Associate Professor LI, XIANFENG

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Academic Qualification

Ph.D., National University of Singapore, 2005

B.Sc., Beijing Institute of Technology, 1995

Teaching Area

Undergraduate Courses:

CS230 Computer Organization

CS231 Computer Organization Laboratory

SE370/EIE470 Computer Networks

SE371 Computer Networks Laboratory

PhD Courses:

DIAE01 Deep Learning

DINE02 Network Routing Protocol and Its Theory

Research Area

Explainable Artificial Intelligence (XAI)

Artificial Intelligece of Things (AIoT)

Edge Intelligence

Hardware Accelerators for Data-Level Parallelism

Energy Optimization for Mobile Systems

Dataplane of High-Performance Networking

AI-enabled Flying Adhoc Networks

Working Experience

2019 - present: Associate Professor, School of Computer Science and Engneering, Macau University of Science and Technology
2009 - 2019: Associate Professor, School of Electric and Computer Engineering, Peking University Shenzhen Graduate School
2008 - 2009: Lecturer, , Microprocessor Research and Development Center, Peking University Shenzhen Graduate School
2006 - 2008: Postdoctoral Researcher, School of EECS, Peking University

Academic Publication (selected)

1. L. Sun, J. Zhu, J. Tan, **X. Li,** et al., “Deep learning-assisted automated sewage pipe defect detection for urban water environment management,” Science of The Total Environment, vol. 882, p. 163562, Jul. 2023, doi: 10.1016/j.scitotenv.2023.163562.
2. Y. Yan, **X. Li,** Y. Zhan, L. Sun, and J. Zhu, “GSM-HM: Generation of Saliency Maps for Black-Box Object Detection Model Based on Hierarchical Masking,” IEEE Access, vol. 10, pp. 98268–98277, 2022, doi: 10.1109/ACCESS.2022.3206379.
3. **X. Li** and G. Li, “HB-ReTriple: Mobile rendering optimization based on efficient history reusing,” Journal of Systems Architecture (JSA), vol. 129, p. 102627, Aug. 2022, doi: 10.1016/j.sysarc.2022.102627.
4. M. Chen, **X. Li**, W. Zhou, Y. Li, and F. Deng, “LoopPara: an Architecture-Transparent Acceleration Framework for Loops by Exploiting Data-Level Parallelism,” in 2021 IEEE 6th International Conference on Computer and Communication Systems (ICCCS), Apr. 2021, pp. 22–27. doi: 10.1109/ICCCS52626.2021.9449282.
5. **X. Li**, C. Xu, and Q. Zhao, “Shellproof: More Efficient Zero-Knowledge Proofs for Confidential Transactions in Blockchain,” presented at the IEEE International Conference on Blockchain and Cryptocurrency (ICBC), Toronto, Canada, May 2020.
6. **X. Li** and G. Li, “An Adaptive CPU-GPU Governing Framework for Mobile Games on big.LITTLE Architectures,” IEEE Transactions on Computers (TC), pp. 1–1, 2020, doi: 10.1109/TC.2020.3012987.
7. **X. Li**, G. Li, and X. Cui, “ReTriple: Reduction of Redundant Rendering on Android Devices for Performance and Energy Optimizations,” in 2020 57th ACM/IEEE Design Automation Conference (DAC), Jul. 2020, pp. 1–6. doi: 10.1109/DAC18072.2020.9218517.
8. W. Li T. Yang, O. Rottenstreich, **X. Li**, G. Xie, H. Li, B. Vamanan, D. Li, H. Lin, “Tuple Space Assisted Packet Classification With High Performance on Both Search and Update,” IEEE Journal on Selected Areas in Communications (JSAC), vol. 38, no. 7, pp. 1555–1569, Jul. 2020, doi: 10.1109/JSAC.2020.2986935.
7. M. Guo, M. Chen, C. Ma, Y. Li, **X. Li**, and X. Xie, “High-Level Task-Driven Single Image Deraining: Segmentation in Rainy Days,” in Neural Information Processing, Cham, 2020, pp. 350–362. doi: 10.1007/978-3-030-63830-6_30.
9. **X. Li** and Y. Wang, “A Versatile Acceleration Framework for Machine Learning Algorithms,” in 2019 IEEE Intl Conf on Parallel Distributed Processing with Applications (ISPA), Dec. 2019, pp. 493–500. doi: 10.1109/ISPA-BDCloud-SustainCom-SocialCom48970.2019.00076.
10. **X. Li** and Y. Huang, “A Flow Table with Two-Stage Timeout Mechanism for SDN Switches,” in 2019 IEEE 21st International Conference on High Performance Computing and Communications (HPCC), Aug. 2019, pp. 1804–1809. doi: 10.1109/HPCC/SmartCity/DSS.2019.00248.
11. **X. Li**, J. Chen, F. Deng, and H. Li, “Profit-Driven Adaptive Moving Targets Search with UAV Swarms,” Sensors, vol. 19, no. 7, p. 1545, Jan. 2019, doi: 10.3390/s19071545.
12. W. Li, D. Li, X. Liu, T. Huang, **X. Li**, W. Le, H. Li, “A power-saving pre-classifier for TCAM-based IP lookup,” Computer Networks, vol. 164, p. 106898, Dec. 2019, doi: 10.1016/j.comnet.2019.106898.
13. **X. Li** and T. Zhang, “STGM: A Spatiotemporally Correlated Group Mobility Model for Flying Ad Hoc Networks,” in Communications and Networking, 2018, pp. 391–400.
14. **X. Li**, J. Chen, and J. Li, “FATES: A Framework with Adaptive Track-Explore Strategy for Moving Targets Search by a FANET,” in 2018 IEEE Intl Conf on Parallel & Distributed Processing with Applications (ISPA), Melbourne, Australia, Dec. 2018, pp. 856–861. doi: 10.1109/BDCloud.2018.00127.

15. **X. Li**, J. Li, and J. Chen, “Effective Cooperative UAV Searching Using Adaptive STGM Mobility Model in a FANET,” in 2018 IEEE Intl Conf on Parallel Distributed Processing with Applications, Ubiquitous Computing Communications (ISPA), Dec. 2018, pp. 295–301. doi: 10.1109/BDCloud.2018.00054.
16. W. Li, **X. Li**, H. Li, and G. Xie, “CutSplit: A Decision-Tree Combining Cutting and Splitting for Scalable Packet Classification,” in IEEE INFOCOM 2018 - IEEE Conference on Computer Communications (INFOCOM), Apr. 2018, pp. 2645–2653. doi: 10.1109/INFOCOM.2018.8485947.
17. **X. Li** and J. Yan, “LEPR: Link Stability Estimation-based Preemptive Routing protocol for Flying Ad Hoc Networks,” in 2017 IEEE Symposium on Computers and Communications (ISCC), Jul. 2017, pp. 1079–1084. doi: 10.1109/ISCC.2017.8024669.
18. **X. Li** and W. Xie, “CRAFT: A Cache Reduction Architecture for Flow Tables in Software-Defined Networks,” in 2017 IEEE Symposium on Computers and Communications (ISCC), Jul. 2017, pp. 967–972. doi: 10.1109/ISCC.2017.8024651.
19. **X. Li** and J. Huang, “ABPP: An Adaptive Beacon Scheme for Geographic Routing in FANET,” in 2017 18th International Conference on Parallel and Distributed Computing, Applications and Technologies (PDCAT), Dec. 2017, pp. 293–299. doi: 10.1109/PDCAT.2017.00055.
20. **X. Li**, Guikang Chen, and Wen Wen, “Energy-efficient execution for repetitive app usages on big.LITTLE architectures,” in 2017 54th ACM/EDAC/IEEE Design Automation Conference (DAC), Jun. 2017, pp. 1–6. doi: 10.1145/3061639.3062239.
21. **X. Li** and J. Chen, “An Efficient Framework for Target Search with Cooperative UAVs in a FANET,” in 2017 IEEE International Symposium on Parallel and Distributed Processing with Applications (ISPA), Dec. 2017, pp. 306–313. doi: 10.1109/ISPA/IUCC.2017.00051.
22. **X. Li**, T. Zhang, and J. Li, “A Particle Swarm Mobility Model for Flying Ad Hoc Networks,” in GLOBECOM 2017 - 2017 IEEE Global Communications Conference (GLOBECOM), Dec. 2017, pp. 1–6. doi: 10.1109/GLOCOM.2017.8253966.
23. W. Li, **X. Li**, and H. Li, “MEET-IP: Memory and Energy Efficient TCAM-Based IP Lookup,” in 2017 26th International Conference on Computer Communication and Networks (ICCCN), Jul. 2017, pp. 1–8. doi: 10.1109/ICCCN.2017.8038369.
24. **X. Li**, Y. Lin, and W. Li, “GreenTCAM: A memory- and energy-efficient TCAM-based packet classification,” in 2016 International Conference on Computing, Networking and Communications (ICNC), Feb. 2016, pp. 1–6. doi: 10.1109/ICCNC.2016.7440722.
25. **X. Li** and Y. Lin, “TaPaC: A TCAM-Assisted Algorithmic Packet Classification with Bounded Worst-Case Performance,” in 2016 IEEE Global Communications Conference (GLOBECOM), Dec. 2016, pp. 1–6. doi: 10.1109/GLOCOM.2016.7842313.
26. **X. Li**, W. Wen, and X. Wang, “Usage History-Directed Power Management for Smartphones,” in Algorithms and Architectures for Parallel Processing: 15th International Conference, ICA3PP 2015, Zhangjiajie, China, November 18-20, 2015
27. R. Shen, **X. Li**, and H. Li, “A space- and power-efficient multi-match packet classification technique combining TCAMs and SRAMs,” Journal of Supercomputing, vol. 69, no. 2, pp. 673–692, Jan. 2014, doi: 10.1007/s11227-014-1109-x.
28. T. Zhang, **X. Li**, and R.-Z. Guo, “Producing virtual face images for single sample face recognition,” Optik - International Journal for Light and Electron Optics, vol. 125, no. 17, pp. 5017–5024, Sep. 2014, doi: 10.1016/j.ijleo.2014.01.171.
29. W. Li and **X. Li**, “HybridCuts: A Scheme Combining Decomposition and Cutting for Packet Classification,” in 2013 IEEE 21st Annual Symposium on High-Performance Interconnects (HOTI), Aug. 2013, pp. 41–48. doi: 10.1109/HOTI.2013.12.

30. **X. Li**, A. Roychoudhury, T. Mitra, P. Mishra, and X. Cheng, “A Retargetable Software Timing Analyzer Using Architecture Description Language,” in 2007 Asia and South Pacific Design Automation Conference, Jan. 2007, pp. 396–401. doi: 10.1109/ASPDAC.2007.358018.
31. Y.-L. Zhao, **X.-F. Li**, D. Tong, and X. Cheng, “An Energy-Efficient Instruction Scheduler Design with Two-Level Shelving and Adaptive Banking,” Journal of Computer Science and Technology, vol. 22, no. 1, pp. 15–24, Jan. 2007, doi: 10.1007/s11390-007-9001-2.
32 **X. Li,** Y. Liang, T. Mitra, and A. Roychoudhury, “Chronos: A timing analyzer for embedded software,” Science of Computer Programming, vol. 69, no. 1, pp. 56–67, Dec. 2007, doi: 10.1016/j.scico.2007.01.014.
33. **X. Li**, A. Roychoudhury, and T. Mitra, “Modeling out-of-order processors for WCET analysis,” Real-Time Systems, vol. 34, no. 3, pp. 195–227, Nov. 2006, doi: 10.1007/s11241-006-9205-5.
34. **X. Li**, T. Mitra, and A. Roychoudhury, “Modeling Control Speculation for Timing Analysis,” Real-Time Systems, vol. 29, no. 1, pp. 27–58, Jan. 2005, doi: 10.1023/B:TIME.0000048933.15922.f9.
35. **X. Li**, A. Roychoudhury, and T. Mitra, “Modeling Out-of-Order Processors for Software Timing Analysis,” in Proceedings of the 25th IEEE International Real-Time Systems Symposium, Washington, DC, USA, 2004, pp. 92–103. doi: 10.1109/REAL.2004.33.
36. **X. Li**, H. S. Negi, T. Mitra, and A. Roychoudhury, “Design Space Exploration of Caches Using Compressed Traces,” in Proceedings of the 18th Annual International Conference on Supercomputing (ICS), New York, NY, USA, 2004, pp. 116–125. doi: 10.1145/1006209.1006227.
37. **X. Li**, T. Mitra, and A. Roychoudhury, “Accurate Timing Analysis by Modeling Caches, Speculation and Their Interaction,” in Proceedings of the 40th Annual Design Automation Conference, New York, NY, USA, 2003, pp. 466–471. doi: 10.1145/775832.775953.

Professional Society Membership

ACM/IEEE/CCF Member