

Cheng XU

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RESEARCH INTERESTS	I am interested in Databases, Cryptography, Information Security and Privacy-Aware Computing. My current focuses include: <ul style="list-style-type: none">• Authenticated query processing for outsourcing cloud computing.• Searchable blockchain with integrity assurance.• Privacy preserving query processing and access control.	
PROFESSIONAL EXPERIENCE	Simon Fraser University Visiting Scholar	Burnaby, BC, Canada <i>Mar 2020 – Present</i>
	<ul style="list-style-type: none">• Advisor: Prof. Jian Pei• Designing novel techniques to build future generation high performance blockchain systems.• Developing a prototype to demonstrate the effectiveness of the proposed system.	
	Hong Kong Baptist University Ph.D. Candidate	Hong Kong <i>Nov 2014 – Feb 2019</i>
	Senior Research Assistant / Post-doctoral Research Fellow	<i>Dec 2018 – Present</i>
	<ul style="list-style-type: none">• Designed novel algorithms and indexes for cloud-based query services to support efficient verifiable query processing in a wide range of enterprise systems.• Developed novel techniques to enable integrity assured search in scalable hybrid-storage blockchain systems.• Resulted to several research papers published in top-tier journals and conferences.	
	Syracuse University Visiting Scholar	Syracuse, NY, USA <i>Sep 2017 – Dec 2017</i>
	<ul style="list-style-type: none">• Advisor: Dr. Yuzhe Tang• Designed and implemented a memory-access pattern secure software system on Intel SGX.• Developed a dynamic program partitioning framework to support implementing a variety of external oblivious algorithms and achieving cache-miss obliviousness.	
	Homebrew Core Maintainer	Hong Kong <i>Feb 2015 – Feb 2017</i>
	<ul style="list-style-type: none">• https://brew.sh• Acted as one of the core maintainers for the open source project Homebrew, which is the most popular package manager on macOS.• Implemented several major features and improvements including better tap system, core/formulae split, sandbox system, portable Ruby, and many bug fixes.	
EDUCATION	Hong Kong Baptist University Ph.D. in Computer Science Dissertation: Authenticated Query Processing in the Cloud Advisor: Prof. Jianliang Xu	Hong Kong <i>Nov 2014 – Feb 2019</i>
	Huazhong University of Science and Technology Bachelor of Engineering in Electronics & Information Engineering	Wuhan, China <i>Sep 2009 – Jun 2014</i>
SKILLS	Programming C/C++, Rust, Java, Python, Ruby, Matlab, \LaTeX , Bash, SQL, Vimscript, Javascript, HTML, CSS Tools Vim, Tmux, Git, macOS, Linux Languages English, Mandarin	

- PUBLICATIONS**
1. H. Wang, C. Xu, C. Zhang, and J. Xu, "vChain: A blockchain system ensuring query integrity," in *Proceedings of the 2020 ACM SIGMOD International Conference on Management of Data (SIGMOD '20)*, Portland, OR, USA, Jun. 2020, *Demo Paper*.
 2. S. Guo, Y. Ji, C. Zhang, C. Xu, and J. Xu, "vCBIR: A verifiable search engine for content-based image retrieval," in *Proceedings of the 36th IEEE International Conference on Data Engineering (ICDE '20)*, Dallas, TX, USA, Apr. 2020, *Demo Paper*.
 3. C. Xu, C. Zhang, and J. Xu, "vChain: Enabling verifiable boolean range queries over blockchain databases," in *Proceedings of the 2019 ACM SIGMOD International Conference on Management of Data (SIGMOD '19)*, Amsterdam, Netherlands, Jun. 2019, pp. 141–158, *Full Paper*.
 4. C. Zhang, C. Xu, J. Xu, Y. Tang, and B. Choi, "GEM²-Tree: A gas-efficient structure for authenticated range queries in blockchain," in *Proceedings of the 35th IEEE International Conference on Data Engineering (ICDE '19)*, Macau SAR, China, Apr. 2019, pp. 842–853, *Full Paper*.
 5. S. Guo, J. Xu, C. Zhang, C. Xu, and T. Xiang, "ImageProof: Enabling authentication for large-scale image retrieval," in *Proceedings of the 35th IEEE International Conference on Data Engineering (ICDE '19)*, Macau SAR, China, Apr. 2019, pp. 1070–1081, *Full Paper*.
 6. Y. Ji, C. Xu, J. Xu, and H. Hu, "vABS: Towards verifiable attribute-based search over shared cloud data," in *Proceedings of the 35th IEEE International Conference on Data Engineering (ICDE '19)*, Macau SAR, China, Apr. 2019, pp. 2028–2031, *Demo Paper*.
 7. C. Zhang, C. Xu, J. Xu, and B. Choi, "Distributed kNN query authentication," in *Proceedings of the 19th IEEE International Conference on Mobile Data Management (MDM '18)*, Aalborg, Denmark, Jun. 2018, pp. 167–176, *Full Paper*.
 8. C. Xu, J. Xu, H. Hu, and M. H. Au, "When query authentication meets fine-grained access control: A zero-knowledge approach," in *Proceedings of the 2018 ACM SIGMOD International Conference on Management of Data (SIGMOD '18)*, Houston, TX, USA, Jun. 2018, pp. 147–162, *Full Paper*.
 9. C. Xu, Q. Chen, H. Hu, J. Xu, and X. Hei, "Authenticating aggregate queries over set-valued data with confidentiality," *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, vol. 30, no. 4, pp. 630–644, Apr. 2018, *Full Paper*.
 10. C. Xu, Q. Chen, H. Hu, J. Xu, and X. Hei, "Authenticating aggregate queries over set-valued data with confidentiality (extended abstract)," in *Proceedings of the 34th IEEE International Conference on Data Engineering (ICDE '18)*, Paris, France, Apr. 2018, pp. 1797–1798, *Poster Paper*.
 11. Y. Tang, Z. Xing, C. Xu, J. Chen, and J. Xu, "Lightweight logging over the blockchain for data-intensive applications," in *2nd Workshop on Trusted Smart Contracts at International Conference on Financial Cryptography and Data Security*, Santa Barbara Beach Resort, Curaçao, Mar. 2018, pp. 308–324, *Workshop Paper*.
 12. Q. Zhu, H. Hu, C. Xu, J. Xu, and W.-C. Lee, "Geo-social group queries with minimum acquaintance constraints," *The VLDB Journal (VLDBJ)*, vol. 26, no. 5, pp. 709–727, Jul. 2017, *Full Paper*.
- TALKS**
1. Blockchain Privacy Preserving Techniques, *The 36th CCF National Database Conference*, Jinan, China, Oct. 2019.
 2. Towards Searchable and Verifiable Blockchain, *1st Workshop on Blockchain and Data Management at 35th IEEE International Conference on Data Engineering*, Macau, Apr. 2019.
 3. When Query Authentication Meets Fine-Grained Access Control: A Zero-Knowledge Approach, *2018 ACM SIGMOD International Conference on Management of Data*, Houston, USA, Jun. 2018.
- AWARDS**
- SIGMOD Travel Award, ACM 2018
 - Department RPg Performance Award, Hong Kong Baptist University 2018, 2019
 - Postgraduate Research Symposium Best Research Performance Award & Best Poster Award, Hong Kong Baptist University 2018
 - Yakun Scholarship Scheme for Mainland Postgraduate Students, Hong Kong Baptist University 2018
 - Excellent Teaching Assistant Performance Award, Hong Kong Baptist University 2017
 - Teaching Assistant Performance Award, Hong Kong Baptist University 2015, 2016