MIAO QIAO

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Room 524, Science Centre 303, University of Auckland

38 Princes Street, Auckland 1010, New Zealand

EDUCATION AND EMPLOYMENT

Senior Lecturer (above the bar)   *2023 - present*
School of Computer Science
University of Auckland, New Zealand

Senior Lecturer equivalent to Associate Professor in Tenure Track systems   *2021 - 2022*
School of Computer Science
University of Auckland, New Zealand

Lecturer   *2018 - 2020*
School of Computer Science
University of Auckland, New Zealand

Lecturer   *2016 - 2018*
School of Engineering and Advanced Technology
Massey University, New Zealand

Researcher   *2015-2016*
Advanced Digital Sciences Center
Singapore

Postdoctoral Fellow   *2013 - 2015*
Department of Computer Science and Engineering
The Chinese University of Hong Kong, Hong Kong

Doctor of Philosophy   *2009 - 2013*
Systems Engineering and Engineering Management
The Chinese University of Hong Kong, Hong Kong

Bachelor of Engineering   *2005 - 2009*
Computer Science and Engineering
Shanghai Jiao Tong University, China

FUNDING

- Principal Investigator of the project "Advanced Graph Analytics for Human Brain Connectivity", supported by New Zealand Singapore Data Science Programme, the Ministry of Business Innovation and Employment (MBIE) New Zealand, **NZD 3,000,000**.   *2020 - 2024*

- Principal Investigator of project "Subgraph Matching: Theory and Practice", supported by Marsden Fast-Start, Royal Society of New Zealand, **NZD 300,000**.   *2018 - 2024*

LEADERSHIP AND SERVICES

Program Committee Chair:

- Australasian Database Conference (ADC)   2021

- Doctoral Consortium of International Semantic Web Conference (ISWC), Core rank A   2019

Review Board Member:

- Proceedings of the ACM Symposium on Principles of Database Systems (PODS), Core rank A* 2023

- Proceedings of the Very Large Database Endowment (PVLDB), Core rank A*   2020-2021,2025

Program Committee Member:

- International Joint Conferences on Artificial Intelligence (IJCAI), Core rank A* 2019-2021
- Association for the Advancement of Artificial Intelligence (AAAI), Core rank A* 2020

Reviewer:

- Symposium on Computational Geometry, Core rank A, 2019
- Transactions on Database Systems (TODS), Core rank A* 2015, 2018, 2019
- Transactions on Knowledge and Data Engineering (TKDE), Core rank A* 2018
- International Conference on Knowledge Discovery & Data Mining (KDD), Core rank A* 2016
- International Conference on Data Mining (ICDM), Core rank A* 2013, 2014
- Web Information Systems Engineering (WISE), Core rank A 2013
- International Journal on Very Large Data Bases (VLDBJ), Core rank A* 2013, 2018, 2019, 2024
- ACM Transactions on Database Systems (TODS), Core rank A* 2024

Vice President of South Pacific Competition Programming Association in 2023.

University Services:

- **School-level** Stage 2 Coordinator 2025
- **School-level** PhD coordinator (deputy) 2019-2020
- **School-level** ACM International Collegiate Programming Contest coordinator 2018-2023
- **University-level** Member of the University of Auckland Human Participants Ethics Committee (UAHPEC) 2021-2023

TALKS

- 2024, Scalable Query Processing with Graphs. Data Systems Seminar Series, University of Waterloo
- 2024, Scalable Query Processing with Graphs. Database group, CMU

AWARDS

- VLDB 2013 Travel Fellowship 2013
- Doctor Scholarship, The Chinese University of Hong Kong 2009-2013
- Shanghai Jiao Tong University 1st Class Scholarship 2008
- ACM International Collegiate Programming Contest (ICPC), 3rd Place, Singapore 2007
- Computer World Scholarship 2007
- Singapore Technology Engineering Scholarship 2006
- ACM International Collegiate Programming Contest (ICPC), 1st Place, Korea 2005
- Silver medal nationwide, National Olympiad in Informatics, China 2004

TEACHING

- COMPSCI751, Advanced Topics in Database Systems (2019-2023, 2025)
- SOFTENG351, Fundamentals of Database Systems (2019-2023, 2025)
- COMPSCI351, Fundamentals of Database Systems (2019-2023, 2025)
- COMPSCI753, Algorithms for Massive Data (2018-2019, 2025)
- 158.347, Database Paradigms (2017)
- 159.172, Computational Thinking and Algorithms (2017)
- 158.247, Database Design (2017-2018)
- 158.225, Systems Analysis and Modelling (2017-2018)
- 158.258, Web Development (2016)
- 158.172, Computational Thinking and Algorithms (2016)
- 158.225, Systems Analysis and Modelling (2016)

Graduated Students:

- Wentao Li. PhD 2021. Lecturer at the University of Leicester since 2024. Wentao was selected as 2021 Global Top 100 Chinese Rising Stars in Artificial Intelligence.
- Zijin Feng. PhD 2024. Huawei, Hong Kong.

Ongoing Students:

- Yizhou Dai
- Callum Cory

CONFERENCE PUBLICATIONS

1. Yue Zeng, **Miao Qiao**, Rong-Hua Li, Hongchao Qin, Guoren Wang. Scaling Up k-Clique Percolation Community Detection. *Proceedings of the ACM on Management of Data (SIGMOD)*, 2026.

2. Zhencan Peng, **Miao Qiao**, Wenchao Zhou, Feifei Li, Dong Deng, Dynamic Range-Filtering Approximate Nearest Neighbor Search. *VLDB*, 2025.

3. *Zijin Feng, **Miao Qiao**, Chengzhi Piao, Hong Cheng. On Graph Representation for Attributed Hypergraph Clustering. *Proceedings of the International Conference on Management of Data (SIGMOD)*, 2025.

4. Jiarui Luo, **Miao Qiao**, Chaoji Zuo, Dong Deng. Tag-Filtered Approximate Nearest Neighbor Search. *IEEE International Conference on Data Engineering (ICDE)*, 2025.

5. Jiaxing Xu, Qingtian Bian, Xinhang Li, Aihu Zhang, Yiping Ke, **Miao Qiao**, Wei Zhang, Wei Khang Jeremy Sim, Balazs Gulyas. Contrastive Graph Pooling for Explainable Classification of Brain Networks *IEEE TRANSACTIONS ON MEDICAL IMAGING (TMI)* , Vol 43, page 3292, 2024.

6. Chaoji Zuo, **Miao Qiao**, Wenchao Zhou, Feifei Li, Dong Deng. SeRF: Segment Graph for Range-Filtering Approximate Nearest Neighbor Search. *Proceedings of the International Conference on Management of Data (SIGMOD)* 2(1): 69:1-69:26 (2024)

7. *Yizhou Dai, **Miao Qiao**, Rong-Hua Li. On Density-based Local Community Search. *Proceedings of the 34th ACM Symposium on Principles of Database Systems (PODS)* 2(2): 88, 2024

8. Jiaxing Xu, Kai He, Mengcheng Lan, Qingtian Bian, Wei Li, Tieying Li, Yiping Ke, **Miao Qiao**. Contrasformer: a brain network contrastive transformer for neurodegenerative condition identification. *CIKM*, 2024.

9. *Zijin Feng, **Miao Qiao**, Hong Cheng. Modularity-based Hypergraph Clustering: Random Hypergraph Model, Hyperedge-cluster Relation, and Computation. *Proceedings of the International Conference on Management of Data (SIGMOD)*, 1(3): 215:1-215:25, 2024.

10. Jiaxing Xu, Yunhan Yang, David Tse Jung Huang, Sophi Shilpa Gururajapathy, Yiping Ke, **Miao Qiao**, Alan Wang, Haribalan Kumar, Josh McGeown, Eryn Kwon. Data-Driven Network Neuroscience: On Data Collection and Benchmark. *Conference on Neural Information Processing Systems (NeurIPS)*, 2023.

11. Yiping Liu, Jiamou Liu, Bakh Khoussainov, **Miao Qiao**, Bo Yan, Mengxiao Zhang, Centralization Problem for Opinion Convergence in Decentralized Networks. *Proceedings of the International Conference on Advances in Social Networks Analysis and Mining*, Pages 658-665, 2023.

12. *Yizhou Dai, **Miao Qiao**, Lijun Chang. Anchored Densest Subgraph. *Proceedings of the International Conference on Management of Data (SIGMOD)*, pages 1200-1213, 2022.

13. *Wentao Li, **Miao Qiao**, Lu Qin, Ying Zhang, Lijun Chang, Xuemin Lin. On Scalable Computation of Graph Eccentricities. *Proceedings of the International Conference on Management of Data (SIGMOD)*, pages 904-916, 2022.

14. *Zijin Feng, **Miao Qiao**, Hong Cheng. Clustering Activation Networks. *Proceedings of the 34th International Conference on Data Engineering (ICDE)*, pages 780-792, 2022.

15. **Miao Qiao**, Yufei Tao.Two-Attribute Skew Free, Isolated CP Theorem, and Massively Parallel Joins. *Proceedings of the 40th ACM Symposium on Principles of Database Systems (PODS)*, pages 166-180, 2021.

16. Hao Zhang, **Miao Qiao**, Jeffrey Xu Yu, Hong Cheng. Fast distributed complex join processing. *2021 IEEE 37th International Conference on Data Engineering (ICDE)*. Pages 2087-2092, 2021.

17. *Wentao Li, **Miao Qiao**, Lu Qin, Ying Zhang, Lijun Chang, Xuemin Lin. Scale Distance Labeling on Graphs with Core-Periphery Properties. *Proceedings of the International Conference on Management of Data (SIGMOD)*, pages 1367-1381, 2020.

18. Lijun Chang, **Miao Qiao**. Deconstruct Densest Subgraphs. *Proceedings of the World Wide Web Conference (WWW)*, pages 2747-2753, 2020.

19. *Wentao Li, **Miao Qiao**, Lu Qin, Ying Zhang, Lijun Chang, Xuemin Lin. Scaling Distance Labeling on Small-World Networks *Proceedings of the International Conference on Management of Data (SIGMOD)*, pages 1060-1077, 2019.

20. *Wentao Li, **Miao Qiao**, Lu Qin, Ying Zhang, Lijun Chang, Xuemin Lin. Exacting Eccentricity for Small-World Networks. *Proceedings of the 34th International Conference on Data Engineering (ICDE)*, pages 785-796, 2018.

21. **Miao Qiao**, Hao Zhang, Hong Cheng. Subgraph Matching: on Compression and Computation. *Proceedings of the Very Large Database Endowment (PVLDB)*, 11(2): 176-188, 2017.

22. **Miao Qiao**, Junhao Gan, Yufei Tao. Range Thresholding on Streams. *Proceedings of the International Conference on Management of Data (SIGMOD)*, pages 571-582, 2016.

23. ** Xiaocheng Hu, **Miao Qiao**, Yufei Tao. Join Dependency Testing, Loomis-Whitney Join, and Triangle Enumeration. *Proceedings of the 34th ACM Symposium on Principles of Database Systems (PODS)*, pages 291-301, 2015.

24. ** Xiaocheng Hu, **Miao Qiao**, Yufei Tao. External Memory Stream Sampling. *Proceedings of the 34th ACM Symposium on Principles of Database Systems (PODS)*, pages 229-239, 2015.

25. ** Xiaocheng Hu, **Miao Qiao**, Yufei Tao. Independent Range Sampling. *Proceedings of the 33rd ACM Symposium on Principles of Database Systems (PODS)*, pages 246-255, 2014.

26. **Miao Qiao**, Lu Qin, Hong Cheng, Jeffrey Xu Yu. Top-K Nearest Keyword Search on Large Graphs. *Proceedings of the Very Large Database Endowment (PVLDB)*, 6(10): 901-912, 2013.

27. **Miao Qiao**, Hong Cheng, Lijun Chang, Jeffrey Xu Yu. Approximate shortest distance computing: a query-dependent local landmark scheme. *Proceedings of the 28th International Conference on Data Engineering (ICDE)*, pages 462-473, 2012.

28. **Miao Qiao**, Hong Cheng, Jeffrey Xu Yu. Querying Shortest Path Distance with Bounded Errors in Large Graphs. *Proceedings of the 23rd International Conference on Scientific and Statistical Database Management (SSDBM)*, pages 255-273, 2011.

JOURNAL PUBLICATIONS

1. Maryam Tayebi, Eryn Kwon, Josh McGeown, Leigh Potter, Davidson Taylor, Paul Condron, **Miao Qiao**, Patrick McHugh, Jerome Maller, Poul Nielsen, Alan Wang, Justin Fernandez, Miriam Scadeng, Vickie Shim, Samantha Holdsworth Characterizing the Effect of Repetitive Head Impact Exposure and mTBI on Adolescent Collision Sports Players' Brain with Diffusion Magnetic Resonance Imaging. *Journal of Neurotrauma*, 2025.

2. Maryam Tayebi, Eryn Kwon, Jerome Maller, Josh McGeown, Miriam Scadeng, **Miao Qiao**, Alan Wang, Poul Nielsen, Justin Fernandez, Samantha Holdsworth, Vickie Shim, Matai mTBI Research Group Potter Leigh Condron Paul Taylor Davidson Cornfield Daniel McHugh Patrick Emsden Taylor Danesh-Meyer Helen Newburn Gil Bydder Graeme. Integration of diffusion tensor imaging parameters with mesh morphing for in-depth analysis of brain white matter fibre tracts. *Brain Communications*. 2024.

3. Jiaxing Xu, Qingtian Bian, Xinhang Li, Aihu Zhang, Yiping Ke, **Miao Qiao**, Wei Zhang, Wei Khang Jeremy Sim, Balazs Gulyas. Contrastive Graph Pooling for Explainable Classification of Brain Networks. *IEEE Transactions on Medical Imaging (TMI)*, 2024, **PREMIA Best Student Paper Honourable Mention Award**. **Impact factor** 11.037**.

4. *Wen Grace, Vickie Shim, Samantha Jane Holdsworth, Justin Fernandez, **Miao Qiao**, Nikola Kasabov, and Alan Wang. Machine Learning for Brain MRI Data Harmonisation: A Systematic Review, 2023. *Bioengineering*, 10(4):397, 2023. **Impact factor** 5.046**.

5. *Wentao Li, **Miao Qiao**, Lu Qin, Ying Zhang, Lijun Chang, Xuemin Lin. Distance labeling: on parallelism, compression, and ordering. *Very Large Data Base Journal (VLDBJ)*, 31(1): 129-155, 2022. **Impact factor** 4.243**.

6. *Wentao Li, **Miao Qiao**, Lu Qin, Ying Zhang, Lijun Chang, Xuemin Lin. Eccentricities on small-world networks. *Very Large Data Base Journal (VLDBJ)*, 28(8): 1-28, 2019. **Impact factor** 4.243**.

7. Yufei Tao, Xiaocheng Hu, **Miao Qiao**. Stream Sampling over Windows with Worst-Case Optimality and l-Overlap Independence. *Very Large Data Base Journal (VLDBJ)*, 26(4): 493-510, 2017. **Impact factor** 4.243**.

8. ** Xiaocheng Hu, **Miao Qiao**, Yufei Tao. I/O-efficient join dependency testing, Loomis-Whitney join, and triangle enumeration. *Journal of Computer and System Sciences* 82(8): 1300-1315 (2016)

9. ** Xiaocheng Hu, **Miao Qiao**, Yufei Tao. Independent Range Sampling on a RAM. *IEEE Data Engineering Bulletin* 38(3): 76-83 (2015)

10. **Miao Qiao**, Hong Cheng, Lijun Chang and Jeffrey Xu Yu. Approximate Shortest Distance Computing: A Query-Dependent Local Landmark Scheme. *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 26(1): 55-68, 2014. **Impact factor** 7.05**.**

11. **Miao Qiao**, Hong Cheng, Lu Qin, Jeffrey Xu Yu, Philip S. Yu and Lijun Chang. Computing Weight Constraint Reachability in Large Networks. *International Journal on Very Large Data Bases (VLDBJ)*, 22(3): 275-294, 2012. **Impact factor** 4.243**.**

12. Lijun Chang, Jeffrey Xu Yu, Lu Qin, Hong Cheng, **Miao Qiao**. The Exact Distance to Destination in Undirected World. *International Journal on Very Large Data Bases (VLDBJ)*, 21(6): 869-888, 2012. **Impact factor** 4.243**.**

* denotes that the first author is a supervised PhD student; ** indicates equal contribution.