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
2021	**Alfred Deakin Medal for Doctoral Theses** 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. **Xiaoyu Xia**, Feifei Chen, Qiang He, Ruikun Luo, Bowen Liu, Caslon Chua, Rajkumar Buyya, Yun Yang, EdgeShield: Enabling Collaborative DDoS Mitigation at the Edge, IEEE Transactions on Mobile Computing ***(TMC, CCF A, CORE A*, Q1)***, Vol. 23(12), pp. 14502 - 14513, 2024.
3. 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.
4. **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.
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. 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.
7. 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.
8. 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.
9. **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.
10. 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.
11. 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.
12. 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.

13. 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.
14. **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.
15. **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.
16. **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.
17. **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.
18. **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.
19. **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.
20. 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.
21. 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.
22. 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.
23. 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.
24. 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.
25. 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.
26. 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.

27. 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.
28. **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.
29. **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.
30. 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.
31. 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.
32. 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.
33. **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.