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	<b>研究方向:</b>	云/数据中心/大数据的智能存储技术和系统 计算机体系结构

### 【详细信息】

2010年本科毕业于电子科技大学数学科学学院，2016年博士毕业于清华大学计算机系，2017年至2019年在香港中文大学计算机科学与工程学系开展博士后研究，主要研究方向为大数据/云存储系统、数据中心和新型非易失存储介质的数据存储可靠性，在IEEE TC、TPDS、TDSC和USENIX ATC、INFOCOM、ICDCS、IPDPS、DSN、SRDS等CCF A/B类期刊会议发表论文40多篇，获得清华大学优秀博士毕业生（清华大学当年度博士毕业生前3%），SRDS'20最佳论文奖（CCF-B类会议，国内第一次在该会获得最佳论文奖）、SRDS'15最佳论文提名奖（CCF-B类会议，国内第一次在该会获得最佳论文提名及以上奖励）、“领跑者5000-中国精品科技期刊顶尖学术论文”等各类学术奖项，主持包括国家自然科学基金面上项目和青年基金、福建省自然科学基金面上项目和青年创新基金、CCF-腾讯犀牛鸟科研基金、之江实验室开放课题和香港创新科技署ITF研发基金（Co-PI）在内等多项课题。入选福建省引进高层次人才（境外B类，2020年）、厦门市高层次留学人员（2020年）、厦门大学南强青年拔尖人才计划（B类，2019年）和“香江学者”计划（2017年，全国遴选60名优秀博士后赴香港联合培养）。担任CCF信息存储专委会委员、ChinaSys程序委员会委员和ACM中国厦门分会副秘书长。

### 【在研项目】

- [1]. 国家自然科学基金面上项目，数据中心高可靠存储和低延迟访问兼顾纠删码技术研究，主持，2021.01~2024.12
- [2]. 香港创新与科技基金(Innovation and Technology Funding), Software-Defined Network-Coding-Based Storage for Geo-Distributed Cloud Data Centers, Co-PI
- [3]. 之江实验室开放课题，区块链存储网络基于纠删码的高可靠存储技术研究，主持，2021.01~2022.12
- [4]. CCF-腾讯犀牛鸟科研基金，区块链存储网络高可靠存储与低访问延迟兼顾的纠删码技术研究，主持，2020.10~2021.10
- [5]. 福建省自然科学基金面上项目，数据中心基于纠删码的安全读写访问关键技术研究，主持，2020.08~2023.08
- [6]. 西安电子科技大学——综合业务网理论及关键技术国家重点实验室第21期开放课题，区块链多存储网络的安全可靠分散机制研究，主持，2020.04-2022.04

### 【发表论文】

- [1]. [CCF-A] Shiyao Lin, Guowen Gong, **Zhirong Shen\*** (通讯作者), Patrick P. C. Lee, and Jiwu Shu. Boosting Full-Node Repair in Erasure-Coded Storage. In Proceedings of 2021 USENIX Annual Technical Conference (USENIX ATC'21), July 14-16, 2021. (AR: 64/341 = 18.8%)
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- [3]. [CCF-A] **Zhirong Shen**, Shiyao Lin, Jiwu Shu, Chengxin Xie, Zhijie Huang, and Yingxun Fu. Cluster-Aware Scattered Repair in Erasure-Coded Storage: Design and Analysis. IEEE Transactions on Computers (TC)

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- [4]. [CCF-A] **Zhirong Shen**, Patrick P.C. Lee. Cross-Rack-Aware Updates in Erasure-Coded Data Centers: Design and Evaluation. IEEE Transactions on Parallel and Distributed Systems (IEEE TPDS), 31(10): 2315-2328, 2020.
- [5]. [CCF-A] **Zhirong Shen**, Patrick P.C. Lee, Jiwu Shu, and Wenzhong Guo. Cross-Rack-Aware Single Failure Recovery in Clustered File Systems. IEEE Transactions on Dependable and Secure Computing (IEEE TDSC), 17(2): 248-261, 2020.
- [6]. [CCF-A] **Zhirong Shen**, Patrick P.C. Lee, Jiwu Shu, and Wenzhong Guo. Correlation-Aware Stripe Organization for Efficient Writes in Erasure-Coded Storage: Algorithms and Evaluation. IEEE Transactions on Parallel and Distributed Systems (IEEE TPDS), 30(7):1552-1564, 2019.
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- [10]. [CCF-A] **Zhirong Shen**, Jiwu Shu, and Yingxun Fu. HV Code: An All-Around MDS Code for RAID-6 Storage Systems. IEEE Transactions on Parallel and Distributed Systems (IEEE TPDS), 27(6): 1674-1686, 2016.
- [11]. [CCF-B] Jiwu Shu (导师), **Zhirong Shen**, and Wei Xue. Shield: A Stackable Secure Storage System for File Sharing in Public Storage. Journal of Parallel and Distributed Computing (JPDC), 74(6), pp. 2872-2883, 2014. (导师是第一作者, 该论文被 JPDC 期刊评选为 2014 年 7 月至 2014 年 9 月访问最热门的 25 篇论文之一, 当时排名为第 11 位)
- [12]. [CCF-B] Si Wu, **Zhirong Shen\*** (通讯作者), and Patrick P. C. Lee. Enabling I/O-Efficient Redundancy Transitioning in Erasure-Coded KV Stores via Elastic Reed-Solomon Codes. In Proceedings of the 39th International Symposium on Reliable Distributed Systems (SRDS'20), Sep. 21-24, 2020, Shanghai, China. (AR: 32/131 = 24.4%) (大会唯一最佳论文奖 **Prof. C. V. Ramamoorthy Best Paper Award**)
- [13]. [CCF-B] Suzhen Wu, Sijie Lan, Jindong Zhou, Hong Jiang, **Zhirong Shen\***(通讯作者). BitFlip: A Bit-Flipping Scheme for Reducing Read Latency and Improving Reliability of Flash Memory. In Proceedings of the 36th International Conference on Massive Storage Systems and Technology (MSST'20), October, 2020, USA.
- [14]. [CCF-B] **Zhirong Shen**, Jiwu Shu, Zhijie Huang, and Yingxun Fu. ClusterSR: Cluster-Aware Scattered Repair in Erasure-Coded Storage. In Proceedings of 34th IEEE International Parallel and Distributed Processing Symposium (IPDPS'20), May 18-May 22, New Orleans, Louisiana, USA.
- [15]. [CCF-B] **Zhirong Shen**, Xiaolu Li, and Patrick P.C. Lee. Fast Predictive Repair in Erasure-Coded Storage Systems. In Proceedings of the 49th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN'19), Jun. 24~Jun. 29, Portland, Oregon, USA. (AR: 54/252=21.4%)
- [16]. [CCF-B] **Zhirong Shen** and Patrick P.C. Lee. Cross-Rack-Aware Updates in Erasure-Coded Data Centers. In Proceedings of the 47th International Conference on Parallel Processing (ICPP'18), Aug. 13~Aug. 16, 2018, Oregon, USA. (AR: 91/313=29.1%)
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- [21]. [CCF-B] **Zhirong Shen**, Jiwu Shu, and Yingxun Fu. Seek-Efficient I/O Optimization in Single Failure Recovery for XOR-Coded Storage Systems. In Proceedings of the 34th International Symposium on Reliable

Distributed Systems (SRDS'15), pp. 228-237, Sep. 28~Oct. 1, 2015, Montreal, Canada. (三篇最佳论文提名之一, 国内第一次在该会获得最佳论文提名, 提名率: 3/81≈3.7%)

- [22]. [CCF-B] **Zhirong Shen** and Jiwu Shu. HV Code: An All-around MDS Code to Improve Efficiency and Reliability of RAID-6 Systems. In Proceedings of the 44th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN'14), pp. 550-561, Jun. 23~ Jun. 26, 2014, Atlanta, USA. (AR: 49/181 = 27.07%)
- [23]. [CCF-B] **Zhirong Shen**, Jiwu Shu, and Wei Xue. Keyword Search with Access Control over Encrypted Data in Cloud Computing. In Proceedings of the 22nd IEEE/ACM Symposium on Quality of Service (IWQoS'14), pp. 87-92, May 26~ May 27, 2014, Hong Kong, China.
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- [25]. [CCF-C] **Zhirong Shen**, Jiwu Shu, and Wei Xue. Preferred Search over Encrypted Data. Frontiers of Computer Science, 12(3): 593-607, 2018.
- [26]. [CCF-C] Jiwu Shu (导师), **Zhirong Shen**, Wei Xue, and Yingxun Fu. Secure Storage Systems and Key Technologies. In Proceedings of the 18th Asia and South Pacific Design Automation Conference (ASP-DAC'13), pp. 376-383, Jan. 22~ Jan. 25, 2013, Pacifico Yokohama, Yokohama, Japan. (导师是第一作者)
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- [28]. **沈志荣**, 薛巍, 舒继武. 可搜索加密机制研究与进展. 《软件学报》, 2014, (4): 880-895. (入选了国家科技部 2016 年度“领跑者 5000——中国精品科技期刊顶尖论文”(简称 F5000))