

# Huaicheng Li

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RESEARCH INTERESTS	<b>Areas:</b> Operating Systems, Storage and Memory Systems, Systems Support for Emerging Hardware/Applications <b>Focus:</b> Design and build novel computing systems for emerging storage/memory hardware to achieve <ol style="list-style-type: none"><li>1. Performance: Software/Hardware co-design for low and predictable end-to-end latencies and high throughput</li><li>2. Efficiency: Offloaded and disaggregated system architecture designs for improved resource and cost efficiency</li><li>3. Programmability: Systems support for emerging I/O and acceleration technologies to ease development efforts</li></ol>	
ACADEMIC POSITIONS	<b>Virginia Tech</b> Assistant Professor, Department of Computer Science  <b>Carnegie Mellon University</b> Postdoctoral Researcher, Parallel Data Lab (PDL) Supervisor: <a href="#">Gregory R. Ganger</a>	Blacksburg, VA 2022–Present  Pittsburgh, PA 2020–2022
EDUCATION	<b>University of Chicago</b> Ph.D. in Computer Science ( <i>M.S. conferred in 2018</i> ) Advisor: <a href="#">Haryadi S. Gunawi</a> Thesis: Evolving Storage Stack for Predictability and Efficiency  <b>Wuhan University</b> M.S. in Computer Science ( <i>dropped out to attend the Ph.D. program</i> ) B.S. in Computer Science and Technology	Chicago, IL 2015–2020  Wuhan, China 2013–2015 2009–2013
HONORS & AWARDS	Rising Star Faculty Award, Department of Computer Science, Virginia Tech NSF CAREER Award  <b>IEEE Micro Top Picks 2024 Honorable Mention: Pond</b> [C1] <b>ASPLOS'23 Distinguished Paper Award: Pond</b> [C1] <b>SYSTOR'22 Best Paper Award: Fantastic SSD Internals</b> [C3] SYSTOR'21 Distinguished Reviewer Award Nomination for the SIGOPS Dennis M. Ritchie Doctoral Dissertation Award ( <i>1 per department</i> ) University Unrestricted (UU) Fellowship, University of Chicago <b>FAST'18 Best Paper Nominee: Fail-Slow at Scale</b> [C7] <b>FAST'17 Best Paper Nominee: Tiny-Tail Flash</b> [C9]	2024 2024 2024 2023 2022 2021 2020 2019 2018 2017
CONFERENCE PUBLICATIONS	Bibliometrics on <a href="#">Google Scholar</a> and <a href="#">DBLP</a>  ASPLOS'23 [C1] <b>Huaicheng Li</b> , Daniel S. Berger, Stanko Novakovic, Lisa Hsu, Daniel Ernst, Pantea Zardoshti, Monish Shah, Ishwar Agarwal, Mark D. Hill, Marcus Fontoura, Ricardo Bianchini. <b>Pond: CXL-Based Memory Pooling Systems for Cloud Platforms</b> . In the Proceedings of the 28th ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), 2023. <b>Distinguished Paper Award</b> <b>IEEE Micro Top Picks 2024 Honorable Mention</b>  ASPLOS'23 [C2] Thomas Kim, Jekyeom Jeon, Nikhil Arora, <b>Huaicheng Li</b> , Michael Kaminsky, David G. Andersen, Gregory R. Ganger, George Amvrosiadis, Matias Bjørling. <b>RAIZN: Redundant Array of Independent Zoned Namespaces</b> . In the Proceedings of the 28th ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), 2023.	

- SYSTOR'22 [C3] Nanqinqin Li, Mingzhe Hao, **Huaicheng Li**, Xing Lin, Tim Emami, Haryadi S. Gunawi. **Fantastic SSD Internals and How to Learn and Use Them**. In the Proceedings of the 15th ACM International Systems and Storage Conference (SYSTOR), 2022.  
**Best Paper Award**
- SOSP'21 [C4] **Huaicheng Li**, Martin L. Putra, Ronald Shi, Xing Lin, Gregory R. Ganger, Haryadi S. Gunawi. **IODA: A Host/Device Co-Design for Strong Predictability Contract on Modern Flash Storage**. In the Proceedings of the 28th Symposium on Operating Systems Principles (SOSP), 2021.
- ASPLOS'20 [C5] **Huaicheng Li**, Mingzhe Hao, Stanko Novakovic, Vaibhav Gogte, Sriram Govindan, Dan R. K. Ports, Irene Zhang, Ricardo Bianchini, Haryadi S. Gunawi, Anirudh Badam. **LeapIO: Efficient and Portable Virtual NVMe Storage on ARM SoCs**. In the Proceedings of the 25th ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), 2020.
- FAST'18 [C6] **Huaicheng Li**, Mingzhe Hao, Michael Hao Tong, Swaminathan Sundararaman, Matias Bjørling, Haryadi S. Gunawi. **The CASE of FEMU: Cheap, Accurate, Scalable and Extensible Flash Emulator**. In the Proceedings of the 16th USENIX Conference on File and Storage Technologies (FAST), 2018.
- FAST'18 [C7] Haryadi S. Gunawi, Riza Suminto, Russell Sears, Casey Golliher, Swaminathan Sundararaman, Xing Lin, Tim Emami, Weiguang Sheng, Nematollah Bidokhti, Caitie McCaffrey, Gary Grider, Parks M. Fields, Kevin Harms, Robert B. Ross, Andree Jacobson, Robert Riccio, Kirk Webb, Peter Alvaro, H. Biral Runesh, Mingzhe Hao, **Huaicheng Li**. **Fail-Slow at Scale: Evidence of Hardware Performance Faults in Large Production Systems**. In the Proceedings of the 16th USENIX Conference on File and Storage Technologies (FAST), 2018.  
**Best Paper Nominee**
- SOSP'17 [C8] Mingzhe Hao, **Huaicheng Li**, Michael Hao Tong, Chrisma Pakha, Riza Suminto, Cesar A. Stuardo, Andrew A. Chien, Haryadi S. Gunawi. **MittOS: Supporting Millisecond Tail Tolerance with Fast Rejecting SLO-Aware OS Interface**. In the Proceedings of the 26th Symposium on Operating Systems Principles (SOSP), 2017.
- FAST'17 [C9] Shiqin Yan, **Huaicheng Li**, Mingzhe Hao, Michael Hao Tong, Swaminathan Sundararaman, Andrew A. Chien, Haryadi S. Gunawi. **Tiny-Tail Flash: Near-Perfect Elimination of Garbage Collection Tail Latencies in NAND SSDs**. In the Proceedings of the 15th USENIX Conference on File and Storage Technologies (FAST), 2017.  
**Best Paper Nominee**

#### JOURNAL PUBLICATIONS

- TODAES'24 [J1] Ping-Xiang Chen, Dongjoo Seo, Changhoon Sung, Jongheum Park, Minchul Lee, **Huaicheng Li**, Matias Bjørling, Nikil Dutt. **ZoneTrace: A Zone Monitoring Tool for F2FS on ZNS SSDs**. ACM Transactions on Design Automation of Electronic Systems (TODAES), 2024.
- IEEE Micro'23 [J2] Daniel S. Berger, Daniel Ernst, **Huaicheng Li**, Pantea Zardoshti, Monish Shah, Samir Rajadnya, Scott Lee, Lisa Hsu, Ishwar Agarwal, Mark D. Hill, Ricardo Bianchini. **Design Tradeoffs in CXL-Based Memory Pools for Cloud Platforms**. IEEE Micro Special Issue on Emerging System Interconnects, 2023.
- TOS'23 [J3] **Huaicheng Li**, Martin L. Putra, Ronald Shi, Fadhil I. Kurnia, Xing Lin, Jaeyoung Do, Achmad I. Kistijantoro, Gregory R. Ganger, Haryadi S. Gunawi. **Extending and Programming the NVMe I/O Determinism Interface for Flash Arrays**. ACM Transactions on Storage (TOS), Volume 19, Issue 1, February 2023. [Extended version of C4]
- TOS'18 [J4] Haryadi S. Gunawi, Riza Suminto, Russell Sears, Casey Golliher, Swaminathan Sundararaman, Xing Lin, Tim Emami, Weiguang Sheng, Nematollah Bidokhti, Caitie McCaffrey, Gary Grider, Parks M. Fields, Kevin Harms, Robert B. Ross, Andree Jacobson, Robert Riccio, Kirk Webb, Peter Alvaro, H. Biral Runesh, Mingzhe Hao, **Huaicheng Li**. **Fail-Slow at Scale: Evidence of Hardware Performance Faults in Large Production Systems**. ACM Transactions on Storage (TOS), Volume 14, Issue 3, November 2018. [Extended version of C7]  
**Fast-tracked**
- TOS'17 [J5] Shiqin Yan, **Huaicheng Li**, Mingzhe Hao, Michael Hao Tong, Swaminathan Sundararaman, Andrew A. Chien, Haryadi S. Gunawi. **Tiny-Tail Flash: Near-Perfect Elimination of Garbage Collection Tail Latencies in NAND SSDs**. ACM Transactions on Storage (TOS), Volume 13, Issue 3, October 2017. [Extended version of C9]  
**Fast-tracked**

#### WORKSHOP PUBLICATIONS

HotStorage'23 [W1] Dongjoo Seo, Ping-Xiang Chen, **Huaicheng Li**, Matias Bjørling, Nikil Dutt. **Is Garbage Collection Overhead Gone? Case study of F2FS on ZNS SSDs**. In the Proceedings of the 15th ACM Workshop on Hot Topics in Storage and File Systems (HotStorage), 2023.

NVMW'23 [W2] **Huaicheng Li**, Daniel S. Berger, Lisa Hsu, Daniel Ernst, Pantea Zardoshti, Stanko Novakovic, Monish Shah, Samir Rajadnya, Scott Lee, Ishwar Agarwal, Mark D. Hill, Marcus Fontoura, Ricardo Bianchini. **Pond: The Case of CXL Memory Pooling for Cloud Datacenters**. In the 14th Annual Non-Volatile Memories Workshop (NVMW), 2023.

## WORK EXPERIENCE

### Research Internships at Industrial Labs

<b>Microsoft Research (Redmond)</b> , <i>Systems Research Group</i>	Summer 2020
Research Intern working on resource disaggregation for datacenter deployment [ASPLOS'23]	
<b>Microsoft Research (Redmond)</b> , <i>Database Group</i>	Summer 2019
Research Intern working on programmable storage	
<b>Microsoft Research (Redmond)</b> , <i>Systems Research Group</i>	Summer 2018
Research Intern working on offloading cloud storage stack to ARM SoCs [ASPLOS'20]	
<b>NetApp</b> , <i>Advanced Technology Group (ATG)</i>	Spring 2020
Research Intern working on new file system designs for emerging storage hardware	

### Research Experience at Universities

<b>Carnegie Mellon University</b> , <i>Parallel Data Lab (PDL)</i>	2020–2022
Postdoctoral Researcher collaborating with Gregory R. Ganger, George Amvrosiadis, David G. Andersen and CMU students on new storage and memory technologies [ASPLOS'23]	
<b>University of Chicago</b> , <i>Systems Group</i>	2015–2020
Graduate Student Researcher working on Operating and Storage Systems research [SOSP'21, ASPLOS'20, FAST'18, SOSP'17, FAST'17]	
<b>Wuhan University</b> , <i>Cloud Computing Lab</i>	2012–2015
Research Assistant working on I/O virtualization and cloud resource scheduling	

### Engineering Internship in Industry

<b>Tencent (Shenzhen)</b>	Summer 2012
Undergraduate Intern working on cluster resource monitoring and kernel optimization	

## SERVICE

### Program Committee (PC)

FAST'25: The 23rd USENIX Conference on File and Storage Technologies	2025
ASPLOS'25: The 30th ACM Intl' Conf. on Architectural Support for PL and OS	2025
NSDI'25: The 22nd USENIX Symposium on Networked Systems Design and Implementation	2025
ASPLOS'24: The 29th ACM Intl' Conf. on Architectural Support for PL and OS	2024
NSDI'24: The 21st USENIX Symposium on Networked Systems Design and Implementation	2024
CCGRID'24: The 24th IEEE/ACM International Symposium on Cluster, Cloud and Internet Computing	2024
ASPLOS'23: The 28th ACM Intl' Conf. on Architectural Support for PL and OS ( <i>Fall cycle</i> )	2023
SySDW'23: Doctoral Workshop at SOSP 2023	2023
SYSTOR'23: The 16th ACM International Systems and Storage Conference	2023
NVMW'23: The 14th Annual Non-Volatile Memories Workshop	2023
APSys'21: The 12th ACM SIGOPS Asia-Pacific Workshop on Systems	2021
SYSTOR'21: The 14th ACM International Systems and Storage Conference	2021

### External Review Committee (ERC)

ISCA'24: The 51st International Symposium on Computer Architecture (ISCA)	2024
ASPLOS'23: The 28th ACM Intl' Conf. on Architectural Support for PL and OS ( <i>Spr/Smr cycles</i> )	2023

### Organization Committee

FAST'24 Artifact Evaluation Committee, Co-chair	2024
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**Shadow Program Committee**

EuroSys'20: The 15th European Conference on Computer Systems	2020
EuroSys'18: The 13th European Conference on Computer Systems	2018

**Journal Reviewer**

IEEE Micro	2022
TC: IEEE Transactions on Computers	2019, 2020, 2022, 2023
TOCS: ACM Transactions on Computer Systems	2019, 2023
TPDS: IEEE Transactions on Parallel and Distributed Systems	2019
JPDC: Journal of Parallel and Distributed Computing	2019, 2021
TOS: ACM Transactions on Storage	2018, 2023, 2024
CACM: Communications of the ACM	2018

**External Reviewer**

FAST'19: The 17th USENIX Conference on File and Storage Technologies	2019
ATC'18: The 2018 USENIX Annual Technical Conference	2018

**Secondary/Sub-reviewer**

FAST'20: The 18th USENIX Conference on File and Storage Technologies	2020
SOSP'19: The 27th ACM Symposium on Operating Systems Principles	2019
ASPLOS'19: The 24th ACM Intl' Conf. on Architectural Support for PL and OS	2019
FAST'18: The 16th USENIX Conference on File and Storage Technologies	2018

**Artifact Evaluation Committee (AEC)**

SOSP'21: The 28th ACM Symposium on Operating Systems Principles	2021
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**Departmental Service**

PhD Qualification Exam Committee, VT CS	2024
Graduate Admission Committee, VT CS	2023
Graduate Student Ministry - Minister for Faculty Hiring, CS Dept, University of Chicago	2019

**Other Activities**

DOE ASCR ALCC Proposal Reviewer	2024
FAST'24 Mentoring Program	2024
Co-organizer of FAST 2024 Bird-of-Feather (BoF) Session on Reproducibility	2024
VT CS Graduate Admission Committee	2024
Co-Organizer of ATC/OSDI 2023 Bird-of-Feather (BoF) Session on Reproducibility	2023
VTURCS Research Symposium Judge	2023
ASPLOS'23 Mentoring Program	2023
Session Chair: ASPLOS'23 ("Storage Session")	2023
SOSP'21 Mentoring Program	2021
Session Chair: SYSTOR'21 ("Storage Session")	2021
USENIX HotStorage'20 Program Committee Meeting Scribe	2020
Chameleon Cloud Testbed Student Ambassador	2020
USENIX ATC'18 Program Committee Meeting Scribe	2018

**TALKS****Dissecting Memory Performance: Quantification, Analysis, and Optimization**

Memory Solutions Lab (MSL), Samsung	2024
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**Pond: CXL-based Memory Pooling for Cloud Platforms**

Conference Talk, ASPLOS'23, Vancouver, BC, Canada	2023
Conference Talk, NVMW'23, San Diego, CA, USA	2023
Cornell Networked System Seminar	2023
Guest Lecture at University of British Columbia	2024
Guest Lecture at University of Chicago	2024

	<b>Towards Predictable and Efficient Datacenter Storage</b>	
	Invited Talk, Intel/VMware Crossroads 3D-FPGA Academic Research Center	2022
	<b>IODA: Host/Device Co-Design for Strong Predictability Contract on Modern Flash Storage</b>	
	Conference Talk, SOSPP'21, Online	2021
	Parallel Data Lab (PDL) Seminar, Carnegie Mellon University, PA, USA	2021
	<b>Towards Hardware-based Memory Disaggregation</b>	
	Invited Talk, Microsoft Research (Redmond), WA, USA	2020
	<b>NVMeFS: SmartNIC-centric File System Offloading</b>	
	Invited Talk, NetApp, CA, USA	2020
	<b>Evolving Storage Stack for Predictability and Efficiency</b>	
	Invited Talk, University of Illinois at Urbana-Champaign, IL, USA	2021
	Ph.D. Thesis Defense, University of Chicago, IL, USA	2020
	Invited Talk, Carnegie Mellon University, PA, USA	2020
	Invited Talk, Microsoft Research - Cambridge, UK	2020
	Invited Talk, University of California - Berkeley, CA, USA	2020
	Invited Talk, University of Wisconsin - Madison, WI, USA	2020
	<b>LeapIO: Efficient and Portable Virtual NVMe Storage on ARM SoCs</b>	
	Invited Talk, CAS ICT Young Scholar Forum, Beijing, China	2020
	Conference Talk, ASPLOS'20, Lausanne, Switzerland	2020
	Ph.D. Thesis Proposal, University of Chicago, IL, USA	2019
	Invited Talk, Microsoft Research (Redmond), WA, USA	2018
	<b>The CASE of FEMU: Cheap, Accurate, Scalable and Extensible Flash Emulator</b>	
	Master Thesis Defense, University of Chicago, IL, USA	2018
	Conference Talk, FAST'18, Oakland, CA, USA	2018
<b>TEACHING</b>	<b>Instructor</b>	
	CS5204: Operating Systems (Fall 2023), Virginia Tech	2023
	CS6204: Advanced Operating Systems (Spring 2023), Virginia Tech	2023
	CS3214: Computer Systems (Fall 2022), Virginia Tech	2022
	<b>Co-Instructor</b>	
	18-746: Storage Systems (Fall 2021), Carnegie Mellon University	2021
	Course website: <a href="https://course.ece.cmu.edu/ece746/index.html">https://course.ece.cmu.edu/ece746/index.html</a>	
	↔ Co-teaching with Gregory R. Ganger and George Amvrosiadis, ~100 students (BS/MS/PhD)	
	↔ Designing and giving lectures on storage management, file systems, etc.	
	↔ End-to-end class administration: course website, weekly TA meetings, designing quizzes, grading, etc.	
	<b>Guest Lecturer</b>	
	18-746: Storage Systems (Fall 2020), Carnegie Mellon University	2020
	↔ Topic: "Ins and Outs of Storage Offloading using ARM SoCs"	
	<b>Teaching Assistant</b>	
	CMSC 230: Operating Systems, University of Chicago, TA	2015, 2018, 2019
	↔ Hosting lab sessions about Pintos projects (tutorials/lectures, office hours, grading, etc.)	
	Computer Organization and Design, Wuhan University, TA	2014
<b>STUDENTS</b>	<b>Current PhD Students</b> (* indicates co-advised students)	
	1. <a href="#">Hanchen Xu</a>	2024–Present
	2. <a href="#">Hansen Idden</a>	2024–Present
	3. <a href="#">Sijia Li</a>	2024–Present
	4. <a href="#">Shoaib Asif Qazi</a>	2023–Present

5. <a href="#">Inho Song</a> * (with Sam Noh)	2023–Present
6. <a href="#">Jinshu Liu</a>	2022–Present
7. <a href="#">Hamid Hadian</a>	2022–Present
8. <a href="#">Yuze Li</a> * (primary advisor: Ali Butt)	2021–Present
9. <a href="#">Yuyue Wang</a> * (at UCLA)	2021–Present
10. <a href="#">Sumit Kumar Monga</a>	2019–Present

#### Current MS Students

11. <a href="#">Subhalakshmi Selvanathan</a> (ECE)	2022–Present
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#### Current Undergraduate Students

12. Saddam Annais Shaquille (ITB)	2024–Present
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#### Alumni

13. <a href="#">Subhalakshmi Selvanathan</a> (ECE MS → Apple, internship: Qualcomm)	2022–2024
14. Hansen Idden (ITS BS → VT CS PhD)	2022–2024
15. Fauzhan Wahyudi (ITS)	2022–2023
16. Muhammad Daffa Al Fahreza (Udinus)	2022–2023
17. Muhammad Akmal Arifin (ITB)	2022–2023
18. Hanchen Xu (UCLA, intern → VT CS PhD)	Summer 2023
19. Edward Halim, (BS → CS PhD student at University of Wisconsin - Madison)	2022–2023
20. Sumanth Rao (CMU MCDS MS → Snowflake)	2022–2023
21. Jiuzhi Yu (CMU MCDS MS → Amazon AWS)	2022–2023
22. Zixu Chen (CMU MCDS MS → Google)	2021–2022
23. Aditya Shetty (CMU MCDS MS → Google)	2021–2022
24. Fadhil I. Kurnia (ITB BS → CS PhD student at UMass - Amherst, co-author of [J3])	2018–2020
25. Martin L. Putra (ITB BS → CS PhD student at University of Chicago, co-author of [C4, J3])	2018–2020
26. Ronald Shi (UChicago BS/MS → Meta, co-author of [C4, J3])	2018–2019

#### Student Awards/Recognitions

27. Hamid Hadian, Pratt Fellowship	2024
28. Subhalakshmi Selvanathan, Pratt Fellowship	2024
29. Jiuzhi Yu, Best Science Award (for CMU MCDS Capstone Project on Programmable Storage)	2022
30. Sumanth Rao, Best Science Award (for CMU MCDS Capstone Project on Programmable Storage)	2022

#### PhD Thesis Committee

31. Sumit Kumar Monga, VT ECE, <b>co-chair</b>
32. Yuze Li, VT CS

#### MS Thesis Committee

33. Subhalakshmi Ramakrishnapuram Selvanathan, VT ECE MS, <b>co-chair</b>
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#### GRANTS

1. “Rethinking System Stack for the Load-Store I/O Era” <b>Huaicheng Li</b> (PI). NSF <a href="#">CNS-2339901</a> . ~\$677K	2024–2029
2. “Converged Memory and Storage Systems” <b>Huaicheng Li</b> (PI). Samsung. \$250K	2024–2025
3. “A Cross-stack Approach to Reduce Memory Carbon for Cloud Data Centers” <b>Huaicheng Li</b> (Co-PI). NSF <a href="#">CNS-2312785</a> . \$1M	2023–2026
4. “Near-data Processing for Machine Learning Workloads Acceleration” <b>Huaicheng Li</b> (PI). 4-VA. \$30K.	2023–2024
5. “CXL for Reduced Memory Management Tax” <b>Huaicheng Li</b> (PI). Samsung. ~\$270K.	2023–2024
6. “Disaggregation and Offloading for Improved System Efficiency” <b>Huaicheng Li</b> (PI). The Indonesian Ministry of Education, Culture, Research and Technology. \$30K.	2023–2024

	7. “Characterization Driven Data Placement Optimizations for CXL Memory” <b>Huaicheng Li</b> (PI). Samsung. ~\$110K ( <i>research gift</i> ).	2023–2024
	8. “Enhancing Storage Stack Design for the Computational Storage Era” <b>Huaicheng Li</b> (Co-PI, <i>major proposal writer</i> ). Samsung. ~\$120K.	2023–2024
	9. New Faculty Mentoring Grant <b>Huaicheng Li</b> (PI). Virginia Tech. \$1.5K.	2023–2024
	10. “Fortified Computational Storage Stack for Efficient Application Offloading” <b>Huaicheng Li</b> (Co-PI, <i>major proposal writer</i> ). Samsung. \$110K.	2022–2023
<b>SOFTWARE</b>	1. <b>RAZIN</b> : <a href="https://github.com/ZonedStorage/RAIZN-release">https://github.com/ZonedStorage/RAIZN-release</a> An array of independent zoned namespace SSDs built on top of a virtual zone interface.	2023
	2. <b>Pond</b> : <a href="https://github.com/vtess/Pond">https://github.com/vtess/Pond</a> A CXL memory emulator utilizing zero-core NUMA nodes with benchmarking results for more than 100 workloads.	2022
	3. <b>Queenie</b> : <a href="https://github.com/ucare-uchicago/Queenie">https://github.com/ucare-uchicago/Queenie</a> A user-level tool for extracting SSD internal properties.	2022
	4. <b>IODA</b> : <a href="https://github.com/huaicheng/IODA">https://github.com/huaicheng/IODA</a> A host/device co-designed flash array for strong deterministic performance.	2021
	5. <b>LeapIO</b> : <a href="https://github.com/huaicheng/LeapIO">https://github.com/huaicheng/LeapIO</a> A cost-efficient cloud storage stack design that has been deployed in Microsoft datacenters.	2020
	6. <b>FEMU</b> : <a href="https://github.com/vtess/FEMU">https://github.com/vtess/FEMU</a> A popular storage research platform widely used by top venue papers at ASPLOS, FAST, OSDI, and SOSP, etc.	2018
	7. <b>MITTSSD</b> : <a href="https://github.com/ucare-uchicago/mittssd">https://github.com/ucare-uchicago/mittssd</a> An OS design with millisecond service level agreement interface.	2018
	8. <b>TTFLASH</b> : <a href="https://github.com/ucare-uchicago/tinyTailFlash">https://github.com/ucare-uchicago/tinyTailFlash</a> An SSD architecture design eliminating garbage collection overhead for tiny-tail latencies.	2017
	9. Linux Kernel Contributor: <a href="#">Linux Open-Channel SSD Subsystem - pblk</a> (120☆)	2017
<b>MEDIA COVERAGE</b>	<b>Pond: CXL-Based Memory Pooling Systems for Cloud Platforms</b> [ASPLOS’23] Software Engineering, <a href="https://semiengineering.com">https://semiengineering.com</a> The Next Platform, <a href="https://nextplatform.com">https://nextplatform.com</a> Semi Analysis, <a href="https://semianalysis.com">https://semianalysis.com</a> Tech Powerup, <a href="https://www.techpowerup.com">https://www.techpowerup.com</a> Screen Hacker, <a href="https://www.screenhacker.com">https://www.screenhacker.com</a>	2023 2022 2022 2022 2022
	<b>Fail-Slow at Scale</b> [FAST’18] The Morning Paper, <a href="https://blog.acolyer.org">https://blog.acolyer.org</a> , search “fail slow at scale” ZDNet, <a href="https://www.zdnet.com/article/how-clouds-fail-slow">https://www.zdnet.com/article/how-clouds-fail-slow</a> Hacker News, <a href="https://news.ycombinator.com/item?id=16463714">https://news.ycombinator.com/item?id=16463714</a>	2018 2018 2018