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## **Education**

PhD, Hong Kong University of Science & Technology, 2003

Bachelor of Engineering, Zhejiang University, China, 1999

## **Academic Appointments**

Professor of Computer Science, School of Computing and Information Systems, SMU, Apr 2021 - Present

Professor of Information Systems, School of Computing and Information Systems, SMU, Jan 2020 - Mar 2021

Associate Professor of Information Systems, School of Computing and Information Systems, SMU, Jan 2011 - Dec 2019

Assistant Professor of Information Systems, School of Computing and Information Systems, SMU, Jan 2004 - Dec 2010

Lecturer of Information Systems, School of Computing and Information Systems, SMU, Jul 2003 - Dec 2003

## **Academic Administrative Positions**

Director, Master of Science in Computing, School of Computing and Information Systems, SMU, Jul 2018 - Present

Associate Dean (SCIS Post-Graduate Research Programmes), School of Computing and Information Systems, SMU, Jul 2014 - Present

PGR Coordinator (Masters of Applied Information Systems (MAIS)), School of Computing and Information Systems, SMU, Jul 2012 - Jun 2014

PGR Coordinator, MAIS, School of Computing and Information Systems, SMU, Jul 2011 - Jun 2012

## **RESEARCH**

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### **Publications**

#### Journal Articles [Refereed]

GTI: Graph-based tree index with logarithm updates for nearest neighbor search in high-dimensional

- spaces, by MA, Ruoyao; ZHU, Yifan; ZHENG, Baihua; CHEN, Lu; GE, Congcong; GAO, Yunjun. (2025). *Proceedings of the VLDB Endowment*, 18 (4), 986-999. <https://dl.acm.org/doi/10.14778/3717755.3717760> (Published)
- Wait and see: A delayed transactions partitioning approach in deterministic database systems for better performance, by SUI, Yuan; YANG, Xiaochun; WANG, Bin; ZHANG, Yujie; ZHENG, Baihua. (2025). *Proceedings of the ACM on Management of Data*, 3 (3), 1-27. <https://doi.org/10.1145/3725422> (Published)
- Learning spatio-temporal dynamics for trajectory recovery via time-aware transformer, by SUN, Tian; CHEN, Yuqi; ZHENG, Baihua; SUN, Weiwei. (2025). *IEEE Transactions on Intelligent Transportation Systems*, 26 (10), 16584-16601. <https://doi.org/10.1109/TITS.2025.3574100> (Published)
- Birdie: Natural language-driven table discovery using differentiable search index, by GUO, Yuxiang; HU, Zhonghao; MAO, Yuren; ZHENG, Baihua; GAO, Yunjun; ZHOU, Mingwei. (2025). *Proceedings of the VLDB Endowment*, 18 (7), 2070-2083. <https://doi.org/10.14778/3734839.3734845> (Published)
- DIMS: Distributed index for similarity search in metric spaces, by ZHU, Yifan; LUO, Chengyang; QIAN, Tang; CHEN, Lu; GAO, Yunjun; ZHENG, Baihua. (2025). *IEEE Transactions on Knowledge and Data Engineering*, 37 (1), 210-225. <https://doi.org/10.1109/TKDE.2024.3487759> (Published)
- Cross-view location alignment enhanced spatial-topological aware dual transformer for travel time estimation, by ZHANG, Hanyuan; ZHANG, Xinyu; JIANG, Qize; LI, Liang; ZHENG, Baihua; SUN, Weiwei. (2024). *IEEE Transactions on Intelligent Transportation Systems*, 25 (12), 20508-20522. <https://doi.org/10.1109/TITS.2024.3463501> (Published)
- Fine-grained passenger load prediction inside metro network via smart card data, by TIAN, Xiancai; ZHANG, Chen; ZHENG, Baihua. (2024). *International Journal of Intelligent Systems*, 2024 1-17. <https://doi.org/10.1155/2024/6643018> (Published)
- GTS: GPU-based Tree Index for Fast Similarity Search, by ZHU, Yifan; MA, Ruiyao; ZHENG, Baihua; KE, Xiangyu; CHEN, Lu; GAO, Yunjun. (2024). *Proceedings of the ACM on Management of Data*, 2 (3), 1-27. <https://doi.org/10.1145/3654945> (Published)
- From a timeline contact graph to close contact tracing and infection diffusion intervention, by ZHANG, Yipeng; BAO, Zhifeng; LI, Yuchen; ZHENG, Baihua; WANG, Xiaoli. (2024). *IEEE Transactions on Knowledge and Data Engineering*, 36 (12), 1-12. <https://doi.org/10.1109/TKDE.2024.3423476> (Advance Online)
- CollaborEM: A self-supervised entity matching framework using multi-features collaboration, by GE, Congcong; WANG, Pengfei; CHEN, Lu; LIU, Xiaoze; ZHENG, Baihua; GAO, Yunjun. (2023). *IEEE Transactions on Knowledge and Data Engineering*, 35 (12), 12139-12152. <https://doi.org/10.1109/TKDE.2021.3134806> (Published)
- A data-driven approach for scheduling bus services subject to demand constraints, by BRAHMANAGE, Janaka Chathuranga; KANDAPPU, Thivya; ZHENG, Baihua. (2023). *IEEE Transactions on Knowledge and Data Engineering*, 35 (7), 6534-6547. <https://doi.org/10.1109/TKDE.2022.3188243> (Published)
- LDPTTrace: Locally Differentially Private Trajectory Synthesis, by DU, Yuntao; HU, Yujia; ZHANG, Zhikun; FANG, Ziquan; CHEN, Lu; ZHENG, Baihua; GAO, Yunjun. (2023). *Proceedings of the VLDB Endowment*, 16 (8), 1897-1909. <https://doi.org/10.14778/3594512.3594520> (Published)
- Multi-view metro station clustering based on passenger flows: a functional data-edged network community detection approach, by ZHANG, Chen; ZHENG, Baihua; TSUNG, Fuguee. (2023). *Data Mining and Knowledge Discovery*, 37 (3), 1154-1208. <https://doi.org/10.1007/s10618-023-00916-w> (Published)
- Segment-Wise Time-Varying Dynamic Bayesian Network with Graph Regularization, by YANG, Xing; ZHANG, Chen; ZHENG, Baihua. (2022). *ACM Transactions on Knowledge Discovery from Data*, 16 (6), 1-23. <https://dl.acm.org/doi/10.1145/3522589> (Published)
- Towards an Optimal Bus Frequency Scheduling: When the Waiting Time Matters, by MO, Songsong; BAO, Zhifeng; ZHENG, Baihua; PENG, Zhiyong. (2022). *IEEE Transactions on Knowledge and Data Engineering*, 34 (9), 4484-4498. <https://doi.org/10.1109/TKDE.2020.3036573> (Published)
- Extract Human Mobility Patterns Powered by City Semantic Diagram, by SHAN, Zhangqing; SUN, Weiwei; ZHENG, Baihua. (2022). *IEEE Transactions on Knowledge and Data Engineering*, 34 (8), 3765-3778. <https://doi.org/10.1109/TKDE.2020.3026235> (Published)
- DESIRE: An Efficient Dynamic Cluster-based Forest Indexing for Similarity Search in Multi-Metric Spaces,

by ZHU, Yifan; CHEN, Lu; GAO, Yunjun; ZHENG, Baihua; WANG, Pengfei. (2022). *Proceedings of the VLDB Endowment*, 15(10), 2121-2133. <https://www.vldb.org/pvldb/vol15/p2121-gao.pdf> (Published)

A Survey on Modern Deep Neural Network for Traffic Prediction: Trends, Methods and Challenges, by TEDJOPUMOMO, David Alexander; BAO, Zhifeng; ZHENG, Baihua; CHOUDHURY, Farhana Murtaza; QIN, Kai. (2022). *IEEE Transactions on Knowledge and Data Engineering*, 34(4), 1544-1561. <https://doi.org/10.1109/TKDE.2020.3001195> (Published)

CrowdTC: Crowd-powered Learning for Text Classification, by YANG, Keyu; GAO, Yunjun; LIANG, Lei; BIAN, Song; CHEN, Lu; ZHENG, Baihua. (2022). *ACM Transactions on Knowledge Discovery from Data*, 16(1), 15:1-15:3. (Published)

Expediting the Accuracy-Improving Process of SVMs for Class Imbalance Learning, by CAO, Bin; LIU, Yuqi, HOU, Chenyu; FAN, Jing; ZHENG, Baihua; YIN, Jianwei. (2021). *IEEE Transactions on Knowledge and Data Engineering*, 33(11), 3550-3567. (Published)

TRIPDECODER: Study travel time attributes and route preferences of metro systems from smart card data, by TIAN, Xiancai; ZHENG, Baihua; WANG, Yazhe; HUANG, Hsiao-Ting; HUNG, Chih-Chieh. (2021). *ACM/IMS Transactions on Data Science*, 2(3), 1-21. <https://doi.org/10.1145/3430768> (Published)

Querying Recurrent Convoys over Trajectory Data, by YADAMJAV, Munkh-Erdene; BAO, Zhifeng; ZHENG, Baihua; CHOUDHURY, Farhana M.; SAMET, Hanan. (2020). *ACM Transactions on Intelligent Systems and Technology*, 11(5), 111:1-24. <https://doi.org/10.1145/3400730> (Published)

Towards distributed node similarity search on graphs, by ZHANG, Tianming; GAO, Yunjun; ZHENG, Baihua; CHEN, Lu; WEN, Shiting; GUO, Wei. (2020). *World Wide Web*, 23(6), 3025-3053. <https://doi.org/10.1007/s11280-020-00819-6> (Published)

Efficient distributed reachability querying of massive temporal graphs, by ZHANG, Tianming; GAO, Yunjun; LU, Chen; GUO, Wei; PU, Shiliang; ZHENG, Baihua; CHRISTIAN S. Jensen. (2019). *VLDB Journal*, 28(6), 871-896. <https://doi.org/10.1007/s00778-019-00572-x> (Published)

Distributed Similarity Queries in Metric Spaces, by YANG, Keyu; DING, Xin; ZHANG, Yuanliang; CHEN, Lu; ZHENG, Baihua; GAO, Yunjun. (2019). *Data Science and Engineering*, 4(2), 93-108. <https://doi.org/10.1007/s41019-019-0095-7> (Published)

SIMkNN: A Scalable Method for in-Memory  $k$ -NN Search over Moving Objects in Road Networks, by CAO, Bin; HOU, Chenyu; LI, Suifei; FAN, Jing; YIN, Jianwei; ZHENG, Baihua; BAO, Jie. (2018). *IEEE Transactions on Knowledge and Data Engineering*, 30(10), 1957-1970. <https://doi.org/10.1109/TKDE.2018.2808971> (Published)

Understanding the effects of taxi ride-sharing - A case study of Singapore, by WANG, Yazhe; ZHENG, Baihua; LIM, Ee Peng. (2018). *Computers, Environment and Urban Systems*, 69 124-132. <https://doi.org/10.1016/j.compenvurbsys.2018.01.006> (Published)

A Novel Representation and Compression for Queries on Trajectories in Road Networks, by YANG, Xiaochun; WANG, Bin; YANG, Kai; LIU, Chengfei; ZHENG, Baihua. (2018). *IEEE Transactions on Knowledge and Data Engineering*, 30(4), 613-629. <https://doi.org/10.1109/TKDE.2017.2776927> (Published)

CLSTERS: A general system for reducing errors of trajectories under challenging localization situations, by WU, Hao; SUN, Weiwei; ZHENG, Baihua; YANG, Li; ZHOU, Wei. (2017). *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*, 1(3), 1-28. <https://doi.org/10.1145/3130981> (Published)

On efficiently finding reverse  $k$ -nearest neighbors over uncertain graphs, by GAO, Yunjun; MIAO, Xiaoye; CHEN, Gang; ZHENG, Baihua; CAI, Deng; CUI, Huiyong. (2017). *VLDB Journal*, 26(4), 467-492. <https://doi.org/10.1007/s00778-017-0460-y> (Published)

Indexing metric uncertain data for range queries and range joins, by CHEN, Lu; GAO, Yunjun; ZHONG, Aoxiao; JENSEN, Christian S.; CHEN, Gang; ZHENG, Baihua. (2017). *VLDB Journal*, 26(4), 585-610. <https://doi.org/10.1007/s00778-017-0465-6> (Published)

SAP: Improving Continuous Top-K Queries Over Streaming Data, by ZHU, Rui; WANG, Bin; YANG, Xiaochun; ZHENG, Baihua; WANG, Guoren. (2017). *IEEE Transactions on Knowledge and Data Engineering*, 29(6), 1310-1328. <https://doi.org/10.1109/TKDE.2017.2662236> (Published)

COMPRESS: A Comprehensive Framework of Trajectory Compression in Road Networks, by HAN,

- Yunheng; SUN, Weiwei; ZHENG, Baihua. (2017). *ACM Transactions on Database Systems*, 42 (2), 1-49. <https://doi.org/10.1145/3015457> (Published)
- Metric Similarity Joins Using MapReduce, by GAO, Yunjun; YANG, Keyu; CHEN, Lu; ZHENG, Baihua; CHEN, Gang; CHEN, Chun. (2017). *IEEE Transactions on Knowledge and Data Engineering*, 29 (3), 656-669. <https://doi.org/10.1109/TKDE.2016.2631599> (Published)
- Answering why-not and why questions on reverse top-k queries, by LIU, Qing; GAO, Yunjun; CHEN, Gang; ZHENG, Baihua; ZHOU, Linlin. (2016). *VLDB Journal*, 25 (6), 867-892. <https://doi.org/10.1007/s00778-016-0443-4> (Published)
- Finding Causality and Responsibility for Probabilistic Reverse Skyline Query Non-Answers, by GAO, Yunjun; LIU, Qing; CHEN, Gang; ZHOU, Linlin; ZHENG, Baihua. (2016). *IEEE Transactions on Knowledge and Data Engineering*, 28 (11), 2974-2987. <https://doi.org/10.1109/TKDE.2016.2599869> (Published)
- Efficient Collective Spatial Keyword Query Processing on Road Networks, by GAO, Yunjun; ZHAO, Jingwen; ZHENG, Baihua; CHEN, Gang. (2016). *IEEE Transactions on Intelligent Transportation Systems*, 17 (2), 469-480. <https://doi.org/10.1109/TITS.2015.2477837> (Published)
- Negative Factor: Improving Regular-Expression Matching in Strings, by YANG, Xiaochun; QIU, Tao; WANG, Bin; ZHENG, Baihua; WANG, Yaoshu; LI, Chen. (2015). *ACM Transactions on Database Systems*, 40 (4), 1-46. <http://dx.doi.org/10.1145/2847525> (Published)
- Processing Incomplete *k* Nearest Neighbor Search, by MIAO, Xiaoye; GAO, Yunjun; CHEN, Gang; ZHENG, Baihua; CUI, Huiyong. (2016). *IEEE Transactions on Fuzzy Systems*, 24 (6), 1349-1363. <http://doi.org/10.1109/TFUZZ.2016.2516562> (Published)
- Top-*k* Dominating Queries on Incomplete Data, by MIAO, Xiaoye; GAO, Yunjun; ZHENG, Baihua; CHEN, Gang; CUI, Huiyong. (2016). *IEEE Transactions on Knowledge and Data Engineering*, 28 (1), 252-266. <http://dx.doi.org/10.1109/TKDE.2015.2460742> (Published)
- An automaton-based index scheme supporting twig queries for on-demand XML data broadcast, by LIU, Peng; SUN, Weiwei; ZHANG, Jian; ZHENG, Baihua. (2015). *Journal of Parallel and Distributed Computing*, 86 82-97. <http://dx.doi.org/10.1016/j.jpdc.2015.07.010> (Published)
- Fast optimal aggregate point search for a merged set on road networks, by SUN, Weiwei; CHEN, Chong; ZHENG, Baihua; CHEN, Chunan; ZHU, Liang; LIU, Weimo; HUANG, Yan. (2015). *Information Sciences: Informatics and Computer Science Intelligent Systems Applications*, 310 52-68. <https://doi.org/10.1016/j.ins.2015.03.028> (Published)
- Should We Use the Sample? Analyzing Datasets Sampled from Twitter's Stream API, by WANG, Yazhe; CALLAN, Jamie; ZHENG, Baihua. (2015). *ACM Transactions on the Web*, 9 (3), 13:1-23. <https://doi.org/10.1145/2746366> (Published)
- Efficient Reverse Top-*k* Boolean Spatial Keyword Queries on Road Networks, by GAO, Yunjun; XU, Qin; ZHENG, Baihua; CHEN, Gang. (2015). *IEEE Transactions on Knowledge and Data Engineering*, 27 (5), 1205-1218. <http://dx.doi.org/10.1109/TKDE.2014.2365820> (Published)
- On efficient *k*-optimal-location-selection query processing in metric spaces, by GAO, Yunjun; QI, Shuyao; CHEN, Lu; ZHENG, Baihua; LI, Xinhao. (2015). *Information Sciences: Informatics and Computer Science Intelligent Systems Applications*, 298 98-117. <https://doi.org/10.1016/j.ins.2014.11.038> (Published)
- On processing reverse *k*-skyband and ranked reverse skyline queries, by GAO, Yunjun; LIU, Qing; ZHENG, Baihua; LI, Mou; GAO, Chen; LI, Qing. (2015). *Information Sciences: Informatics and Computer Science Intelligent Systems Applications*, 293 11-34. <https://doi.org/10.1016/j.ins.2014.08.052> (Published)
- An Air Index for Spatial Query Processing in Road Networks, by SUN, Weiwei; CHEN, Chunan; ZHENG, Baihua; CHEN, Chong; LIU, Peng. (2015). *IEEE Transactions on Knowledge and Data Engineering*, 27 (2), 382-395. <http://dx.doi.org/10.1109/TKDE.2014.2330836> (Published)
- High utility K-anonymization for social network publishing, by WANG, Yazhe; XIE, Long; ZHENG, Baihua; LEE, Ken C.K.. (2014). *Knowledge and Information Systems*, 41 (3), 697-725. <http://dx.doi.org/10.1007/s10115-013-0674-2> (Published)
- An Air Index for Spatial Query Processing in Road Networks, by SUN, Weiwei; CHEN, Chunan; ZHENG, Baihua; CHEN, Chong; LIU, Peng. (2015). *IEEE Transactions on Knowledge and Data Engineering*, 27 (2),

382-395. <https://doi.org/10.1109/TKDE.2014.2330836> (Published)

On efficient reverse skyline query processing, by GAO, Yunjun; LIU, Qing; ZHENG, Baihua; CHEN, Gang. (2014). *Expert Systems with Applications*, 41 (7), 3237-3249. <http://dx.doi.org/10.1016/j.eswa.2013.11.012> (Published)

Air Indexing for On-Demand XML Data Broadcast, by SUN, Weiwei; QIN, Rongrui; WU, Jinjin; ZHENG, Baihua. (2014). *IEEE Transactions on Parallel and Distributed Systems*, 25 (6), 1371-1381. <http://dx.doi.org/10.1109/TPDS.2013.87> (Published)

Efficient Index-Based Approaches for Skyline Queries in Location-Based Applications, by LEE, Ken C. K.; ZHENG, Baihua; CHEN, Cindy; CHOW, Chi-Yin. (2013). *IEEE Transactions on Knowledge and Data Engineering*, 25 (11), 2507-2520. <https://doi.org/10.1109/TKDE.2012.216> (Published)

Hypergraph index: An index for context-aware nearest neighbor query on social networks, by WANG, Yazhe; ZHENG, Baihua. (2013). *Social Network Analysis and Mining*, 3 (4), 813-828. <https://doi.org/10.1007/s13278-013-0095-y> (Published)

ROAD: A New Spatial Object Search Framework for Road Networks, by LEE, Ken C. K.; LEE, Wang-Chien; ZHENG, Baihua; TIAN, Yuan. (2012). *IEEE Transactions on Knowledge and Data Engineering*, 24 (3), 547-560. <https://doi.org/10.1109/TKDE.2010.243> (Published)

Location-dependent spatial query containment, by LEE, Ken C. K.; UNGER, Brandon; ZHENG, Baihua; LEE, Wang-Chien. (2011). *Data & Knowledge Engineering*, 70 (10), 842-865. <https://doi.org/10.1016/j.datak.2011.06.001> (Published)

Direction-based surrounder queries for mobile recommendations, by GUO, Xi; ZHENG, Baihua; ISHIKAWA, Yoshiharu; GAO, Yunjun. (2011). *VLDB Journal*, 20 (5), 743-766. <https://doi.org/10.1007/s00778-011-0241-y> (Published)

Continuous visible nearest neighbor query processing in spatial databases, by GAO, Yunjun; ZHENG, Baihua; CHEN, Gencai; LI, Qing; GUO, Xiaofa. (2011). *VLDB Journal*, 20 (3), 371-396. <http://dx.doi.org/10.1007/s00778-010-0200-z> (Published)

IR-Tree: An Efficient Index for Geographic Document Search, by LI, Zhisheng; LEE, Ken C. K.; ZHENG, Baihua; LEE, Wang-Chien; LEE, Dik Lun; WANG, Xufa. (2011). *IEEE Transactions on Knowledge and Data Engineering*, 23 (4), 585-599. <http://dx.doi.org/10.1109/TKDE.2010.149> (Published)

Continuous Nearest-Neighbor Search in the Presence of Obstacles, by GAO, Yunjun; ZHENG, Baihua; CHEN, Gang; CHEN, Chun; LI, Qing. (2011). *ACM Transactions on Database Systems*, 36 (2), <http://dx.doi.org/10.1145/1966385.1966387> (Published)

Efficient mutual nearest neighbor query processing for moving object trajectories, by GAO, Yunjun; ZHENG, Baihua; CHEN, Gencai; LI, Qing; CHEN, Chun; CHEN, Gang. (2010). *Information Sciences: Informatics and Computer Science Intelligent Systems Applications*, 180 (11), 2176-2195. <https://doi.org/10.1016/j.ins.2010.02.010> (Published)

Z-SKY: an efficient skyline query processing framework based on Z-order, by LEE, Ken C. K.; LEE, Wang-Chien; ZHENG, Baihua; LI, Huajing; TIAN, Yuan. (2010). *VLDB Journal*, 19 (3), 333-362. <http://dx.doi.org/10.1007/s00778-009-0166-x> (Published)

Efficient processing of exact top-k queries over disk-resident sorted lists, by PANG, Hwee Hwa; DING, Xuhua; ZHENG, Baihua. (2010). *VLDB Journal*, 19 (3), 437-456. <https://doi.org/10.1007/s00778-009-0174-x> (Published)

Algorithms for constrained k-nearest neighbor queries over moving object trajectories, by GAO, Yunjun; ZHENG, Baihua; CHEN, Gencai; LI, Qing; CHEN, Chun. (2010). *GeoInformatica*, 14 (2), 241-276. <http://dx.doi.org/10.1007/s10707-009-0084-5> (Published)

Efficient valid scope for location-dependent spatial queries in mobile environments, by LEE, Ken C. K.; LEE, Wang-Chien; LEONG, Hong Va; UNGER, Brandon; ZHENG, Baihua. (2010). *Journal of Software*, 5 (2), 133-145. <http://doi.org/10.4304/jsw.5.2.133-145> (Published)

Tuning On-Air Signatures for Balancing Performance and Confidentiality, by ZHENG, Baihua; LEE, Wang-Chien; LIU, Peng; LEE, Dik Lun; DING, Xuhua. (2009). *IEEE Transactions on Knowledge and Data Engineering*, 21 (12), 1783-1797. <http://dx.doi.org/10.1109/TKDE.2009.43> (Published)

- Accelerating sequence searching: dimensionality reduction method, by SONG, Guojie; CUI, Bin; ZHENG, Baihua; XIE, Kunqing; YANG, Dongqing. (2009). *Knowledge and Information Systems*, 20 (3), 301-322. <http://dx.doi.org/10.1007/s10115-008-0180-0> (Published)
- Visible Reverse *k*-Nearest Neighbor Query Processing in Spatial Databases, by GAO, Yunjun; ZHENG, Baihua; CHEN, Gencai; LEE, Wang-Chien; LEE, Ken C. K.; LI, Qing. (2009). *IEEE Transactions on Knowledge and Data Engineering*, 21 (9), 1314-1327. <http://dx.doi.org/10.1109/TKDE.2009.113> (Published)
- A distributed spatial index for error-prone wireless data broadcast, by ZHENG, Baihua; LEE, Wang-Chien; LEE, Ken C. K.; LEE, Dik Lun; SHAO, Min. (2009). *VLDB Journal*, 18 (4), 959-986. <http://dx.doi.org/10.1007/s00778-009-0137-2> (Published)
- On efficient mutual nearest neighbor query processing in spatial databases, by GAO, Yunjun; ZHENG, Baihua; CHEN, Gencai; LI, Qing. (2009). *Data & Knowledge Engineering*, 68 (8), 705-727. <http://dx.doi.org/10.1016/j.datak.2009.04.004> (Published)
- Optimal-Location-Selection Query Processing in Spatial Databases, by GAO, Yunjun; ZHENG, Baihua; CHEN, Gencai; LI, Qing. (2009). *IEEE Transactions on Knowledge and Data Engineering*, 21 (8), 1162-1177. <https://doi.org/10.1109/TKDE.2009.81> (Published)
- Ranked reverse nearest neighbor search, by LEE, Ken C. K.; ZHENG, Baihua; LEE, Wang-Chien. (2008). *IEEE Transactions on Knowledge and Data Engineering*, 20 (7), 894-910. <http://dx.doi.org/10.1109/TKDE.2008.36> (Published)
- Round-Eye: A system for tracking nearest surroundings in moving object environments, by LEE, Ken C. K.; Schiffman, Josh; ZHENG, Baihua; LEE, Wang-Chien. (2007). *Journal of Systems and Software*, 80 (12), 2063-2076. <http://dx.doi.org/10.1016/j.jss.2007.03.007> (Published)
- Materialized in-network view for spatial aggregation queries in wireless sensor network, by LEE, Ken C. K.; ZHENG, Baihua; LEE, Wang-chien; Winter, Julian. (2007). *ISPRS Journal of Photogrammetry and Remote Sensing*, 62 (5), 382-402. <http://dx.doi.org/10.1016/j.isprsjprs.2007.03.006> (Published)
- On searching continuous *k* nearest neighbors in wireless data broadcast systems, by ZHENG, Baihua; LEE, Wang-Chien; LEE, Dik Lun. (2007). *IEEE Transactions on Mobile Computing*, 6 (7), 748-761. <http://dx.doi.org/10.1109/TMC.2007.1004> (Published)
- Grid-partition index: a hybrid method for nearest-neighbor queries in wireless location-based services, by ZHENG, Baihua; XU, Jianliang; LEE, Wang-Chien; LEE, Dik Lun. (2006). *VLDB Journal*, 15 (1), 21-39. <http://dx.doi.org/10.1007/s00778-004-0146-0> (Published)
- Information dissemination - via wireless broadcast, by ZHENG, Baihua; LEE, Dik Lun. (2005). *Communications of the ACM*, 48 (5), 105-110. <http://dx.doi.org/10.1145/1060710.1060717> (Published)
- The D-tree: An index structure for planar point queries in location-based wireless services, by XU, Jianliang; ZHENG, Baihua; LEE, Wang-chien; LEE, Dik Lun. (2004). *IEEE Transactions on Knowledge and Data Engineering*, 16 (12), 1526-1542. <https://doi.org/10.1109/TKDE.2004.97> (Published)
- Spatial queries in wireless broadcast systems, by ZHENG, Baihua; LEE, Wang-Chien; LEE, Dik Lun. (2004). *Wireless Networks*, 10 (6), 723-736. <http://doi.org/10.1023/B:WINE.0000044031.03597.97> (Published)
- On semantic caching and query scheduling for mobile nearest-neighbor search, by ZHENG, Baihua; LEE, Wang-Chien; LEE, Dik Lun. (2004). *Wireless Networks*, 10 (6), 653-664. <http://doi.org/10.1023/B:WINE.0000044026.38487.b2> (Published)
- Cache invalidation and replacement strategies for location-dependent data in mobile environments, by ZHENG, Baihua; XU, Jianliang; LEE, Dik Lun. (2002). *IEEE Transactions on Computers*, 51 (10), 1141-1153. <http://dx.doi.org/10.1109/tc.2002.1039841> (Published)
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- Caching complementary space for location-based services, by LEE, Ken C. K.; LEE, Wang-chien; ZHENG, Baihua; XU, Jianliang. (2006.0). *Advances in Database Technology - EDBT 2006: 10th International Conference on Extending Database Technology, Munich, Germany, March 26-31, 2006*, (pp. 1020-1038) Berlin, Heidelberg: Springer Verlag. [http://dx.doi.org/10.1007/11687238\\_59](http://dx.doi.org/10.1007/11687238_59) (Published)
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- Balancing Performance and Confidentiality in Air Index, by TAN, Qingzhao; LEE, Wang-chien; ZHENG, Baihua; LIU, Peng; LEE, Dik Lun. (2005.0). *CIKM '05 : proceedings of the 14th ACM International Conference on Information and Knowledge Management, October 31-November 5, 2005, Bremen, Germany*, (pp. 800-807) New York, N.Y.: ACM. <http://dx.doi.org/10.1145/1099554.1099743> (Published)
- DSI: A Fully Distributed Spatial Index for Wireless Data Broadcast, by LEE, Wang-Chien; ZHENG, Baihua. (2005.0). *ICDCS 2005: 25th IEEE International Conference on Distributed Computing Systems: Proceedings: 6-10 June 2005, Columbus, Ohio, USA*, (pp. 349-358) Los Alamitos, CA: IEEE Computer Society. <http://dx.doi.org/10.1109/ICDCS.2005.26> (Published)
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- Proactive Caching for Spatial Queries in Mobile Environments, by HU, Haibo; XU, Jianliang; WONG, Wing Sing; ZHENG, Baihua; LEE, Dik Lun; LEE, Wang-Chien. (2005.0). *ICDE 2005: Proceedings: 21st IEEE International Conference on Data Engineering, 5-8 April 2005, Tokyo*, (pp. 403-414) Los Alamitos, CA: IEEE Computer Society. <http://dx.doi.org/10.1109/ICDE.2005.113> (Published)
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- Search Continuous Nearest Neighbor on Air, by ZHENG, Baihua; LEE, Wang-chien; LEE, Dik Lun. (2004.0). *Proc. The First International Conference on Mobile and Ubiquitous Systems: Networking and Services (MobiQuitous '04)*, (pp. 236-245) IEEE. <http://dx.doi.org/10.1109/MOBIQ.2004.1331730> (Published)
- Energy-conserving air indexes for nearest neighbor search, by ZHENG, Baihua; Xu, Jianliang; LEE, Wang-chien; LEE, Dik Lun. (2004.0). *Advances in database technology--EDBT 2004 : 9th International Conference on Extending Database Technology : Herakleion, Crete, Greece, March 14-18, 2004 : proceedings*, (pp. 645-646) Berlin ; New York: Springer Verlag. <http://dx.doi.org/10.1007/b95855>

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Selecting the Best Valid Scopes for Wireless Dissemination of Location-dependent Data, by ZHENG, Baihua; LEE, Wang-chien; LEE, Dik Lun. (2003.0). *18th ACM Symposium on Applied Computing (SAC'03)*, New York: ACM. <http://dx.doi.org/10.1145/952532.952703> (Published)

Search K Nearest Neighbors on air, by ZHENG, Baihua; LEE, Wang-Chien; LEE, Dik Lun. (2003.0). *Mobile Data Management: 4th International Conference, MDM 2003 Melbourne, Australia, January 21-24, 2003: Proceedings*, (pp. 181-195) Berlin: Springer Verlag. [http://dx.doi.org/10.1007/3-540-36389-0\\_13](http://dx.doi.org/10.1007/3-540-36389-0_13) (Published)

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Processing Location-dependent Queries In a Multi-cell Wireless Environment, by ZHENG, Baihua; LEE, Dik Lun. (2001.0). *Proceedings : Second ACM International Workshop on Data Engineering for Wireless and Mobile Access, MobiDE '01 : Santa Barbara, California, USA, May 20, 2001*, (pp. 54-65) New York, NY: ACM. <http://dx.doi.org/10.1145/376868.376897> (Published)

### Conference Papers

Research Challenges in Information Access and Dissemination in a Mobile Environment, by Xu, Jianliang; ZHENG, Baihua; ZHU, Manli; LEE, Dik Lun. (2002.0). *Pan-Yellow-Sea International Workshop on Information Technologies for Network Era (PYIWIT'02)*, Saga, Japan. <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.6.8879> (Published)

### **Research Grants**

#### Singapore Management University

BeyondTravel: a Multimodal Travel Records Analytics Framework, Academic Research Fund (AcRF) Tier 2, Ministry of Education (MOE) , PI (Project Level): ZHENG Baihua , Co-PI (Project Level): Thivya KANDAPPU, 2020, S\$544,872

Personalized Participatory Nation: The Proposal for 2nd Phase Funding of Living Analytics Research Centre (LARC) – CMU Partnership & International Collaborations, Interactive Digital Media (IDM) International Research Centres (IRCs) Funding Scheme, National Research Foundation (NRF) , PI (Programme Level): LIM Ee Peng , PI (Project Level): Archan MISRA, ZHENG Baihua, Steven HOI, Jing JIANG, 2017, S\$6,984,929

Personalized Participatory Nation: The Proposal for 2nd Phase Funding of Living Analytics Research Centre (LARC), Interactive Digital Media (IDM) International Research Centres (IRCs) Funding Scheme, National Research Foundation (NRF) , PI (Programme Level): LIM Ee Peng , PI (Project Level): Archan MISRA, ZHENG Baihua, Steven HOI, Jing JIANG, 2016, S\$18,015,071

Trajectory Management in Road Networks, SMU Internal Grant, Ministry of Education (MOE) Tier 1 , PI (Project Level): ZHENG Baihua, 2014, S\$22,598.11

Twitalytics: Interactive Social Media Analytics for Twitter Data (Year 2), SMU Internal Grant, Ministry of Education (MOE) Tier 1 , PI (Project Level): ZHENG Baihua, 2013, S\$22,109

Utility-Oriented K-Anonymization on Social Networks, SMU Internal Grant, Ministry of Education (MOE)

Tier 1 , PI (Project Level): ZHENG Baihua, 2011, S\$20,179.67

Caching and Index Strategies for Location-Dependent Information Services, SMU Internal Grant, Ministry of Education (MOE) Tier 1 , PI (Project Level): ZHENG Baihua, 2004, S\$36,000

### Other Institutions

Transition from Living Analytics Research Centre to Social Urban Observatory, NRF, National Research Foundation PI (Project Level): LIM Ee Peng, Co-PI (Project Level): Archan MISRA, ZHENG Baihua, Jing JIANG, 2021, SGD2,687,280

Transition from Living Analytics Research Centre to Social Urban Observatory, Strategic Capabilities Research Centres Funding Initiative, NRF PI (Project Level): LIM Ee Peng, Co-PI (Project Level): ZHENG Baihua, Archan MISRA, Jing JIANG, Wei GAO, SUN Qianru, HARA, Kotaro, Palakorn ACHANANUPARP, 2021, SGD2,687,280

Transition from Living Analytics Research Centre to Social Urban Observatory, NRF, National Research Foundation - Strategic Capabilities Research Centres Funding Initiative , PI (Programme Level): LIM Ee Peng, PI (Project Level): LIM Ee Peng, Archan MISRA, Jing JIANG, ZHENG Baihua, Co-PI (Project Level): HARA, Kotaro, SUN Qianru, Palakorn ACHANANUPARP, Wei GAO, 2021, SGD2,687,280

LARC 2.0 - Living Analytics Research Centre – Phase II (Project PI for 1 of 4 work packages, “Smart Consumption & Healthy LifeStyle” ), International Research Centre, National Research Foundation , PI (Programme Level): LIM Ee Peng, Mark Kamlet, PI (Project Level): LIM Ee Peng, Co-PI (Project Level): Archan MISRA, Jing JIANG, ZHENG Baihua, Steven HOI, 2016, SGD25,000,000

## TEACHING

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### Courses Taught

#### Singapore Management University

Undergraduate Programmes :

Data Management

Postgraduate Professional Programmes :

Capstone Project - Data Science and Engineering

Data Management

Thesis

Postgraduate Research Programmes :

Dissertation

Research Topics in Information Systems 1

Research Topics in Information Systems 2

Seminars in Information Systems 1

Seminars in Information Systems 2

## THESES AND DISSERTATIONS

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### Theses and Dissertations Supervised

#### Singapore Management University

Supervisor, "Data Preparation for Social Network Mining and Analysis", Dissertation by WANG YAZHE, PhD in Information Systems, Singapore Management University, 2015

### Theses and Dissertations Assessed

#### Singapore Management University

Committee Member, "Preference Learning and Similarity Learning Perspectives on Personalized Recommendation", Dissertation by LE Duy Dung, PhD in Computer Science, Singapore Management University, 2019

Committee Member, "Comparison Mining from Text", Dissertation by Maksim TKACHENKO, PhD in Information Systems, Singapore Management University, 2018

Committee Member, "Entity Summarization of Review and Micro-Reviews", Dissertation by NGUYEN THANH SON, PhD in Information Systems, Singapore Management University, 2018

Committee Member, "Learning Latent Characteristics of Locations-based Social Networking Data", Dissertation by DOAN THANH NAM, PhD in Information Systems, Singapore Management University, 2018

Committee Member, "User Behaviour Mining in Microblogging", Dissertation by HOANG TUAN ANH, PhD in Information Systems, Singapore Management University, 2016

Committee Member, "Multi-cost and Upgradable Spatial Network Databases", Dissertation by LIN YIMIN, PhD in Information Systems, Singapore Management University, 2014