

ANDREA C. ARPACI-DUSSEAU

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Research Interests

Operating Systems, File and Storage Systems, Parallel and Distributed Systems, Computer Science Education

Education

- Computer Science Division, University of California, Berkeley. 1991-1998
Ph.D., December 1998.
Implicit Coscheduling: Coordinated Scheduling with Implicit Information in Distributed Systems
M.S., May 1994. *Modeling Parallel Sorts with LogP on the CM-5*
Advisor: David E. Culler
- Department of Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, PA 1987-1991
B.S. in Computer Engineering, *Univeristy and College Honors*

Appointments

- Professor of Computer Sciences, University of Wisconsin, Madison June 2009-Present
Visiting Scientist, Google, Mountain View 2014-2015
Visiting Professor, Stanford University 2014-2015
Visiting Professor, EPFL, Lausanne Summer 2010
Visiting Professor, University of Michigan, Ann Arbor 2006-2007
Associate Professor of Computer Sciences, University of Wisconsin, Madison Spring 2006-June 2009
Assistant Professor of Computer Sciences, University of Wisconsin, Madison January 2000-Spring 2006
Instructor and Postdoctoral Researcher, Stanford University 1998-1999

Awards and Honors

- WARF Named Professorship: Susan Beth Horwitz Professor of Computer Sciences 2021
ACM Fellow 2020
Carl de Boer Professorship in Computer Sciences 2018
ACM SIGOPS Mark Weiser Award 2018
UW-Madison Vilas Faculty Mid-Career Investigator Award 2018-2019
Fellow of UW-Madison Teaching Academy 2017
Carolyn Rosner Award for Excellence in Teaching (CS Department) 2010, 2017
UW-Madison Van Hise Outreach Teaching Award 2017
UW-Madison Vilas Associate 2012-2014
Honored Instructors Award (Division of University Housing) 2009
Advised students to PennySort World Record 2002
Advised students to Datamation Sorting World Record 2001
MinuteSort World Record (Joint with Remzi Arpaci-Dusseau) 1997, 1998
Datamation Sorting World Record (Joint with Remzi Arpaci-Dusseau) 1997, 1998
Intel Graduate Fellowship 1995-1997
National Science Foundation Graduate Fellowship 1991-1994

Best Paper Awards

- Symposium on File and Storage Technologies (FAST) 2020
Symposium on File and Storage Technologies (FAST) 2018
Symposium on File and Storage Technologies (FAST) 2017
European Conference on Computer Systems (EuroSys) 2014
Symposium on File and Storage Technologies (FAST) 2013
Symposium on Operating Systems Principles (SOSP) 2011

Symposium on File and Storage Technologies (FAST)	2011
Symposium on File and Storage Technologies (FAST)	2010
Usenix Annual Technical Conference (ATC)	2009
Symposium on File and Storage Technologies (FAST)	2009
Symposium on File and Storage Technologies (FAST)	2008
Dependable Systems and Networks (DSN)	2005
Symposium on File and Storage Technologies (FAST)	2004

External Service

Virginia Tech Computer Science Department External Review	Fall'21
ACM SIGOPS Mark Weiser Award Selection Committee	2019-2021
OSDI Steering Committee	2018-Present
Panelist for NSF CISE Proposals	2001, 2002, 2004, 2006, 2007, 2008, 2014, 2019, 2020
EuroSys Roger Needham Award Review Committee	2019
Reviewer for Department of Energy SBIR Phase I and II	2018, 2019
Instructor for College Board Computer Science (CS): Principles Pilot Phase II	2011-2012
Reviewer for NCWIT-WI Aspirations in Computing Scholarships	2012
Member of Advisory Committee for NSF CISE	2006-2008
External Advisory Panelist for NSF LEAD project	October 2006
Elected as ACM SIGOPS Treasurer	2003
Reviewer for Natural Sciences and Engineering Resource Council of Canada (NSERC)	2002

Program Chair and Committees

USENIX Conference on File and Storage Technologies (FAST)	2005, 2008, 2012, 2016, 2018, 2021
USENIX Symposium on Operating System Design and Implementation (OSDI)	2016, 2020
USENIX Annual Technical Conference (ATC)	2003, 2005, 2012, 2020
USENIX Conference on Networked Systems Design and Implementation (NSDI)	2017, 2020
ACM SIGOPS Asia-Pacific Workshop on Systems (APSys)	2019
ACM International Systems and Storage Conference (SYSTOR)	2019
USENIX Symposium on Operating System Design and Implementation (OSDI) (Co-Chair)	2018
European Conference on Computer Systems (EuroSys)	2013, 2017, 2018
Workshop on Hot Topics in Storage and File Systems	2013, 2014
ACM Symposium on Operating Systems Principles (SOSP)	2007, 2009, 2011 (Poster+WIPs)
ACM SIGMETRICS/Performance	2009
Conference on Very Large Data Bases (VLDB)	2009
USENIX Conference on File and Storage Technologies (FAST) (Co-Chair w/ Remzi Arpaci-Dusseau)	2007
Architectural Support for Programming Languages and Operating Systems (ASPLOS)	2006
Workshop on Hot Topics in Systems Dependability (HotDep)	2006
International Workshop on Storage Security and Survivability (StorageSS)	2005
Supercomputing (SC)	2001, 2005
USENIX Annual Technical Conference (ATC) (Co-Chair w/ Remzi Arpaci-Dusseau)	2004
International Conference on Distributed Computing Systems (ICDCS)	2004
Autonomic Track at Hawaii International Conference on System Sciences (HICSS)	2004
ACM Symposium on Principles of Distributed Computing (PODC)	2002
Workshop on Job Scheduling Strategies for Parallel Processing	1999, 2000, 2001, 2002
ACM SIGPLAN Workshop on Optimization of Middleware and Distributed Systems	2001

Community Outreach

Created Weekly CS Afterschool and Weekend Clubs for K-12 Students	
Shorewood Elementary	Fall'09-Present
Lowell Elementary	Fall'11-Sp'13, Fall'15-Present
Van Hise Elementary	Fall'12-Present
Thoreau Elementary	Sp'12-Present

Madison Children's Museum (Co-Ed)	<i>Sp'12-Present</i>
Randall Elementary	<i>Fall'13-Present</i>
Crestwood Elementary	<i>Fall'13-Present</i>
Muir Elementary	<i>Sp'14-Present</i>
Stephens Elementary	<i>Sp'15-Present</i>
Marquette Elementary	<i>Sp'16-Present</i>
Olson Elementary	<i>Sp'17-Present</i>
Midvale Elementary	<i>Sp'17-Present</i>
Emerson Elementary	<i>Fall'17-Present</i>
Schenk Elementary	<i>Sp'12, Sp'18-Present</i>
Salvation Army	<i>Sp'18-Present</i>
Falk Elementary	<i>Sp'16-Fall'16, Sp'19</i>
Huegel Elementary	<i>Fall'18-Present</i>
Hawthorne Elementary	<i>Fall'18</i>
Neighborhood House Community Center	<i>Sp'15-Fall'15, Sum'17, Sum'18</i>
Elvehjem Elementary	<i>Sp'17</i>
Leopold Elementary	<i>Fall'15-Fall'16</i>
Madison Children's Museum (Girls-Only)	<i>Sp'13-Sp'14</i>
America Indian Science and Engineering Society (AISES)	<i>Sp'13</i>
Nuestro Mundo Elementary	<i>Fall'12-Sp'13</i>
Schenk Elementary	<i>Sp'12</i>
Hamilton Middle	<i>Sp'11-Sp'12</i>
Wright Middle	<i>Fall'11-Sp'12</i>
Presenter at UW-Madison AP Summer Institute for CS Principles	<i>2016, 2017</i>
Dean for CS Major at Grandparents Univeristy, UW-Madison	<i>Summer 2011-Present</i>
Primary Instructor for CS Major at Grandparents Univeristy, UW-Madison	<i>Summers 2011, 2012, 2015</i>
Created UW-Madison Scratch-a-thon Programming Competition	<i>Sp'13</i>
Coordinated CS Workshops	
UW-Madison Wisconsin Science Festival	<i>Fall'18</i>
John Muir Family Science Night in Portage, WI	<i>Sp'13</i>
Science Night at Emerson Elementary	<i>Sp'13</i>
Shorewood Elementary Teacher Training	<i>Fall'11</i>
Scratch Workshop at Sussex Library	<i>Fall'10</i>
Scratch Workshop at Hartland Library	<i>Sp'09</i>
Women in Science and Engineering RLC	<i>Sp'09</i>
Volunteer for Imaginary Worlds Camp at Calvin College	<i>Summer 2007</i>

University Service

L&S Academic Planning Council	<i>Fall'21-Present</i>
Mercile J. Lee Scholars Program Mentor	<i>Fall'20-Present</i>
Distinguished Teaching Awards Committee	<i>Fall'19-Sp'22</i>
Kemper K. Knapp Bequest Committee	<i>Fall'18-Sp'22</i>
Panelist, WISELI Celebrating Grant Review	<i>Summer'15-Present</i>
UW-Madison Sophomore Research Fellowship Committee	<i>Sp'19, Sp'20</i>
Cluster Advising Committee (CAC)	<i>Sp'20</i>
Graduate Student Support Competition Committee	<i>Fall'18</i>
L&S Physical Sciences Divisional Committee	<i>Fall'15-Sp'18</i>
UW-Madison CIO Search Committee	<i>2018</i>
Chair, Physics Department Academic Programs Review Committee	<i>Fall'13</i>
Faculty Advisor, Alpha Phi Omega, National Service Fraternity	<i>Sp'11-Sp'13</i>
Faculty Co-Director of UW-Madison WISE Residential Learning Community	<i>Fall'08 - Sp'10</i>
Committee Member of ECE Department's Ten-Year Review	<i>Sp'08</i>

Departmental Service

Chair, CS Department Graduate Student Admissions Committee	Fall'18-Present
Faculty Advisor, ACM-Women Chapter	Sp'11-Present
CS Department Budget Committee	Fall'07-Sp'10, Fall'15-Sp'17, Fall'19-Sp'21
Associate Chair, Department of Computer Sciences	Fall'10-Summer'14
CS Department Curriculum Committee	Fall'10-Spring'14
Chair of CS Department Graduate Advising Committee	Fall'08-Sp'10
Co-Chair of CS Department Graduate Advising Committee	Fall'07-Sp'08
CS Department Graduate Advising Committee	Fall'02 - Sp'03
CS Department Distinguished Lecture Series	Fall'04-Sp'05
CS Women Distinguished Lecture Series	Sp'03
CS Department Graduate Student Admissions Committee	Sp'01, Sp'02, Sp'04, Sp'06
CS Department Faculty Recruiting Committee	Sp'00
CS Department OS Qualifying Exam Committee	Sp'00-Present

Courses Created and Taught

Introducing CS to K-12 Students (CS 402)	Fall'12 (Created), Sp'13, Fall'13, Sp'14, Sp'16, Sp'17 Sum'17, Fall'17, Sum'18, Fall'18, Sum'19, Fall'21
Distributed Systems (CS739)	Sp'05, Sp'06, Sp'08, Sp'09, Sp'22
Introduction to Operating Systems (CS537)	Sp'00, Sp'01, Sp'03, Fall'04, Fall'05, Fall'07 Fall'15, Fall'16, Fall'19, Sp'21
Advanced Operating Systems (CS 736)	Fall'01, Sp'02, Fall'13, Sp'18, Sp'19, Fall'20
Introduction to Computation (CS 202)	Fall'09 (Created), Sp'10, Fall'10, Fall'11, Fall'12 (Honors)
Service-learning: Afterschool Computer Science Clubs (Bio 375)	Sp'11 (Created), Fall'11, Sp'12
Special Topics in Operating Systems: Gray-Box Systems (CS838)	Fall'02 (Created)

Students

Ph.D. Student Matriculation (w/ Remzi Arpaci-Dusseau):

Yuvraj Patel, Ph.D., <i>Fair and Secure Synchronization for Non-Cooperative Concurrent Systems</i>	Summer'21
Aishwarya Ganesan, Ph.D., <i>Consistency-Aware Durability</i>	Fall'20
Ram Alagappan, Ph.D., <i>Protocol- and Situation-Aware Distributed Storage Systems</i>	Summer'19
Jun He, Ph.D., <i>Beyond Storage Interfaces: Finding and Exploiting Unwritten Contracts in Storage Devices</i>	Fall'18
Zev Weiss, Ph.D., <i>Hardware Driven Evolution in Storage Software</i>	Summer'18
Leo Arulraj, Ph.D., <i>Non-Invasive I/O Classification Techniques and Applications</i>	Sp'18
Suli Yang, Ph.D., <i>Schedulability in Local and Distributed Storage Systems</i>	Fall'17
Thanumalayan Sankaranarayanan Pillai, Ph.D., <i>Application Crash Consistency</i> (Google)	Fall'16
Tyler Harter, Ph.D., <i>Measurement-Driven Storage: a Study of Apple Desktop Applications, Facebook Messages, and Docker Containers</i> (Microsoft Gray Systems Lab)	Sp'16
Lanyue Lu, Ph.D., <i>Physical Separation in Modern Storage Systems</i> (Google)	Sp'16
Vijay Chidambaran, Ph.D., <i>Orderless and Eventually Durable File Systems</i> (UT-Austin)	Fall'15
Thanh Do, Ph.D., <i>Towards Reliable Cloud Systems</i> (Microsoft Gray Systems Lab)	Sp'14
Yupu Zhang, Ph.D., <i>Integrated Data Protection</i> (HP Labs)	Sp'14
Yiying Zhang, Ph.D., <i>Indirection in Storage Stacks</i> (Purdue)	Sp'13
Sriram Subramanian, Ph.D., <i>Revisiting the Storage Interface for Flash</i> (Fusion-I/O)	Sp'13
Swami Sundararaman, Ph.D., <i>Recovery Techniques to Improve File System Reliability</i> (Fusion-I/O)	Sp'11
Joe Meehan, Ph.D., <i>Towards Transparent CPU Scheduling</i> (Professor at Lynchburg)	Sp'11
Haryadi Gunawi, Ph.D., <i>Towards Reliable Storage Systems</i> (U of Chicago)	Fall'09
Nitin Agarwal, Ph.D., <i>Enabling Realistic and Practical File-System Benchmarking</i> (NEC Labs)	Fall'09
Lakshmi Bairavasundaram, Ph.D., <i>Characteristics, Impact, and Tolerance of Partial Disk Failures</i> (NetApp)	Sp'08
Florentina Popovici, Ph.D., <i>Data-Driven Models in Storage System Design</i> (Google)	Sp'07
Todd Jones, Ph.D., <i>Implicit Operating System Awareness in a VMM</i> (Sandia National Labs)	Sp'07
Tim Denehy, Ph.D., <i>Information and Collaboration in the Storage Stack</i> (Google)	Sp'06
Nathan Burnett, Ph.D., <i>Information and Control in File System Buffer Management</i> (VmWare)	Sp'06

Vijayan Prabhakaran, Ph.D., <i>IRON File Systems</i> (Microsoft Research)	Sp'06
John Bent, Ph.D., <i>Data-driven Batch Scheduling</i> (Los Alamos National Labs)	Sp'05
Muthian Sivathanu, Ph.D., <i>Semantically-smart Disk Systems</i> (Google)	Sp'05

Masters Student Matriculation (w/ Remzi Arpaci-Dusseau):

Chris Dragga (*M.S., 2013*), Ao Ma (*M.S., 2012*), Ishani Ahuja (*M.S., 2011*), Deepak Ramamurthi (*M.S. 2011*), Abhishek Rajimwale (*M.S., 2009*), Swetha Krishnan (*M.S., 2007*), Meenali Rungta (*M.S., 2006*), James Nugent (*M.S., 2005*), Camille Fournier (*M.S. 2005*), Brian Forney (*M.S., 2003*), Stirling Martin (*M.S., 2002*), Sambavi Muthukrishnan (*M.S., 2001*)

Undergraduate Students:

Aaron Darling (Fall'00), Julio Lauritz (Fall'00), Yenny Rusli (Fall'00), Andy Lesmana (Sp'01), Vishal Soni (Fall'01), Leslie Cheung (Fall'01 - Sp'02), Madhava Walpola (Sp'02), Tom Hennen (Fall'01 and Fall'02), Andrew Hochhaus (Summer'03), Hendro Riyadi (Summer'03), Greg Sawyer (Summer'03), Dan Hawk (URS: Fall'07-Sp'08), Tu Anh Lam Vo (URS: Fall'07-Sp'08), Arizona Jaramillo (URS: Fall'07-Sp'08), Aaraon Scott (Summer 2008), Pa Kou Vang (URS: Fall'08-Sp'09), Phoua Xiong (URS: Fall'08-Sp'09), Erin Gonzalez (URS: Fall'08-Sp'09), Victor Bittorf (Sp'11), Cara Lauriten (Sp'12), Michael Ahlm (Sp'14), Pavle Kostovi (Sp'17), Kevin Houck (Sp'17)

Refereed Conference Publications

- [1] Aishwarya Ganesan, Ramnatthan Alagappan, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Exploiting Nil-Externality for Fast Replicated Storage. In *Proceedings of the 28th ACM Symposium on Operating Systems Principles (SOSP '21)*, Virtual, October 2021.
- [2] Jing Liu, Anthony Rebello, Yifan Dai, Chenhao Ye, Sudarsun Kannan, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Scale and Performance in a Filesystem Semi-Microkernel. In *Proceedings of the 28th ACM Symposium on Operating Systems Principles (SOSP '21)*, Virtual, October 2021.
- [3] Kan Wu, Zhihan Guo, Guanzhou Hu, Kaiwei Tu, Ramnatthan Alagappan, Rathijit Sen, Kwanghyun Park, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. The Storage Hierarchy is Not a Hierarchy: Optimizing Caching on Modern Storage Devices with Orthus. In *19th USENIX Conference on File and Storage Technologies (FAST '21)*, February 2021.
- [4] Youmin Chen, Youyou Lu, Bohong Zhu, Andrea C. Arpaci-Dusseau, Remzi H. Arpaci-Dusseau, and Jiwu Shu. Scalable Persistent Memory File System with Kernel-Userspace Collaboration. In *19th USENIX Conference on File and Storage Technologies (FAST '21)*, February 2021.
- [5] Yifan Dai, Yien Xu, Aishwarya Ganesan, Ramnatthan Alagappan, Brian Kroth, Andrea Arpaci-Dusseau, and Remzi Arpaci-Dusseau. From WiscKey to Bourbon: A Learned Index for Log-Structured Merge Trees. In *14th USENIX Symposium on Operating Systems Design and Implementation (OSDI'20)*, October 2020.
- [6] Anthony Rebello, Yuvraj Patel, Ramnatthan Alagappan, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Can applications recover from fsync failures? In *The 2020 USENIX Annual Technical Conference (USENIX ATC '20)*. USENIX Association, July 2020.
- [7] Yuvraj Patel, Leon Yang, Leo Arulraj, Andrea C. Arpaci-Dusseau, Remzi H. Arpaci-Dusseau, and Michael M. Swift. Avoiding Scheduler Subversion using Scheduler-Cooperative Locks. In *Fifteenth European Conference on Computer Systems (EuroSys '20)*, Heraklion, Greece, April 2020.
- [8] Aishwarya Ganesan, Ramnatthan Alagappan, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Strong and Efficient Consistency with Consistency-aware Durability. In *18th USENIX Conference on File and Storage Technologies (FAST 20)*, Santa Clara, CA, February 2020. USENIX Association.
- [9] Jun He, Kan Wu, Sudarsun Kannan, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Read as Needed: Building WiSER, a Flash-Optimized Search Engine. In *18th USENIX Conference on File and Storage Technologies (FAST '20)*, Santa Clara, CA, February 2020.
- [10] Suli Yang, Jing Liu, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Principled Schedulability Analysis for Distributed Storage Systems using Thread Architecture Models. In *Proceedings of the 13th Symposium on Operating Systems Design and Implementation (OSDI '18)*, San Diego, California, October 2018.
- [11] Ramnatthan Alagappan, Aishwarya Ganesan, Jing Liu, Andrea Arpaci-Dusseau, and Remzi Arpaci-Dusseau. Fault-Tolerance, Fast and Slow: Exploiting Failure Asynchrony in Distributed Systems. In *Proceedings of the 13th Symposium on Operating Systems Design and Implementation (OSDI '18)*, San Diego, California, October 2018.

- [12] Edward Oakes, Leon Yang, Dennis Zhou, Kevin Houck, Tyler Harter, Andrea Arpaci-Dusseau, and Remzi Arpaci-Dusseau. SOCK: Rapid task provisioning with serverless-optimized containers. In *2018 USENIX Annual Technical Conference (USENIX ATC 18)*, Boston, MA, 2018.
- [13] Sudarsun Kannan, Nitish Bhat, Ada Gavrilovska, Andrea Arpaci-Dusseau, and Remzi Arpaci-Dusseau. Redesigning LSMs for Nonvolatile Memory with NoveLSM. In *2018 USENIX Annual Technical Conference (USENIX ATC 18)*, Boston, MA, 2018. USENIX Association.
- [14] Ramnatthan Alagappan, Aishwarya Ganesan, Eric Lee, Aws Albarghouthi, Vijay Chidambaram, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Protocol-Aware Recovery for Consensus-Based Storage. In *Proceedings of the 16th USENIX Conference on File and Storage Technologies (FAST '18)*, Oakland, California, February 2018.
- [15] Sudarsun Kannan, Andrea C. Arpaci-Dusseau, Remzi H. Arpaci-Dusseau, Yuangang Wang, Jun Xu, and Gopinath Palani. Designing a True Direct-Access File System with DevFS. In *Proceedings of the 16th USENIX Conference on File and Storage Technologies (FAST '18)*, Oakland, California, February 2018.
- [16] Samer Al-Kiswany, Suli Yang, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. NICE: Network-Integrated Cluster-Efficient Storage. In *The 26th International Symposium on High Performance Parallel and Distributed Computing (HPDC '17)*, June 2017.
- [17] Leo Arulraj, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Improving Virtualized Storage Performance with Sky. In *Proceedings of the 13th ACM SIGPLAN/SIGOPS International Conference on Virtual Execution Environments, VEE '17*, pages 112–128, 2017.
- [18] Jun He, Sudarsun Kannan, Andrea Arpaci-Dusseau, and Remzi Arpaci-Dusseau. The Unwritten Contract of Solid State Drives. In *Proceedings of the EuroSys Conference (EuroSys '17)*, Belgrade, Serbia, April 2017.
- [19] Aishwarya Ganesan, Ramnatthan Alagappan, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Redundancy Does Not Imply Fault Tolerance: Analysis of Distributed Storage Reactions to Single Errors and Corruptions. In *Proceedings of the 15th USENIX Conference on File and Storage Technologies (FAST '17)*, Santa Clara, California, February 2017.
- [20] Thanumalayan Sankaranarayana Pillai, Ramnatthan Alagappan, Lanyue Lu, Vijay Chidambaram, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Application Crash Consistency and Performance with CCFS. In *Proceedings of the 15th USENIX Conference on File and Storage Technologies (FAST '17)*, Santa Clara, California, February 2017.
- [21] Ramnatthan Alagappan, Aishwarya Ganesan, Yuvraj Patel, Thanumalayan Sankaranarayana Pillai, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Correlated Crash Vulnerabilities. In *Proceedings of the 12th Symposium on Operating Systems Design and Implementation (OSDI '16)*, Savannah, Georgia, November 2016.
- [22] Suli Yang, Kiran Srinivasan, Kishore Udayashankar, Swetha Krishnan, Jingxin Feng, Yupu Zhang, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Tombolo: Performance Enhancements for Cloud Storage Gateways. In *Proceedings of the 32nd IEEE Conference on Massive Data Storage (MSST '16)*, Santa Clara, California, June 2016.
- [23] Tyler Harter, Brandon Salmon, Rose Liu, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Slacker: Fast Distribution with Lazy Docker Containers. In *Proceedings of the 14th USENIX Conference on File and Storage Technologies (FAST '16)*, Santa Clara, California, February 2016.
- [24] Lanyue Lu, Thanumalayan Sankaranarayana Pillai, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. WiscKey: Separating Keys from Values in SSD-conscious Storage. In *Proceedings of the 14th USENIX Conference on File and Storage Technologies (FAST '16)*, Santa Clara, California, February 2016.
- [25] Suli Yang, Tyler Harter, Nishant Agrawal, Salini Selvaraj Kowsalya, Anand Krishnamurthy, Samer Al-Kiswany, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Split-Level I/O Scheduling. In *Proceedings of the 25th ACM Symposium on Operating Systems Principles (SOSP '15)*, Monterey, California, October 2015.
- [26] Zev Weiss, Sriram Subramanian, Swaminathan Sundararaman, Vinay Sridhar, Nisha Talagala, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Mjolnir: Collecting Trash in a Demanding New World. In *Interactions of NVM/Flash with Operating-Systems and Workloads (INFLOW '15)*, Monterey, California, October 2015.
- [27] Yiyang Zhang, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Removing the Costs and Retaining the Benefits of Flash-Based SSD Virtualization with FSDV. In *Proceedings of the 31st IEEE Conference on Massive Data Storage (MSST '15)*, Santa Clara, California, May 2015.

- [28] Zev Weiss, Sriram Subramanian, Swaminathan Sundararaman, Nisha Talagala, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. ANViL: Advanced Virtualization for Modern Non-Volatile Memory Devices. In *Proceedings of the 13th USENIX Conference on File and Storage Technologies (FAST '15)*, Santa Clara, California, February 2015.
- [29] Jun He, Duy Nguyen, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Reducing File System Tail Latencies with Chopper. In *Proceedings of the 13th USENIX Conference on File and Storage Technologies (FAST '15)*, Santa Clara, California, February 2015.
- [30] Thanumalayan Sankaranarayana Pillai, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Fractured Processes: Adaptive, Fine-Grained Process Abstractions. In *Proceedings of the 2014 Conference on Timely Results in Operating Systems (TRIOS '14)*, Broomfield, Colorado, October 2014.
- [31] Thanumalayan Sankaranarayana Pillai, Vijay Chidambaram, Ramnatthan Alagappan, Samer Al-Kiswany, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. All File Systems Are Not Created Equal: On the Complexity of Crafting Crash-Consistent Applications. In *Proceedings of the 11th Symposium on Operating Systems Design and Implementation (OSDI '14)*, Broomfield, Colorado, October 2014.
- [32] Lanyue Lu, Yupu Zhang, Thanh Do, Samer Al-Kiswany, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Physical Disentanglement in a Container-Based File System. In *Proceedings of the 11th Symposium on Operating Systems Design and Implementation (OSDI '14)*, Broomfield, Colorado, October 2014.
- [33] Sriram Subramanian, Swaminathan Sundararaman, Nisha Talagala, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Snapshots in a Flash with ioSnap. In *Proceedings of the EuroSys Conference (EuroSys '14)*, Amsterdam, Netherlands, April 2014.
- [34] Tyler Harter, Dhruva Borthakur, Siying Dong, Amitanand Aiyer, Liyin Tang, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Analysis of HDFS Under HBase: A Facebook Messages Case Study. In *Proceedings of the 12th USENIX Symposium on File and Storage Technologies (FAST '14)*, Santa Clara, California, February 2014.
- [35] Zev Weiss, Tyler Harter, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. ROOT: Replaying Multi-threaded Traces with Resource-Oriented Ordering. In *Proceedings of the 24th ACM Symposium on Operating Systems Principles (SOSP '13)*, Nemacon Woodlands Resort, Farmington, Pennsylvania, October 2013.
- [36] Vijay Chidambaram, Thanumalayan Sankaranarayana Pillai, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Optimistic Crash Consistency. In *Proceedings of the 24th ACM Symposium on Operating Systems Principles (SOSP '13)*, Nemacon Woodlands Resort, Farmington, Pennsylvania, October 2013.
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- [10] Jun He, Sudarsun Kannan, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. The Unwritten Contract of Solid State Drives. The 9th Non-Volatile Memories Workshop (NVMW '18), March 2018.
- [11] Ivo Jimenez, Carlos Maltzahn, Jay F. Lofstead, Adam Moody, Kathryn Mohror, Remzi H. Arpaci-Dusseau, and Andrea C. Arpaci-Dusseau. Characterizing and Reducing Cross-Platform Performance Variability Using OS-Level Virtualization. IPDPS Workshop '16, 2016.
- [12] Scott Hendrickson, Stephen Sturdevant, Tyler Harter, Venkateshwaran Venkataramani, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Serverless Computation with OpenLambda. In *The Eighth USENIX Workshop on Hot Topics in Cloud Computing (HotCloud'16)*, Denver, Colorado, June 2016.
- [13] Rammathan Alagappan, Vijay Chidambaram, Thanumalayan S. Pillai, Aws Albarghouthi, Andrea C. Arpaci-Dusseau, and Remzi H. Arpaci-Dusseau. Beyond Storage APIs: Provable Semantics for Storage Stacks. In *The Fifteenth Workshop on Hot Topics in Operating Systems (HotOS XV)*, Kartause Ittingen, Switzerland, May 2015.
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