

# Cheng XU

DLB 625, Department of Computer Science  
Hong Kong Baptist University, Hong Kong  
✉ chengxu@comp.hkbu.edu.hk  
🏠 <https://xuc.me> · 🌐 xu-cheng · 📄 xu-cheng

RESEARCH INTERESTS	I am interested in Databases, Cryptography, Information Security and Privacy-Aware Computing. My current focuses include: <ul style="list-style-type: none"><li>• Authenticated query processing for outsourcing cloud computing.</li><li>• Searchable blockchain with integrity assurance.</li><li>• Privacy preserving query processing and access control.</li></ul>	
PROFESSIONAL EXPERIENCE	<b>Hong Kong Baptist University</b> <b>Ph.D. Candidate</b> <b>Senior Research Assistant / Post-doctoral Research Fellow</b>	Hong Kong Nov 2014 – Feb 2019 Dec 2018 – Present
	<ul style="list-style-type: none"><li>• Designed novel algorithms and indexes for cloud-based query services to support efficient verifiable query processing in a wide range of enterprise systems.</li><li>• Developed novel techniques to enable integrity assured search in scalable hybrid-storage blockchain systems.</li><li>• Resulted to several research papers published in top-tier journals and conferences.</li></ul>	
	<b>Syracuse University</b> <b>Visiting Scholar</b>	Syracuse, NY, USA Sep 2017 – Dec 2017
	<ul style="list-style-type: none"><li>• Advisor: Dr. Yuzhe Tang</li><li>• Designed and implemented a memory-access pattern secure software system on Intel SGX.</li><li>• Developed a dynamic program partitioning framework to support implementing a variety of external oblivious algorithms and achieving cache-miss obliviousness.</li></ul>	
	<b>Homebrew</b> <b>Core Maintainer</b>	Hong Kong Feb 2015 – Feb 2017
	<ul style="list-style-type: none"><li>• <a href="https://brew.sh">https://brew.sh</a></li><li>• Acted as one of the core maintainers for the open source project Homebrew, which is the most popular package manager on macOS.</li><li>• Implemented several major features and improvements including better tap system, core/formulae split, sandbox system, portable Ruby, and many bug fixes.</li></ul>	
	<b>Huazhong University of Science and Technology</b> <b>Final Year Project</b>	Wuhan, China Sep 2013 – Jun 2014
	<ul style="list-style-type: none"><li>• Advisor: Dr. Xiaojun Hei</li><li>• Designed and implemented a smart home router system using software defined network technology.</li></ul>	
EDUCATION	<b>Hong Kong Baptist University</b> Ph.D. in Computer Science Dissertation: Authenticated Query Processing in the Cloud Advisor: Prof. Jianliang Xu	Hong Kong Nov 2014 – Feb 2019
	<b>Huazhong University of Science and Technology</b> Bachelor of Engineering in Electronics & Information Engineering	Wuhan, China Sep 2009 – Jun 2014
SKILLS	<b>Programming</b> C/C++, Rust, Java, Python, Ruby, Matlab, $\text{\LaTeX}$ , Bash, SQL, Vimscript, Javascript, HTML, CSS <b>Tools</b> Vim, Tmux, Git, macOS, Linux <b>Languages</b> English, Mandarin	

- PUBLICATIONS**
1. 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.
  2. C. Zhang, C. Xu, J. Xu, Y. Tang, and B. Choi, "GEM<sup>2</sup>-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.
  3. 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.
  4. 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.
  5. 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.
  6. 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.
  7. 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.
  8. 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.
  9. 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.
  10. 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