "*Answering Why-Questions for Sub-graph Queries in Multi-Attributed Graphs*", IEEE International Conference on Data Engineering (**ICDE**), 2019.
- (12) 2018 **Qi Song**, Bo Zong, Yinghui Wu, Lu-An Tang, Hui Zhang, Guofei Jiang and Haifeng Chen, "*TGNet: Learning to Rank Nodes in Temporal Graphs*", ACM International Conference on Information and Knowledge Management (**CIKM**), 2018.
- (11) 2018 Peng Lin, **Qi Song**, Jialiang Shen, Yinghui Wu, "*Discovering Graph Patterns for Fact Checking in Knowledge Graphs*", International Conference On Database Systems for Advanced Applications(**DASFAA**), 2018.
- (10) 2018 Bo Zong, **Qi Song**, Martin Renqiang Min, Wei Cheng, Cristian Lumezanu, Daeki Cho, Haifeng Chen, "*Deep Autoencoding Gaussian Mixture Model for Unsupervised Anomaly Detection*", International Conference on Learning Representations(**ICLR**), 2018.
- (9) 2018 **Qi Song**, Yinghui Wu, Peng Lin, Xin Luna Dong, Hui Sun, "*Mining Summaries for Knowledge Graph Search*", IEEE Transactions on Knowledge and Data Engineering (**TKDE**), 30(10), 1887-1900, (2018).
- (8) 2018 Peng Lin, **Qi Song**, Yinghui Wu, "*Discovering Patterns for Fact Checking in Knowledge Graphs*", Journal of Data and Information Quality(**JDIQ**), 2018.
- (7) 2018 Peng Lin, **Qi Song**, Yinghui Wu, "*Fact Checking in Knowledge Graphs with Ontological Subgraph Patterns*", Data Science and Engineering(**DSE**), 2018.
- (6) 2018 Wei Cai, Baochun He, Min Hu, Wenyu Zhang, Deqiang Xiao, Hao Yu, Nan Xiang, Jian Yang, **Qi Song**, Songsheng He, Yaohuan Huang, Wenjie Huang, Fucang Jia, Chi-hua Fang, "*A radiomics-based Nomogram for the Preoperative Prediction of Posthepatectomy Liver Failure in Patients with Hepatocellular Carcinoma*", Surgical Oncology(**SO**), 2018.
- (5) 2017 Mohammad Hossein Namaki, Yinghui Wu, **Qi Song**, Peng Lin, Tingjian Ge, "*Discovering Temporal Graph Association Rules*", ACM International Conference on Information and Knowledge Management (**CIKM**), 2017.
- (4) 2017 **Qi Song**, Mohammad Hossein Namaki, Peng Lin, Yinghui Wu, "*Parallel Graph Summarization for Knowledge Search*", 13th International Workshop on Mining and Learning with Graphs (**MLG**), 2017.
- (3) 2016 **Qi Song**, Yinghui Wu, Xin Luna Dong, "*Mining Summaries for Knowledge Graph Search*", IEEE International Conference on Data Mining (**ICDM**), 2016.
- (2) 2014 **Qi Song**, Bo Li, Weiren Yu, Jianxin Li, Bin Shi, "*NSLPA: A node similarity based label propagation algorithm for real-time community detection*", IEEE International Conference on Utility and Cloud Computing (**UCC**), 2014.
- (1) 2013 Jianxin Li, **Qi Song**, Weiren Yu, Chunming Hu, Jian Kang, "*iScreen: A Merged Screen of Local System with Remote Applications in a Mobile Cloud Environment*", IEEE International Symposium on Service Oriented System Engineering (**SOSE**), 2013.

## Patents - before 2020

- (6) **Qi Song**, Congmin Min, Jin Guo, Wei Li, "*System and method for intelligent guided shopping*", US Patent 16,296,169, Status: **Granted**.
- (5) Bo Zong, Daeki Cho, Cristian Lumezanu, Haifeng Chen, **Qi Song**, "*Density estimation network for unsupervised anomaly detection*", US Patent 10,999,247, Status: **Granted**.
- (4) Bo Zong, LuAn Tang, **Qi Song**, Biplob Debnath, Hui Zhang, Guofei Jiang, "*Discovering critical alerts through learning over heterogeneous temporal graphs*", US Patent 10,409,669, Status: **Granted**.

- (3) Bo Li, **Qi Song**, Jianxin Li, Weiren Yu, "*Data segmenting method and system of distributed graph calculating system*", Publication No. : CN104281664B, Status: **Granted**.
- (2) Jianxin Li, Weiren Yu, **Qi Song**, Chenggen Sun, Bo Wu, "*Desktop presenting method based on cloud*", Publication No. : CN103595759B, Status: **Granted**.
- (1) Chunming Hu, Weiren Yu, **Qi Song**, Chenggen Sun, Bo Wu, "*File picture sharing method based on cloud*", Publication No. : CN103595760B, Status: **Granted**.

## Awards

- 2024.06 **2023 ACM China Council Hefei Chapter Rising Star.**
- 2022.12 **Mozi distinguished youth from USTC.**
- 2019.04 **NSF Student Travel Award for SIGMOD 2019.**
- 2019.04 **NSF Student Travel Award for ICDE 2019.**
- 2017.11 **SIGIR Student Travel Award for CIKM 2017.**
- 2016.11 **NSF Student Travel Award for ICDM 2016.**
- 2015 & 2016 **NSF Travel support for NSF Graduate Data Science Workshop 2015, 2016.**
- 2014.11 **MediaTek Inc. - Beihang Univ. Science and Technology Award.**

## Services

- SPC **CIKM'23.**
- PC **DASFAA'24,AAAI'23/24,ECAI'23.**
- Journal Reviewer **TPAMI, TDSC, TKDE, VLDBJ, JAIR, TNNLS, JDIQ, TBD, JCST, PR, ML, JAIR.**
- Conference Reviewer **VLDB, SIGMOD, ICDE, KDD, Big Data.**