Xiaoyu (Shaw) XIA

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Research and Teaching

My research interests include parallel and distributed systems, system security and sustainable computing. My current research directions include optimization, security and AI in edge and cloud systems. I am a senior member of IEEE and member of ACM.

As a teacher, I believe that creative thinking is as important as content mastery. I want students to value their own ability to think creatively, and I encourage them to use novel ways to demonstrate their knowledge. I prefer to use examples and data from industry for presenting information and emphasizing the importance to students. Due to my academic and industrial background, I can teach units in the areas of computer science, cloud computing, software engineering, networks, and databases.

Funded Project

2025-2027	**ARC Discovery Project (1/23)** Chief Investigator, "Privacy-Aware Intelligent Digital Twin for Secure Critical Infrastructures", $506,636 from Australian Research Council, Australia
2024-2025	**CSIRO-RMIT Research Masters Project** Lead Chief Investigator, "Optimizing Collaborative Learning at the Constrained Edge with Privacy Awareness", jointly funded by CSIRO and RMIT University, Australia
2023-2024	**Advance HE Global Impact Grants** Chief Investigator, "Empowering Female Cybersecurity Leaders: Bridging the Gender Gap in Cybersecurity Education", funded by Advance HE, United Kingdom
2022	**Academic Affairs Research Collaboration Grant** Lead Chief Investigator, "Cost-Effective and Secure Data Management in Edge Computing", funded by University of Southern Queensland, Australia

Awards

2022-23	**World's Top 2% Scientists** Stanford University
2023	**Alfred Deakin Medal for Doctoral Theses in 2022** Deakin University
2021	**Teaching Excellence Award** Swinburne University of Technology
2021	**Postgraduate Research Award** School of IT at Deakin University
2018 – 2021	**Postgraduate Research Scholarship** Deakin University

Work Experiences

2023 – Now **Lecturer, Cyber Security and Software Systems**
Research: Edge computing, distributed systems and edge security
Teaching: Software Engineering and Internet-of-Things
@C RMIT University, Melbourne, Australia

2022 – 2023 **Lecturer, Computing**
Research: Edge computing, distributed systems and artificial intelligence
Teaching: Web technologies
@ University of Southern Queensland, Toowoomba, Australia

2021 – 2022 **Research Assistant, Postdoctoral Research Fellow**
Research: Edge computing, distributed systems and artificial intelligence
@ The University of Adelaide, Adelaide, Australia

2019 – 2021 **Tutor**
Teaching: Software Engineering
@ Swinburne University of Technology, Melbourne, Australia

2016 – 2018 **Software Engineer**
Development: mobile applications including NAB Dash, Nando's, etc.
@ LOKE Digital, Melbourne, Australia

Teaching Experiences

2024 – Now **Program Coordinator**
Master of Information Technology
@ RMIT University, Australia

2024 – Now **Master Major Program Designer**
Master of Cybersecurity in Critical Infrastructure
@ RMIT University, Australia

2023 – Now **Coordinator & Lecturer**
ISYS1083 & ISYS1084 – Object Oriented Software Design
COSC2674 & COSC2755 – Programming Internet of Things
@ RMIT University, Australia

2022 – 2023 **Coordinator & Lecturer**
CSC8740 – Client-side Web Technology
CSC2406 – Web Technology I
@ University of Southern Queensland, Australia

2019 – 2021 **Tutor**
COS60004- Creating Web Applications
COS60007- Creating Web Applications with Databases
COS10011- Creating Web Applications
@ Swinburne University of Technology, Australia

Education

2018 – 2021 **Doctor of Philosophy – PhD, Information Technology**
@ Deakin University, Australia
Supervisors: Dr. Feifei Chen, Prof. John Grundy, Prof Mohamed Abdelrazek, Prof Qiang He

2013 – 2015 **Master of Information Technology**
@ The University of Melbourne, Australia

2009 – 2013 Bachelor of Engineering in Computer Science and Technology
@ National Huaqiao University, China

Selected Publications

My total citations are 1,584 and h-index is 21 on Google Scholar.

1. Xiaoyu Xia, Ziqi Wang, Ruoxi Sun, Bowen Liu, Ibrahim Khalil, Minhui Xue, Edge Unlearning is Not "on Edge"! An Adaptive Exact Unlearning System on Resource-Constrained Devices, IEEE Symposium on Security and Privacy ***(Oakland, CCF A, CORE A*)***, 2025
2. Ziqi Wang, Xiaoyu Xia, Minhui Xue, Ibrahim Khalil, Minghui Liwang, Xun Yi, GEES: Enabling Location Privacy-Preserving Energy Saving in Multi-Access Edge Computing, ACM The Web Conference ***(WWW/TheWebConf, CCF A, CORE A*)***, 2024.
3. Xiaoyu Xia, Sheik Mohammad Fattah, Muhammad Ali, A Survey on UAV-enabled Edge Computing: Resource Management Perspective, ACM Computing Survey ***(CSUR, CORE A*, Q1)***, Vol. 56(3), Art. 78, pp.1 - 36, 2024.
4. Xiaolong Xu, Hongsheng Dong, Lianyong Qi, Xuyun Zhang, Haolong Xiang, Xiaoyu Xia, Yanwei Xu, Wanchun Dou, CMCLRec: Cross-modal Contrastive Learning for User Cold-Start Sequential Recommendation, ACM SIGIR Conference on Research and Development in Information Retrieval ***(SIGIR, CCF A, CORE A*)***, 2024.
5. Yuhao Hu, Xiaolong Xu, Lianyong Qi, Xiaokang Zhou, Xiaoyu Xia, Latency and Privacy Aware Convolutional Neural Network Distributed Inference for Reliable Artificial Intelligence Systems, IEEE Transactions on Artificial Intelligence ***(TAI, Q1)***, 2024.
6. Zhipeng Cheng, Xiaoyu Xia, Minghui Liwang, Xuwei Fan, Yanglong Sun, Xianbin Wang, Lianfeng Huang, CHEESE: Distributed Clustering-Based Hybrid Federated Split Learning over Edge Networks, IEEE Transactions on Parallel and Distributed Systems ***(TPDS, CCF A, CORE A*, Q1)***, Vol. 34(12), pp. 3174 - 3191, 2023.
7. Xiaoyu Xia, Feifei Chen, Qiang He, Guangming Cui, John Grundy, Mohamed Abdelrazek, Athman Bouguettaya, Hai Jin, OL-MEDC: An Online Approach for Cost-effective Data Caching in Mobile Edge Computing Systems, *IEEE Transactions on Mobile Computing* ***(TMC, CCF A, CORE A*, Q1)***, Vol. 22(3), pp. 1646 - 1658, 2023.
8. Guangming Cui, Qiang He, Xiaoyu Xia, Feifei Chen, Yun Yang, EESaver: Saving Energy Dynamically for Green Mobile Edge Computing, IEEE Transactions on Parallel and Distributed Systems ***(TPDS, CCF A, CORE A*, Q1)***, accepted in May 2023.
9. Feifei Chen, Jingwen Zhou, Xiaoyu Xia, Yong Xiang, Xuehong Tao, Qiang He, Joint Optimization of Coverage and Reliability for Application Placement in Mobile Edge Computing, IEEE Transactions on Services Computing ***(TSC, CCF A, CORE A*, Q1)***, accepted in July 2023.
10. Houyi Qi, Minghui Liwang, Seyyedali Hosseinalipour, Xiaoyu Xia, Zhipeng Cheng, Xianbin Wang, and Zhenzhen Jiao, Matching-based Hybrid Service Trading for Task Assignment over Dynamic Mobile Crowdsensing Networks, IEEE Transactions on Services Computing ***(TSC, CCF A, CORE A*, Q1)***, accepted in Nov 2023.
11. Ruikun Luo, Hai Jin, Qiang He, Song Wu, Xiaoyu Xia, Enabling Balanced Data Deduplication in Mobile Edge Computing, IEEE Transactions on Parallel and Distributed Systems ***(TPDS, CCF A, CORE A*, Q1)***, accepted in Feburary 2023.
12. Guangming Cui, Qiang He, Xiaoyu Xia, Feifei Chen, Fang Dong, Hai Jin, Yun Yang, OL-EUA: Online User Allocation for NOMA-based Mobile Edge Computing, *IEEE Transactions on Mobile Computing* ***(TMC, CCF A, CORE A*, Q1)***, Vol. 22(3), pp. 1449 - 1463, 2023.

13. Xiaoyu Xia, Feifei Chen, Qiang He, John Grundy, Mohamed Abdelrazek, Jun Shen, Athman Bouguettaya, Hai Jin, Formulating Cost-Effective Data Distribution Strategies Online for Edge Cache Systems, *IEEE Transactions on Parallel and Distributed Systems* ***(TPDS, CCF A, CORE A*, Q1)***, Vol. 33(12), pp. 4270 - 4281, 2022.
14. Xiaoyu Xia, Feifei Chen, Qiang He, John Grundy, Mohamed Abdelrazek, Xiaolong Xu, Hai Jin, Data, User and Power Allocations for Caching in Multi-Access Edge Computing, *IEEE Transactions on Parallel and Distributed Systems* ***(TPDS, CCF A, CORE A*, Q1)***, Vol. 33(5), pp. 1144-1155, 2022.
15. Xiaoyu Xia, Feifei Chen, Qiang He, John Grundy, Mohamed Abdelrazek, Hai Jin, Online Collaborative Data Caching in Edge Computing, *IEEE Transactions on Parallel and Distributed Systems* ***(TPDS, CCF A, CORE A*, Q1)***, Vol. 32(2), pp. 281-294, 2021.
16. Xiaoyu Xia, Feifei Chen, Qiang He, John Grundy, Mohamed Abdelrazek, Hai Jin, Cost-Effective App Data Distribution in Edge Computing, *IEEE Transactions on Parallel and Distributed Systems* ***(TPDS, CCF A, CORE A*, Q1),*** Vol. 32(1), pp. 31-44, 2021.
17. Xiaoyu Xia, Feifei Chen, John Grundy, Mohamed Abdelrazek, Hai Jin, Qiang He, Constrained App Data Caching over Edge Server Graphs in Edge Computing Environment, *IEEE Transactions on Services Computing* ***(TSC, CCF A, CORE A*, Q1, Invited presentation - IEEE SERIVCES 2021)***, accepted in 2021. DOI:10.1109/TSC.2021.3062017. 2021.
18. Xiaoyu Xia, Feifei Chen, Qiang He, Guangming Cui, John Grundy, Mohamed Abdelrazek, Fang Dong, Formulating Interference-aware Data Delivery Strategies in Edge Storage Systems, 51st International Conference on Parallel Processing (***ICPP, CCF B, CORE B***), accepted in June 2022.
19. Jingwen Zhou, Feifei Chen, Qiang He, Xiaoyu Xia, Rui Wang, Yong Xiang, Data Caching Optimization with Fairness in Mobile Edge Computing, IEEE Transactions on Services Computing ***(TSC, CCF A, CORE A*, Q1)***, accepted in August 2022.
20. Hai Jin, Ruikun Luo, Qiang He, Song Wu, Zilai Zeng, Xiaoyu Xia, Cost-Effective Data Placement in Edge Storage Systems with Erasure Code, *IEEE Transactions on Services Computing* ***(TSC, CCF A, CORE A*, Q1)***, accepted in 2022.
21. Guangming Cui, Qiang He, Xiaoyu Xia, Feifei Chen, Yun Yang, Energy-efficient Edge Server Management for Edge Computing: A Game-theoretical Approach, 51st International Conference on Parallel Processing (***ICPP, CCF B, CORE B***), accepted in June 2022.
22. Guangming Cui, Qiang He, Xiaoyu Xia, Feifei Chen, Hai Jin, Yang Xiang, Yun Yang, Efficient Verification of Edge Data Integrity in Edge Computing Environment, *IEEE Transactions on Services Computing* ***(TSC, CCF A, CORE A*, Q1)***, accepted in 2021, DOI:10.1109/TSC.2021.3090173.
23. Guangming Cui, Qiang He, Xiaoyu Xia, Feifei Chen, Tao Gu, Hai Jin, Yun Yang, Demand Response in NOMA-based Mobile Edge Computing, *IEEE Transactions on Mobile Computing* ***(TMC, CCF A, CORE A*, Q1)***, accepted in 2021. DOI:10.1109/TMC.2021.3108581.
24. Phu Lai, Qiang He, Xiaoyu Xia, Feifei Chen, Mohamed Abdelrazek, John Grundy, John Hosking, Yun Yang, Dynamic User Allocation in Stochastic Mobile Edge Computing Systems, *IEEE Transactions on Services* Computing ***(TSC, CCF A, CORE A*, Q1)***, accepted in 2021. DOI:10.1109/TSC.2021.3063148.
25. Ruikun Luo, Hai Jin, Qiang He, Song Wu, Zilai Zeng, Xiaoyu Xia, Graph-based Data Deduplication in Mobile Edge Computing Environment, 19th International Conference on Service-Oriented Computing ***(ICSOC2021, CCF B, CORE A)***, pp. 499-515, Online, 2021.
26. Ying Liu, Yuzheng Han, Ao Zhang, Xiaoyu Xia, Feifei Chen, Mingwei Zhang, Qiang He, QoE-aware Data Caching Optimization with Budget in Edge Computing, 28th IEEE International on Web Services ***(ICWS2021, CCF B, CORE A)***, pp. 324-334, Online, 2021.

27. Xiaoyu Xia, Feifei Chen, Guangming Cui, Mohamed Abdelrazek, John Grundy, Hai Jin, Qiang He, Budgeted Data Caching based on k-Median in Mobile Edge Computing, 27th IEEE International Conference on Web Services ***(ICWS2020, CCF B, CORE A)***, pp. 197-206, Beijing, China, 2020.
28. Xiaoyu Xia, Feifei Chen, Qiang He, Guangming Cui, Phu Lai, Mohamed Abdelrazek, John Grundy, Hai Jin, Graph-based Data Caching Optimization in Edge Computing, *Future Generation Computer Systems* ***(FGCS, CCF C, CORE A, Q1)***, Vol. 112, pp. 684-694, 2020.
29. Ying Liu, Qiang He, Dequan Zheng, Xiaoyu Xia, Feifei Chen, Bin Zhang, Data Caching Optimization in the Edge Computing Environment, *IEEE Transactions on Services Computing* ***(TSC, CCF A, CORE A*, Q1),*** accepted in 2020. DOI: 10.1109/TSC.2020.3032724.
30. Bo Li, Qiang He, Guangming Cui, Xiaoyu Xia, Feifei Chen, Hai Jin, Yun Yang, READ: Robustness-oriented Edge Application Deployment in Edge Computing Environment, *IEEE Transactions on Services Computing* ***(TSC, CCF A, CORE A*, Q1)***, accepted in 2020.
31. Guangming Cui, Qiang He, Xiaoyu Xia, Feifei Chen, Hai Jin, Yun Yang, Robustness-oriented k Edge Server Placement, 20th IEEE/ACM International Symposium on Cluster, Cloud and Internet Computing ***(CCGrid2020, CCF C, CORE A)***, pp. 81-90, Melbourne, Australia, 2020.
32. Xiaoyu Xia, Feifei Chen, Qiang He, Guangming Cui, Phu Lai, Mohamed Abdelrazek, John Grundy, Hai Jin, Graph-based Optimal Data Caching in Edge Computing, 17th International Conference on Service-Oriented Computing ***(ICSOC2019, CCF B, CORE A)***, pp. 477-493, Toulouse, France, 2019.

Professional Services

2023 – 2025	Technical Review Board Member @ IEEE Transactions on Parallel and Distributed Systems
2024	Program Committee Member @ ACM The Web Conference & ACM Multimedia & IEEE International Conference on Web Services
2023	Program Committee Member @ IEEE International Conference on Data Mining (Workshop) & International Joint Conference on Neural Networks (Workshop)
2022	Program Committee Member @ Pacific Rim International Conference on Artificial Intelligence & IEEE International Conference on Edge Computing & Asian Conference on Computer Vision (Workshop)
2021	Program Committee Member @ IEEE International Conference on Edge Computing
2020	Outstanding Service as a Student Volunteer @ IEEE/ACM International Conference on Automated Software Engineering

Regular Reviewer

Nature Communications, IEEE Transactions on Parallel and Distributed Systems, IEEE Transactions on Dependable and Secure Computing, IEEE/ACM Transactions on Networking, IEEE Transactions on Services Computing, IEEE Transactions on Mobile Computing, IEEE Transactions on Knowledge and Data Engineering, IEEE Transactions on Information Forensics & Security, etc.

References

Available upon request.