

# Yuzhe Tang

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## Academic Position

2014 - Assistant Professor, Department of EECS, Syracuse University

## Education

Ph.D. Georgia Institute of Technology (Atlanta, GA USA), 2009-2014  
M.Sc. Fudan University (Shanghai, China), 2006-2009  
B.Sc. Fudan University (Shanghai, China), 2002-2006

## Research Areas

Research areas Cyber-security and distributed systems with specific technical focuses on *vulnerability discovery & mitigation, security measurement, trusted execution environment, and performance optimization.*

Application focus Currently on the emerging security-critical scenarios including *blockchain and decentralized applications, cloud computing and data outsourcing, and privacy-preserving data federation.*

## Publications

**FSE'21** *iBatch: Saving Ethereum Fees via Secure and Cost-Effective Batching of Smart-Contract Invocations*  
Yibo Wang, Qi Zhang, Kai Li, Yuzhe Tang, Jiaqi Chen, Xiapu Luo, Ting Chen.  
ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE) 2021  
Acceptance rate=24.5%

**ToNSE'21** *VFChain: Enabling Verifiable and Auditable Federated Learning via Blockchain Systems*  
Zhe Peng, Jianliang Xu, Xiaowen Chu, Shang Gao, Yuan Yao, Rong Gu, Yuzhe Tang  
IEEE Transactions on Network Science and Engineering (TNSESI) 2021

**NDSS'21** *As Strong As Its Weakest Link: How to Break Blockchain DApps at RPC Service*  
Kai Li, Jiaqi Chen, Xianghong Liu, Yuzhe Tang, XiaoFeng Wang, Xiapu Luo  
The Network and Distributed System Security Symposium (NDSS) 2021  
Acceptance rate=15.2%

**Middleware'20** *Cost-Effective Data Feeds to Blockchains via Workload-Adaptive Data Replication*  
Kai Li, Yuzhe Tang, Jiaqi Chen, Zhehu Yuan, Cheng Xu, Jianliang Xu  
ACM/IFIP Middleware conference 2020  
Acceptance rate=25.2%

**SERIAL'20** *Scalable Log Auditing on Private Blockchains via Lightweight Log-Fork Prevention*  
Yuzhe Tang, Kai Li, Yibo Wang, Sencer Burak Somuncuoglu  
Workshop on Scalable and Resilient Infrastructures for Distributed Ledgers 2020, colocated with ACM/IFIP Middleware conference 2020

**ICDE'19** *GEM<sup>2</sup>-Tree: A Gas-Efficient Structure for Authenticated Range Queries in Blockchain*  
Ce Zhang, Cheng Xu, Jianliang Xu, Yuzhe Tang, Byron Choi.  
IEEE 36th International Conference on Data Engineering (ICDE) 2020  
Acceptance rate=26.8%

**SecureComm'19** *Secure Consistency Verification for Untrusted Cloud Storage by Public Blockchains*  
Kai Li, Yuzhe Tang, Beom Heyn Kim, Jianliang Xu

**SecureComm'19** *Authenticated LSM Trees with Minimal Trust, (Short paper)*  
Yuzhe Tang, Ju Chen, Kai Li.

**CISSE'19** *Hands-on Labs for Secure Programming on Modern Trusted Platforms*

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| ASONAM'19         | Yuzhe Tang, Wenliang Du.<br><i>Computing Node Clustering Coefficients Securely</i> , Short paper  |
| SecureComm'18     | K. Areekijserree, Yuzhe Tang, Sucheta Soundarajan<br><i>Secure and Efficient Multi-Party Directory Publication for Privacy-Preserving Data Sharing</i><br>K. Areekijserree, Ju Chen, Yuzhe Tang, Shuang Wang, Arun Iyengar and B. Palanisamy.<br>SecureComm 2018, Acceptance rate=30.6% |
| Cloud'18a         | <i>ChainFS: Blockchain-Secured Cloud Storage</i><br>Qiwu Zou, Yuzhe Tang, Ju Chen, Kai Li, Charles Kamoua, Kevin Kwiat, Laurent Njilla<br>IEEE Cloud 2018, Acceptance rate=20%  |
| Cloud'18b         | Pinchao Liu, Liting Hu, Hailu Xu, Zhiyuan Shi, Jason Liu, Qingyang Wang, Jai Dayal and Yuzhe Tang<br><i>A Toolset for Detecting Containerized Application's Dependencies in CaaS Clouds</i><br>IEEE Cloud 2018, Acceptance rate=20%   |
| Cloud'18c         | Hailu Xu, Liting Hu, Pinchao Liu, Yao Xiao, Wentao Wang, Jai Dayal, Qingyang Wang and Yuzhe Tang<br><i>Oases: An Online Scalable Spam Detection System for Social Networks</i><br>IEEE Cloud 2018, Acceptance rate=20%  |
| FC'18(W)          | <i>Lightweight Blockchain Logging for Data-Intensive Applications</i><br>Yuzhe Tang, Zihao Xing, Cheng Xu, Ju Chen, Jianliang Xu<br>The Workshop of Trusted Smart Contract at the International Conference of Financial Cryptography 2018   |
| VT'18             | <i>Non-interactive Identity-based Underwater data transmission with Anonymity and Zero-knowledge</i><br>Changsheng Wan, Vir V Phoha, Yuzhe Tang, Aiqun Hu<br>IEEE Transactions on Vehicular Technology 2017   |
| CIC'17            | <i>PADS: Privacy-preserving Auction Design for Allocating Dynamically Priced Cloud Resources</i><br>Jinlai Xu, Balaji Palanisamy, Yuzhe Tang, SD Madhu Kumar<br>IEEE CIC 2017   |
| SOSP'17(W)        | <i>Strongly Secure and Efficient Data Shuffle on Hardware Enclaves</i><br>Ju Chen, Yuzhe Tang, Hao Zhou<br>The Workshop of Systems Software for Trusted Execution (SysTEX) at ACM SOSP 2017   |
| ICDCS'17(P)       | <i>Towards Secure Public Directory for Privacy-Preserving Data Sharing</i><br>Amin Fallahi, Xi Liu, Yuzhe Tang, Shuang Wang, Rui Zhang.<br>IEEE International Conference on Distributed Computing Systems, Poster   |
| ICDCS'17(W)       | <i>Social-Aware Decentralization for Efficient and Secure Multi-Party Computation</i><br>Yuzhe Tang, Sucheta Soundarajan<br>The Workshop of Big-Data Privacy and Security at IEEE International Conference on Distributed Computing Systems   |
| BMC'16            | <i>Secure Multi-party Computation Grid Logistic REgression (SMAC-GLORE)</i><br>Haoyi Shi, Chao Jiang, Wenrui Dai, Xiaoqian Jiang, Yuzhe Tang, Lucila Ohno-Machado and Shuang Wang<br>BMC Medical Informatics and Decision Making [ <a href="#">open access</a> ]                        |
| SecDev'16         | <i>Towards Building Practical And Secure Multi-Party Databases</i><br>Yuzhe Tang, Wenqing Zhuang<br>IEEE Cybersecurity Development Conference 2016 (Abstract)   |
| Bioinformatics'16 | <i>HEALER: Homomorphic computation of ExAct Logistic rEgRes-sion for secure rare disease variants analysis in GWAS</i><br>Shuang Wang, Y. Zhang, W. Dai, K. Lauter, M. Kim, Yuzhe Tang, X. Jiang<br>Oxford Journals Bioinformatics, doi: 10.1093/bioinformatics/btv563                  |
| BMC'15            | <i>Privacy-preserving GWAS analysis on federated genomic datasets</i><br>Scott D Constable, Yuzhe Tang, Shuang Wang, Xiaoqian Jiang, Steve Chapin<br>BMC Medical Informatics and Decision Making 2015, [ <a href="#">Open access</a> ]  |
| TKDE'15           | <i>Privacy-Preserving Multi-Keyword Search in Information Networks</i><br>Yuzhe Tang, Ling Liu<br>IEEE Trans. Knowl. Data Eng. 27(9): 2424-2437 (2015)  |
| CCGrid'15         | <i>Deferred Lightweight Indexing for Log-Structured Key-Value Stores</i><br>Yuzhe Tang, Arun Iyengar, Wei Tan, Liana Fong, Ling Liu, Balaji Palanisamy<br>IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing 2015: 11-20<br><b>Best Paper Award</b>                  |
| HPBDC'15          | <i>KTV Tree: Interactive Top-K Aggregation on Large Dataset in Cloud</i><br>Yuzhe Tang, Ling Liu, Junichi Tatemura, Hakan Hacigumus<br>IEEE International Conference of Distributed Computing Systems Workshops 2015: 136-141   |
| HotCloud'15       | <i>Privacy-Preserving Offloading of Mobile App to the Public Cloud</i>  |

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| TBC'15     | Yue Duan, Mu Zhang, Heng Yin, Yuzhe Tang<br>USENIX Workshop on Hot Topics in Cloud Computing 2015<br><i>Secure Multi-party Computation on Grid Logistic Regression</i><br>Haoyi Shi, Shuang Wang, Wenrui Dai, Yuzhe Tang, Xiaoqian Jiang, LucilaOhno-Machado<br>Annual Translational Bioinformatics Conference 2015 |
| ACSAC'14   | <i>Lightweight Authentication of Freshness in Outsourced Key-Value Stores</i><br>Yuzhe Tang, Ling Liu, Xin Hu, Jiyong Jang<br>USENIX/ACM Annual Computer Security Applications Conference 2014: 176-185<br>Acceptance rate=19.9%  |
| ICDCS'14   | <i>e-PPI: Locator Service in Information Networks with Personalized Privacy Preservation</i><br>Yuzhe Tang, Ling Liu, Arun Iyengar<br>IEEE International Conference of Distributed Computing Systems 2014: 186-197  |
| EDBT'14    | <i>Diff-Index: Differentiated Index in Distributed Log-Structured Data Stores</i><br>Wei Tan, Sandeep Tata, Yuzhe Tang, Liana Fong<br>International Conference on Extending Database Technology 2014: 700-711   |
| JDPD'14    | <i>Anonymizing Continuous Queries with Delay-tolerant Mix-zones on Road Networks</i><br>Balaji Palanisamy, Ling Liu, Kisung Lee, Shicong Meng, Yuzhe Tang<br>International Journal of Distributed and Parallel Databases 32(1): 91-118 (2014)   |
| ICDE'14(D) | <i>Outsourcing multi-version key-value stores with verifiable data freshness</i><br>Yuzhe Tang, Ling Liu, Ting Wang, Xin Hu, Reiner Sailer, Peter Pietzuch<br>IEEE International Conference on Data Engineering 2014: 1214-1217 (Demo paper)  |
| TPDS'13    | <i>Auto-pipelining for Data Stream Processing</i><br>Yuzhe Tang, Bugra Gedik<br>IEEE Trans. Parallel Distrib. Syst. 24(12): 2344-2354 (2013)  |
| Cloud'13a  | <i>Residency Aware Inter-VM Communication in Virtualized Cloud: Performance Measurement and Analysis</i><br>Qi Zhang, Ling Liu, Yi Ren, Kisung Lee, Yuzhe Tang, Xu Zhao, Yang Zhou<br>IEEE International Conference on Cloud Computing 2013: 204-211  |
| Cloud'13b  | <i>Efficient and Customizable Data Partitioning Framework for Distributed Big RDF Data Processing in the Cloud</i><br>Kisung Lee, Ling Liu, Yuzhe Tang, Qi Zhang, Yang Zhou<br>IEEE International Conference on Cloud Computing 2013: 327-334   |
| MSN'12     | <i>Location Privacy with Road Network Mix-Zones</i><br>Balaji Palanisamy, Ling Liu, Kisung Lee, Shicong Meng, Yuzhe Tang<br>IEEE International Conference on Mobile Ad-hoc and Sensor Networks 2012: 124-131  |
| Cloud'12   | <i>Reliable State Monitoring in Cloud Data Centers</i><br>Shicong Meng, Arun Iyengar, I. Rouvellou, L. Liu, K. Lee, B. Palanisamy, Yuzhe Tang<br>IEEE International Conference on Cloud Computing 2012: 951-958<br><b>Best Paper Award</b>  |
| CIKM'11    | <i>Privacy Preserving Indexing for eHealth Information Networks</i><br>Yuzhe Tang, Ting Wang, Ling Liu, Shicong Meng, Balaji Palanisamy<br>Conference on Information and Knowledge Management 2011: 905-914   |
| TPDS'11    | <i>A Lightweight Multi-dimensional Index for Complex Queries over DHTs</i><br>Yuzhe Tang, Jianliang Xu, Shuigeng Zhou, Wang-Chien Lee, Dingxiong Deng, Yue Wang<br>IEEE Trans. Parallel Distrib. Syst. 22(12): 2046-2054 (2011)   |
| TKDE'10    | <i>LIGHT: A Query-Efficient yet Low-Maintenance Indexing Scheme over DHTs</i><br>Yuzhe Tang, Shuigeng Zhou, Jianliang Xu<br>IEEE Trans. Knowl. Data Eng. 22(1): 59-75 (2010)  |
| ICDCS'09   | <i>m-LIGHT: Indexing Multi-Dimensional Data over DHTs</i><br>Yuzhe Tang, Jianliang Xu, Shuigeng Zhou, Wang-Chien Lee<br>IEEE International Conference of Distributed Computing Systems 2009: 191-198  |
| ICDCS'08   | <i>LHT: A Low-Maintenance Indexing Scheme over DHTs</i><br>Yuzhe Tang, Shuigeng Zhou<br>IEEE International Conference of Distributed Computing Systems 2008: 141-151  |

## Research Grants

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| 2021-2024 | Collaborative Research: SaTC: EDU: Developing Instructional Laboratories for Blockchain Security Applications,<br>Yuzhe Tang (PI), Jing Lei, Farzana Rahman, Hongmei Chi.<br>Total: \$399,995, PI Tang's portion: \$340,000<br>National Science Foundation (NSF) |
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| 2018-2021 | SaTC: Small: External Obliviousness in Trusted Execution Environments<br>Yuzhe Tang (Single PI), \$496,999 + \$16,000<br>National Science Foundation ( <b>NSF</b> )                             |
| 2019-2020 | Planning IUCRC Syracuse University: Center for High-Assurance Secure Systems and IoT (CHASSI)<br>Shui-Kai Chin (PI), Yuzhe Tang (Co-PI), \$15,000<br>National Science Foundation ( <b>NSF</b> ) |
| 2018-2020 | SGX-based Key-Management Applications in the Cloud<br>Yuzhe Tang (Single PI), \$9,996<br>Intel Gift   |
| 2017-2018 | Cryptographic Engineering on Modern Trusted Platforms<br>Yuzhe Tang (PI), Wenliang Du (Co-PI), \$300,000<br>National Security Agency ( <b>NSA</b> )   |
| 2015-2016 | Optimizing Privacy-Preserving Analytics in Information Networks<br>Yuzhe Tang (PI), \$69,861<br>Cyber Research Institute (CRI)  |

#### Internal grants

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| 2021-2023 | Workload-Adaptive Designs for Cost-Effective Decentralized Applications on Blockchains<br>Yuzhe Tang (Single PI), \$21,000,<br>CUSE Grant (Syracuse University Internal Grant) |
| 2018-2020 | On-Campus Blockchain Applications for Education and Beyond<br>Wenliang Du (PI), Yuzhe Tang (Co-PI), \$30,000<br>CUSE Grant (Syracuse University Internal Grant)                |
| 2018-2020 | Efficient Algorithms for Secure, Large-Scale Graph Mining<br>Yuzhe Tang (PI), Sucheta Soundarajan (Co-PI), \$30,000<br>CUSE Grant (Syracuse University Internal Grant)         |

## Patents

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| 2014 | Adaptive Auto-pipelining in Stream Processing Applications: US20140101668<br>Bugra Gedik, Scott A. Schneider, Yuzhe Tang, Kun-lung Wu |
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## Teaching

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|-------------|--|
| Fall 2020   | CIS600/FIN600, <i>Cryptocurrencies and Blockchains</i>   |
| Fall 2019   | CIS600/FIN600, <i>Cryptocurrencies and Blockchains</i><br>CIS628/CIS428, <i>Introduction to Applied Cryptography</i>                 |
| Spring 2019 | CSE384, <i>System Programming</i>  |
| Fall 2018   | CIS600/FIN600, <i>Blockchain and Cryptocurrency</i>  |
| Spring 2018 | CIS300, <i>Introduction to System Programming</i>  |
| Fall 2017   | CIS700, <i>Modern Information Security and Privacy</i>   |
| Spring 2017 | CIS/CSE600, <i>Applied Cryptography</i><br>CIS655/CSE661, <i>Advanced Computer Architecture</i><br>CIS423, <i>System Programming</i> |
| Spring 2016 | CIS700/CSE791, <i>Big-Data and Cloud Security</i> , website: <a href="#">[link]</a>  |
| Fall 2015   | CIS655/CSE661, <i>Advanced Computer Architecture</i> (180 students), website: <a href="#">[link]</a>                                 |
| Spring 2015 | CIS700/CSE791, <i>Distributed Systems in Cloud</i> , website: <a href="#">[link]</a>   |
| Fall 2014   | CIS655/CSE661, <i>Advanced Computer Architecture</i> (180 students)  |

## Student Supervision

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| Ph.D.  | Kai Li, Yibo Wang, Jiaqi Chen, Xianghong Liu, Qi Zhang  |
| Alumni | Zhehu Yuan (U.G.), PhD at NYU<br>Sencer Burak Somuncuoglu (M.S.), Chainalysis<br>Qiwu Zou (U.G.), Master at Cornell<br>Vinutha Karanth (M.S.), Microsoft<br>Katchaguy Areekijserree (M.S.), PhD at Syracuse Univ.<br>Hari Krishna Gajarla (M.S.), Bloomberg, L.P. |

## Professional Services

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| Program chair     | GLSD 2018/2020 (Great lake security day)<br>The BlockDM workshop 2021/2020/2019 (the International Workshop of Blockchain and Data Management, colocated with ICDE)   |
| Program committee | WWW 2020, 2021<br>ICDCS 2020, 2017, 2015<br>IPDPS 2018, IEEE Computing 2017<br>TOCS 2017<br>ICICS 2021<br>IEEE Cloud 2015<br>PAIS 2016, 2015<br>TKDE 2017, 2016, 2015<br>TSC 2021, 2017, 2016, 2015<br>TWeb 2015, TCSVT 2014, Middleware 2012 |

## Internship Experience

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| 05/2013-08/2013 | IBM Research (T.J. Watson Lab) at Yorktown Heights, NY USA |
| 05/2012-08/2012 | IBM Research (T.J. Watson Lab) at Yorktown Heights, NY USA |
| 05/2011-08/2011 | IBM Research (T.J. Watson Lab) at Hawthorn, NY USA         |
| 05/2010-08/2010 | NEC Labs America at Cupertino, CA USA                      |
| 01/2009-06/2009 | Microsoft Research Asia at Beijing, China                  |
| 01/2006-04/2006 | IBM Corp. at Shanghai, China                               |

## Honors and Awards

- Best paper award, 15th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing, 2015
- Chinese Government Award for Outstanding Self-financed Students Abroad, 2012
- Best paper award, 5th International Conference on Cloud Computing, 2012
- Outstanding Master Thesis of Shanghai, Shanghai Government, 2010
- Tung's Oriental Scholarship, Tung's Oriental, 2008
- HP Distinguished Chinese Student Scholarship, Hewlett-Packard, 2008
- ICDCS Student Travel Grant, TCDP (IEEE Computer Society), 2008
- Graduate Student Fellowship of Fudan University, 2007-2008 (2 times)
- Outstanding Graduated Student of Fudan University, 2006
- Excellence Award, Tencent Innovation Contest, 2006
- The Peoples Scholarship of Fudan University, 2002-2006 (4 times)
- Chinese Physics Olympiads, First Prize in Hunan Province, 2001

## Invited Talks

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|---------------|--|
| NKU'14        | Scalable and secure cloud service in big data systems<br>North Kentucky University, Newport, KY,<br>Department of Computer Science,<br>Feb. 24, 2014                 |
| UDel'14       | Scalable and secure cloud service in big data systems<br>University of Delaware, Newark, DE,<br>Department of Computer and Information Sciences,<br>Feb. 28, 2014    |
| NECLab'14     | Scalable and secure cloud service in big data systems<br>NEC Lab America, Princeton, NJ,<br>March 7, 2014  |
| IBM'14        | Scalable and secure cloud service in big data systems<br>IBM Research, Yorktown Heights, NY, March 18, 2014  |
| MST'14        | Scalable and secure cloud service in big data systems<br>Missouri University of Science and Technology, Rolla, MO,<br>Computer Science Department,<br>March 31, 2014 |
| HealthTech'14 | Searching HIE with Differentiated Privacy Preservation <a href="#">[link]</a>  |



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|            | Usenix Security, San Diego, CA,<br>August 31, 2014  |
| LSU'14     | Securing Key-Value Stores in the Public Cloud using Lightweight Authentication <a href="#">[link]</a><br>Louisiana State University, Baton Rouge, LA,<br>Department of Computer Science,<br>December 16, 2014 |
| Fudan'16   | Lightweight Authentication of Freshness in Outsourced Key-Value Stores<br>Fudan University, Shanghai, China<br>School of Computer Science,<br>Dec. 28, 2016   |
| NUDT'17    | Lightweight Authentication of Freshness in Outsourced Key-Value Stores<br>National University of Defense and Technology, Changsha, China<br>Department of Computer Science,<br>Jan. 4, 2017                   |
| XJTU'17    | Lightweight Authentication of Freshness in Outsourced Key-Value Stores<br>Xi'an Jiaotong University, Xi'an, China<br>School of Computer Science,<br>Jan. 10, 2017   |
| Cornell'17 | Lightweight Authentication of Freshness in Outsourced Key-Value Stores<br>Cornell University, Ithaca, NY<br>Department of Computer Science,<br>Feb. 3, 2017   |
| MoST'17    | TACNY Junior Cafe Scientifique: "Get Your Head In The Clouds! Cloud Computing: Risks and Rewards" <a href="#">[link]</a><br>Museum of Science & Technology, Syracuse, NY<br>June 17, 2017                     |
| CSIAC'17   | Public lecture: "Blockchain: Applications, Security Promises and Internals"<br>Dec. 19 2017, <a href="#">[webinar]</a> , <a href="#">[slides]</a>   |