Assistant Professor Huang, Kai

School of Computer Science and Engineering, Faculty of Innovation Engineering
Macau University of Science and Technology

Office：A307b
Tel.：
E-mail：huangkai@must.edu.mo

Academic Qualification

Ph.D. in Computer Science, Fudan University, 2020
B.S.   in Software Engineering, East China Normal Univeristy, 2014

Teaching Area

C/C++ Programming
Database and Data Analytics
Data Mining

Research Area

Database and Data Management
Graph Queries and Mining
Data Analytics
Privacy Computing

Working Experience

May.2021 – Aug.2023 Postdoc at Department of Computer Science and Engineering, Hong Kong University of Science and Technology. Hong Kong, SAR.
Nov.2020 – May.2021 Postdoc at Dept. of Electronic and Information Engineering, Hong Kong Polytechnic University. Hong Kong, SAR.
Jul.2017 – Jan.2019 Research Assistant at Dept. of Electronic and Information Engineering, Hong Kong Polytechnic University. Hong Kong, SAR.
Mar.2016 – Dec.2016 Research Assistant at School of Computer Science and Engi- neering, Nanyang Technological University. Singapore.

Academic Publication

Please refer to https://sites.google.com/view/kai-huang for more details.

Kai Huang, Gaoya Ouyang, Qingqing Ye, Haibo Hu, Bolong Zheng, Xi Zhao, Ruiyuan Zhang, Xiaofang Zhou. LDPGuard: Defenses against Data Poisoning Attacks to Local Differential Privacy Protocols. IEEE Transactions on Knowledge and Data Engineering (TKDE'24), 2024. (accepted in
Kai Huang, Yunqi Li, Qingqing Ye, Yao Tian, Xi Zhao, Yue Cui, Haibo Hu, Xiaofang Zhou. FRESH: Towards Efficient Graph Queries in an Outsourced Graph. IEEE 40th International Conference on Data Engineering (ICDE'24) , Utrecht, Netherlands, 2024. [CCF A, CORE A*]

Xi Zhao, Zhonghan Chen, **Kai Huang**, Ruiyuan Zhang, Bolong Zheng, Xiaofang Zhou. Efficient Approximate Maximum Inner Product Search over Sparse Vectors. IEEE 40th International Conference on Data Engineering (ICDE'24) , Utrecht, Netherlands, 2024. [CCF A, CORE A*]

Yulian Mao, Qingqing Ye, Haibo Hu, Qi Wang, **Kai Huang**. PrivShape: Extracting Shapes in Time Series underUser-Level Local Differential Privacy. IEEE 40th International Conference on Data Engineering (ICDE'24) , Utrecht, Netherlands, 2024. [CCF A, CORE A*]

Yao Tian, Yan Tingyun, Ruiyuan Zhang, Kai Huang, Bolong Zheng, Xiaofang Zhou. A Learned Cuckoo Filter for Approximate Membership Queries over Variable-sized Sliding Windows on Data Streams. Proceedings of the 2024 International Conference on Management of Data (SIGMOD'24), Santiago, Chile, 2024. [CCF A, CORE A*]

Kai Huang, Haibo Hu, Qingqing Ye, Kai Tian, Bolong Zheng, Xiaofang Zhou. TED: Towards Discovering Top-k Edge-Diversified Patterns in a Graph Database. Proceedings of the 2023 International Conference on Management of Data (SIGMOD'23), Seattle, WA, USA, 2023. [CCF A, CORE A*]

Kai Huang, Houdong LIANG, Chongchong Yao, Xi Zhao, Yue Cui, Yao Tian, Ruiyuan Zhang, Xiaofang Zhou. VisualNeo: Bridging the Gap between Visual Query Interfaces and Graph Query Engines. Proceedings the 49th International Conference on Very Large Data Bases (PVLDB'23), Vancouver, Canada, 2023 (demo). [CCF A,

Xi Zhao, Yao Tian, Kai Huang, Bolong Zheng, Xiaofang Zhou. Towards Efficient Index Construction and Approximate Nearest Neighbor Search in High-Dimensional Spaces. Proceedings the 49th International Conference on Very Large Data Bases (PVLDB'23), Vancouver, Canada, 2023. [CCF A, CORE A*]

Kai Huang, Yue Cui, Qingqing Ye, Yan Zhao, Xi Zhao, Yao Tian, Kai Zheng, Haibo Hu, Xiaofang Zhou. TED+: Towards Discovering Top-k Edge-Diversified Patterns in a Graph Database. IEEE Transactions on Knowledge and Data Engineering (TKDE'23), accepted to appear, 2023. [CCF A, CORE A*]

Bolong Zheng, Yong Ma, Jingyi Wan, Yongyong Gao, **Kai Huang**, Xiaofang Zhou, Christian Jensen. Reinforcement Learning based Tree Decomposition for Distance Querying in Road Networks. IEEE 39th International Conference on Data Engineering (ICDE'23), Anaheim, California, USA, 2023. [CCF A, CORE A*]

Yao Tian, Tingyun Yan, Xi Zhao, Kai Huang, Xiaofang Zhou. A Learned Index for Exact Similarity Search in Metric Spaces. IEEE Transactions on Knowledge and Data Engineering (TKDE'23), 2023. [CCF A, CORE A*]

Qingqing Ye, Haibo Hu, Kai Huang, Man Ho Au, Qiao Xue. Stateful Switch: Optimized Time Series Release with Local Differential Privacy. 2023 IEEE International Conference on Computer Communications (INFOCOM'23), New York area, USA, 2023. [CCF A, CORE A*]

Qiuyu Qian, Qingqing Ye, Haibo Hu, Kai Huang, Tom Tak-Lam Chan, Jin Li. Collaborative Sampling for Partial Multi-dimensional Value Collection under Local Differential Privacy. IEEE Transactions on Information Forensics and Security (TIFS'23), accepted to appear, 2023. [CCF A, CORE A*]

Xinyue Sun, Qingqing Ye, Haibo Hu, Yuandong Wang, Kai Huang, Tianyu Wo, and Jie Xu. Synthesizing Realistic Trajectory Data with Differential Privacy. IEEE Intelligent Transportation Systems Transactions (TITS'23), 2023.

Kai Huang, Qingqing Ye, Haibo Hu, Xiaofang Zhou. VINCENT: Towards Efficient Exploratory Subgraph Search in Graph Databases. Proceedings the 48th International Conference on Very Large Data Bases (PVLDB'22), Sydney, Australia, 2022 (demo). [CCF A, CORE A*]

Bolong Zheng, Jingyi Wan, Yongyong Gao, Yong Ma, Kai Huang, Xiaofang Zhou, Christian S.Jensen. Workload-Aware Shortest Path Distance Querying in Road Networks. IEEE 38th International Conference on Data Engineering (ICDE'22), Kuala Lumpur, Malaysia, 2022. [CCF A, CORE A*]

Kai Huang, Haibo Hu, Shuigeng Zhou, Jihong Guan, Qingqing Ye, Xiaofang Zhou. Privacy and Efficiency Guaranteed Social Subgraph Matching in Cloud. The International Journal on Very Large Data Bases (The VLDB Journal'22), 31:581–602, 2022. [CCF A, CORE A*]

Kai Huang, Huey Eng Chua, Sourav S Bhowmick, Byron Choi, Shuigeng Zhou. MIDAS: Towards Effective Maintenance of Canned Patterns in Visual Graph Query Interfaces. Proceedings of the 2021 International Conference on Management of Data (SIGMOD'21), Xi'an, China, 2021. [CCF A, CORE A*]

Qingqing Ye, Haibo Hu, Xiaofeng Meng, Huadi Zheng, Kai Huang, Chengfang Fang, Jie Shi. PrivKVM*: Revisiting Key-Value Statistics Estimation with Local Differential Privacy. IEEE Transactions on Dependable and Secure Computing (TDSC'21), 2021. [CCF A, CORE A*]

Sourav S Bhowmick, Kai Huang, Huey Eng Chua, Zifeng Yuan, Byron Choi, Shuigeng Zhou. AURORA: Data-driven Construction of Visual Graph Query Interfaces for Graph Databases. Proceedings of the 2020 International Conference on Management of Data (SIGMOD'20), Portland, Oregon, USA, 2020 (demo). [CCF A, CORE A*]

Kai Huang, Huey Eng Chua, Sourav S Bhowmick, Byron Choi, Shuigeng Zhou. CATAPULT: Data-driven Selection of Canned Patterns for Efficient Visual Graph Query Formulation. Proceedings of the 2019 International Conference on Management of Data (SIGMOD'19), Amsterdam, The Netherlands, 2019. [CCF A, CORE A*]

Kai Huang, Sourav S Bhowmick, Shuigeng Zhou, Byron Choi. PICASSO: Exploratory Search of Connected Subgraph Substructures in Graph Databases. Proceedings the 43rd International Conference on Very Large Data Bases (PVLDB'17), Munich, Germany, 2017 (demo). [CCF A, CORE A*]

Zekun Ye, Kai Huang, Jihong Guan, Shuigeng Zhou. Gaussian Weighting Reversion Strategy for Accurate On-line Portfolio Selection. IEEE 29th International Conference on Tools with Artificial Intelligence (ICTAI'17), Boston,

Zhanzhan Cheng, Kai Huang (Co-first Author), Shuigeng Zhou, Hui Liu, Yang Wang and Jihong Guan. Selecting High-Quality Negative Samples for Effectively Predicting Protein-RNA Interactions. BMC Systems Biology,

Yifu Huang, Kai Huang, Yang Wang, Hao Zhang, Jihong Guan, Shuigeng Zhou. Exploiting Twitter Moods to Boost Financial Trend Prediction Based on Deep Network Models. 2016 International Conference on Intelligent Computing (ICIC'16), Lanzhou, China, 2016.

Yifu Huang, Shuigeng Zhou, Kai Huang, Jihong Guan. Boosting Financial Trend Prediction with Twitter Mood Based on Selective Hidden Markov Models. The 20th International Conference on Database Systems for Advanced Applications (DASFAA'15), Hanoi, Vietnam, 2015.

Qiaozhen Guo, Wei Huang, Kai Huang, Xiao Liu. Information Credibility: A Probabilistic Graphical Model for Identifying Credible Influenza Posts on Social Media. 2015 International Conference for Smart Health (ICSH'15), Phoenix, Arizona, USA, 2015.

Yu Wang, Weiting Chen, Kai Huang, Qiufang Gu. Classification of neonatal amplitude-integrated EEG using random forest model with combined feature. 2013 IEEE International Conference on Bioinformatics and Biomedicine (BIBM '13), Shanghai, China, 2013.

Yang Liu, Weiting Chen, Su Yang, Kai Huang. Domain adaptation to automatic classification of neonatal amplitude-integrated EEG. 2012 12th International Conference on Intelligent Systems Design and Applications

Personal Website

https://sites.google.com/view/kai-huang

Patents

2018 Privacy and Efficiency Guaranteed Subgraph Query Processing Algorithm. Shuigeng Zhou, Kai Huang, Haibo Hu, Jihong Guan.

Professional Certification and Awards

2019 ACM SIGMOD Travel Award, ACM
2022-2023   STEM Talent Fellow, Hong Kong ITF
2022/2023   Hong Kong Postdoctoral Fellowship Scheme, Hong Kong RGC, HK$406,550/yr X 3 yrs. [relinquished]

Student Awards

2022 The Best Min-conference Paper Award, HKUST, HK$ 50,000

Professional Society Membership

Member, ACM

Professional Activity

Invited Reviewers: ICDE 2024, IJCAI 2024, PAKDD 2024, ICDE 2023 (Industry), ICDM 2023, BDMS@DASFAA 2023, PAKDD 2023, PAKDD 2022, PAKDD 2021, Data Science and

External Reviewers: SIGMOD 2023, CIKM 2022, TKDE 2021, DASFAA 2021, AAAI 2016, AAAI 2