Curriculum Vitae

Dr. Alexandra Fedorova

Electrical and Computer Engineering
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1 Education

2006 **Ph.D. in Computer Science**
Harvard University, *Cambridge, MA, USA*
Thesis title: Operating System Scheduling for Chip Multithreaded Processors
Thesis advisor: Margo Seltzer

2002 **M.S. in Computer Science,**
Harvard University*, Cambridge, MA, USA*

1999 **Bachelor's in Computer Science**
Smith College, *Northampton, MA, USA*

2 Employment history

2015-present **Associate Professor**
Electrical and Computer Engineering, University of British Columbia

2014-present **Consultant**
MongoDB. Storage engines team. Adoption of new technologies.

2013-2014 **Consultant**
WiredTiger. Performance tuning of a key-value store

2012-2015 **Associate Professor**
School of Computing Science, Simon Fraser University

2006 –2012 **Assistant Professor**
School of Computing Science, Simon Fraser University

2003-2006 **Graduate student intern**
Sun Microsystems Laboratories, Burlington, MA, USA
- Scalable Synchronization Group (PI Mark Moir)
- Iceberg Group (PI Christopher Small)

1999-2000 **Software engineer, *EMC Corporation, Westboro, MA, USA***

3 Research

3.1 Major Awards

- Alfred P. Sloan Research Fellowship, 2012
- ACM CRA-W Anita Borg Early Career award, 2011
- Best paper awards (USENIX ATC 2002, USENIX ATC 2015, IEEE Big Data 2018)

3.2 Short summary

My research spans a broad range of systems problems. I am investigating how to make system software more performant, scalable and energy-efficient, how to gain better observability into its internal workings, and how to bridge the gap between applications and hardware. In the past, my students and I focused on operating system scheduling and memory management algorithms that reduce contention for hardware resources. This work culminated in techniques for intelligent placement of virtual containers on physical hardware, to ensure predictable performance and energy efficiency. While I continue to work on many research directions, my recent passion is memory and storage systems. My current projects revolve around processing-in-memory, NVRAM and other evolving storage hardware, and its applications for deep learning, key-value stores and data analytics systems.

3.3 Publications

Refereed and invited articles in journals and magazines:

[J14] Joel Nider, Craig Mustard and Alexandra Fedorova. Processing Persistent Data in Place, *USENIX ;login, 2021*, *Invited*.

[J13] Jean-Pierre Lozi, Baptiste Lepers, Justin Funston, Fabien Gaud, Vivien Quéma and Alexandra Fedorova, Your Cores Are Slacking Off — Or Why OS Scheduling Is a Hard Problem, *USENIX ;login,VOL. 41, NO. 4*, Winter 2016. *Invited*.

[J12] Eric Matthews, Lesley Shannon and Alexandra Fedorova. Shared Memory Multicore MicroBlaze System with SMP Linux Support. *ACM Transactions on Reconfigurable Technology and Systems (TRETS) 9(4):26,* 2016.

[J11] Fabien Gaud, Baptiste Lepers, Justin Funston, Mohammad Dashti, Alexandra Fedorova, Vivien Quéma, Renaud Lachaize, and Mark Roth. Challenges of memory management on modern NUMA systems. *Commun. ACM 58, 12, pp. 59-66*., December 2015.

[J10] Baptiste Lepers, Vivien Quema, Alexandra Fedorova, Thread and Memory Placement on NUMA Systems: Asymmetry Matters, *USENIX ;login, Vol. 40, No. 5*, October 2015

[J9] Sergey Zhuravlev, Juan Carlos Saez, Sergey Blagodurov, Alexandra Fedorova and Manuel Prieto, Survey of Energy-Cognizant Scheduling Techniques, *Transactions on Parallel and Distributed Systems*, 24(7), pp. 1447-1464. July 2013.

[J8] Juan Carlos Saez, Alexandra Fedorova, M. Prieto. Leveraging Core Specialization via OS Scheduling to Improve Performance on Asymmetric Multicore Systems, *ACM Transactions of Computer Systems*, vol. 30, issue 2, April 2012.

[J7] Sergey Zhuravlev, Juan Carlos Saez, Sergey Blagodurov, Alexandra Fedorova, Manuel Prieto. Survey of Scheduling Techniques for Addressing Shared Resources in Multicore Processors. *ACM Computing Surveys,* vol. 45, issue 1, March 2013

[J6] Juan Carlos Saez, Daniel Shelepov, Alexandra Fedorova and Manuel Prieto. Leveraging Workload Diversity through OS Scheduling to Maximize Performance on Single-ISA Heterogeneous Multicore Systems. *Journal of Parallel and Distributed Computing*, vol. 71, issue 1, January 2011.

[J5] Sergey Blagodurov, Sergey Zhuravlev and Alexandra Fedorova. Contention Aware Scheduling on Multicore Systems. *ACM Transactions on Computer Systems*, vol. 30, issue 4, December 2010.

[J4] Alexandra Fedorova, Sergey Blagodurov and Sergey Zhuravlev. Managing Contention for Shared Resources on Multicore Processors. *Communications of the ACM*, vol 53, issue 2, pp. 49-57, February 2010. *Invited.*

[J3] Alexandra Fedorova, Juan Carlos Saez, Daniel Shelepov and Manuel Prieto. Maximizing Performance per Watt with Asymmetric Multicore Systems. *Communications of the ACM,* vol. 52, issue 12, pp. 48-57, December 2009. *Invited.*

[J2] Viren Kumar and Alexandra Fedorova. Towards Better Performance Per Watt in Virtual Environments on Asymmetric Single-ISA Multi-core Systems. *ACM Operating Systems Review,* vol. 43, issue 3, July 2009.

[J1] Daniel Shelepov, Juan Carlos Saez, Stacey Jeffery, Alexandra Fedorova, Nestor Perez, Zhi Feng Huang, Sergey Blagodurov, Viren Kumar. HASS: A Scheduler for Heterogeneous Multicore Systems. *ACM Operating Systems Review, Special Issue on the Interaction among the OS, Compilers, and Multicore Processors*, vol. 43, issue 2, April 2009.

Refereed Conference Proceedings:

[C43] Joel Nider, Craig Mustard, Andrada Zoltan, John Ramsden, Larry Liu, Jacob Grossbard, Mohammad Dashti, Romaric Jodin, Alexandre Ghiti, Jordi Chauzi, Alexandra Fedorova, A Case Study of Computing-in-Memory in off-the-Shelf Systems, *USENIX Annual Technical Conference (ATC'21)*,

[C42] Craig Mustard, Swati Goswami, Niloofar Gharavi, Joel Nider, Ivan Beschastnikh, Alexandra Fedorova, JumpGate: Automating Intergration of Network Connected Accelerators, *14th ACM International Systems and Storage Conference (SYSTOR'21)*

[C41] Louis Ye, Mieszko Lis and Alexandra Fedorova. A Unifying Abstraction for Data Structure Splicing, *International Symposium on Memory Systems (MEMSYS),* 2019.

[C40] Gleb Naumenko, Gregory Maxwell, Pieter Wuille, Alexandra Fedorova, Ivan Beschastnikh. Erlay: Efficient Transaction Relay for Bitcoin, *26th ACM Conference on Computer and Communications Security (CCS)*, 2019.

[C39] A. Jayarajan, J. Wei, G. Gibson, A. Fedorova, G. Pekhimenko, Priority-based Parameter Propagation for Distributed DNN Training, *SysML Conference 2019*.

[C38] Craig Mustard and Alexandra Fedorova. Practical Cross Program Memoization with KeyChain, *IEEE Big Data*, 2018. Best paper award!

[C37] Alexandra Fedorova, Craig Mustard, Ivan Beschastnikh, Julia Rubin, Augustine Wong, Svetozar Miuchin and Louis Ye, Performance Comprehension at WiredTiger, *ACM SIGSOFT Symposium on the Foundations of Software Engineering (FSE),* 2018.

[C36] Svetozar Miucin and Alexandra Fedorova, Data-Driven Spatial Locality, *International Symposium on Memory Systems (MEMSYS)*, 2018.

[C35] Justin Funston, Maxime Lorrillere, Alexandra Fedorova, Baptiste Lepers, David Vengerov, Jean-Pierre Lozi, Vivien Quema, *Placement of Virtual Containers on NUMA Systems: A Practical and Comprehensive Model*. USENIX Annual Technical Conference (ATC), 2018. Acceptance rate 20%.

[C34] Mohammad Dashti and Alexandra Fedorova, Analyzing Memory Management Methods on Integrated CPU-GPU Systems, *2017 ACM SIGPLAN International Symposium on Memory Management (ISMM 2017)*.

[C33] Matheus Nunes, Harjeet Lalh, Ashaya Sharma, Augustine Wong, Svetozar Miucin, Alexandra Fedorova and Ivan Beschastnikh. Studying multi-threaded behavior with TSViz. *International Conference on Software Engineering (ICSE)*, 2017 (Demo track).

[C32] Svetozar Miucin, Conor Brady and Alexandra Fedorova, End-to-end Memory Behavior Profiling with DINAMITE, in *24th ACM SIGSOFT International Symposium on the Foundations of Software Engineering (FSE)*, 2016. *Demo track*

[C31] Jean-Pierre Lozi, Baptiste Lepers, Justin Funston, Fabien Gaud, Alexandra Fedorova and Vivien Quema. The Linux Scheduler: A Decade of Wasted Cores. *Eleventh European Conference on Computer Systems (EuroSys)*, 2016.

[C30] Sergey Blagodurov, Alexandra Fedorova, Evgeny Vinnik, Tyler Dwyer and Fabien Hermenier, Multi-Objective Job Placement in Clusters, *Supercomputing Conference (SC),* 2015. Acceptance rate 22%.

[C29] Baptiste Lepers, Vivien Quéma and Alexandra Fedorova, Thread and Memory Placement on NUMA Systems: Asymmetry Matters, *USENIX Annual Technical Conference (USENIX ATC)*, July 2015. Acceptance rate 16%.

[C28] Anoop Sarkar, Fred Popowich, Alexandra Fedorova, A Professional Big Data Master's Program to Train Computational Specialists**,** *Big Data and Analytics EdCon 2014. –* Short paper

[C27] Fabien Gaud, Baptiste Lepers, Justin Funston, Jeremie Decouchant, Justin Funston, Alexandra Fedorova and Vivien Qu**é**ma, Large Pages May be Harmful on NUMA Systems, *USENIX Annual Technical Conference (USENIX ATC)*, June 2014. Acceptance rate 15%.

[C26] Sergey Blagodurov, Martin Arlitt, Yuan Chen, Chris Hyser, Alexandra Fedorova, Maximizing Server Utilization while Meeting Critical SLAs through Weight-Based

Collocation Management, *IFIP/IEEE Integrated Nework Management Symposium (IM 2013).* Acceptance rate 27%.

[C25] Mohammad Dashti, Alexandra Fedorova, Justin Funston, Fabien Gaud, Renaud Lachaize, Baptiste Lepers, Vivien Quema and Mark Roth, Traffic Management: A Holistic Approach to Memory Placement on NUMA Systems, *Eightieenth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, 2013. Acceptance rate 23%.

[C24] Mark Roth, Micah J Best, Craig Mustard and Alexandra Fedorova, Deconstructing the Overhead in Parallel Applications, *IEEE International Symposium on Workload Characterization* (IISWC), 2012. Acceptance rate 38%.

[C23] Tyler Dwyer, Alexandra Fedorova, Sergey Blagodurov, Mark Roth, Fabien Gaud and Jian Pei, A Practical Method for Estimating Performance Degradation on Multicore Processors and its Application to HPC Workloads, *Supercomputing Conference (SC),* 2012. Acceptance rate 21%.

[C22] Mohammad Hosseini, Alexandra Fedorova, Shervin Shirmohammadi, Joseph Peters, Energy-Aware Adaptations in Mobile 3D Graphics, *ACM Multimedia,* 2012. Acceptance rate .

[C21] Eric Matthews, Lesley Shannon and Alexandra Fedorova, From One to Many, Bringing MicroBlaze into the Multicore Era with Linux SMP Support, *22nd International Conference on Field Programmable Logic and Applications (FPL),* 2012. Acceptance rate 28%.

[C20] Justin Funston, Kaoutar El Maghraoui, Joefon Jann, Pratap Pattnaik and Alexandra Fedorova, An SMT-Selection Metric to Improve Multithreaded Applications' Performance, *IEEE International Parallel & Distributed Processing Symposium (IPDPS)*, 2012. Acceptance rate 21%.

[C19] Sergey Blagodurov, Sergey Zhuravlev, Mohammad Dashti and Alexandra Fedorova. A Case for NUMA-Aware Contention Management on Multicore Systems. *USENIX Annual Technical Conference (USENIX ATC),* 2011. Acceptance rate 18%.

[C18] Micah J Best, Shane Mottishaw, Craig Mustard, Mark Roth, Alexandra Fedorova, Andrew Brownsword. Synchronization via Scheduling: Techniques For Efficiently Managing Shared State. *32nd ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI)*, 2011. Acceptance rate 23%.

[C17] Kishore Kumar, David Vengerov, Alexandra Fedorova and Vana Kalogeraki. FACT: a Framework for Adaptive Contention-Aware Thread Migrations. *ACM International Conference on Computing Frontiers (CF),* 2011. Acceptance rate 22%.

[C16] Ananth Narayan S, Somshubra Sharangi, Alexandra Fedorova. Global Cost-Diversity Aware Dispatch Algorithm for Heterogeneous Data Centers. *2nd ACM/SPEC Conference on Performance Engineering (ICPE)*, 2011. Acceptance rate 30%.

[C15] Eric Matthews, L. Shannon, A. Fedorova. A Configurable Framework for Investigating Workload Execution. *International Conference on Field-Programmable Technology*

(FPT), 2010. Acceptance rate unknown.

[C14] Sergey Zhuravlev, Sergey Blagodurov and Alexandra Fedorova. AKULA: A Toolset for Experimenting and Developing Thread Placement Algorithms on Multicore Systems. *International Conference on Parallel Architectures and Compilation Techniques (PACT)*, 2010. Acceptance rate 17%.

[C13] Juan Carlos Saez, Alexandra Fedorova, Manuel Prieto and Hugo Vegas. Operating System Support for Mitigating Software Scalability Bottlenecks on Asymmetric Multicore Processors. *ACM International Conference on Computing Frontiers (CF),* 2010. Acceptance rate 27%.

[C12] Vahid Kazempour, Ali Kamali and Alexandra Fedorova. AASH: An Asymmetry-Aware Scheduler for Hypervisors. *ACM SIGPLAN/SIGOPS International Conference on Virtual Execution Environments (VEE),* 2010. Acceptance rate 27%.

[C11] Juan Carlos Saez, Manuel Prieto, Alexandra Fedorova and Sergey Blagodurov. A Comprehensive Scheduler for Asymmetric Multicore Processors. *5th ACM European Conference on Computer Systems (EuroSys),* 2010. Acceptance rate 19%.

[C10] Sergey Zhuravlev, Sergey Blagodurov, and Alexandra Fedorova. Addressing Cache Contention in Multicore Processors via Scheduling. *Fifteenth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, 2010. Acceptance rate 17%.

[C9] Walter Maldonado, Patrick Marlier, Pascal Felber, Adi Suissa, Danny Hendler, Alexandra Fedorova, Julia Lawall, Gilles Muller. Scheduling Support for Transactional Memory Contention Management. *15th ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming (PPoPP),* 2010. Acceptance rate 17%.

[C8] James Charles, Preet Jassi, Ananth Narayan S., Abbas Sadat and Alexandra Fedorova. Evaluation of the Intel Core i7 Turbo Boost Feature. *IEEE International Symposium on Workload Characterization*, *(IISWC),* 2009. Acceptance rate unknown.

[C7] Micah J Best, Alexandra Fedorova, Ryan Dickie, Andrea Tagliasacchi, Alex Couture-Beil, Craig Mustard, Shane Mottishaw Aron Brown, Zhi Feng Huang, Xiaoyuan Xu, Nasser Ghazali and Andrew Brownsword. Searching for Concurrent Design Patterns in Video Games: Practical Lessons in Achieving Parallelism in a Video Game Engine. *15th European Conference on Parallel and Distributed Computing (EUROPAR)*, 2009. Acceptance rate 33%.

[C6] Vahid Kazempour, Alexandra Fedorova, and Pouya Alagheband. Performance Implications of Cache Affinity on Multicore Processors. *14th European Conference on Parallel and Distributed Computing (EUROPAR)*, 2008. Acceptance rate 33%.

[C5] Alexandra Fedorova, Margo Seltzer and Michael D. Smith. Improving Performance Isolation on Chip Multiprocessors via an Operating System Scheduler. *Sixteenth International Conference on Parallel Architectures and Compilation Techniques (PACT)*, 2007. Acceptance rate 19%.

[C4] Peter Damron, Alexandra Fedorova, Yosef Lev, Victor Luchangco, Mark Moir and Daniel

Nussbaum. Hybid Transactional Memory. *Twelfth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, 2006. Acceptance rate 22%.

[C3] Alexandra Fedorova, Margo Seltzer, Christopher Small and Daniel Nussbaum. Performance Of Multithreaded Chip Multiprocessors And Implications For Operating System Design. *USENIX Annual Technical Conference (USENIX ATC),* 2005. Acceptance rate unknown.

[C2] Kostas Magoutis, Salimah Addetia, Alexandra Fedorova, Margo I. Seltzer. Making the Most out of Direct Access Network-Attached Storage. *Second USENIX Conference on File and Storage Technologies (FAST)*, 2003. Acceptance rate unknown.

[C1] Kostas Magoutis, Salimah Addetia, Alexandra Fedorova, Margo I. Seltzer, Jeffrey S. Chase, Andrew J. Gallatin, Richard Kisley, Rajiv G. Wickremesinghe, Eran Gabber. Structure and Performance of the Direct Access File System. *USENIX Annual Technical Conference (USENIX ATC)*, 2002. **Best paper award.** Acceptance rate unknown.

Refereed Workshop Proceedings

[W21] Joel Nider and Alexandra Fedorova. The Last CPU, *USENIX HotOS XVIII: Hot Topics in Operating Systems*

[W20] Joel Nider, Craig Mustard, Andrada Zoltan and Alexandra Fedorova. Processing in Storage Class Memory*, 12th USENIX Workshop on Hot Topics in Storage and File Systems (HotStorage '20).*

[W19] Craig Mustard, Fabian Ruffy, Anny Gakhokidze, Ivan Beschastnikh, Alexandra Fedorova. Jumpgate: In-Network Processing as a Service for Data Analytics, *11th USENIX Workshop on Hot Topics in Cloud Computing (HotCloud '19).*

[W18] Lesley Shannon, Eric Matthews, Nicholas Doyle, and Alexandra Fedorova, Performance Monitoring for Heterogeneous Multicore Embedded Computing Systems on FPGAs, *FPGAs for Software Programmers* (FSP 2015).

[W17] Tyler Dwyer and Alexandra Fedorova, On Instruction Organization, *15th USENIX Workshop on Hot Topics in Operating Systems (HotOS XV)*, 2015.

[W16] Micah J Best, Nicholas Vining, Daniel Jacobsen and Alexandra Fedorova, Collection-focused Parallelism, *Fifth USENIX Workshop on Hot Topics on Parallelism (HotPar 13)*.

[W15] Micah J Best, Shane Mottishaw, Craig Mustard, Mark Roth, Parsiad Azimzadeh, Alexandra Fedorova and Andrew Brownsword. Schedule Data not Code. *Third USENIX Workshop on Hot Topics on Parallelism (HotPar),* 2011.

[W14] Micah J Best, Shane Mottishaw, Craig Mustard, Mark Roth, Alexandra Fedorova and Andrew Brownsword. Synchronization via Scheduling: Managing Shared State in Video Games. *Second USENIX Workshop on Hot Topics on Parallelism (HotPar),* 2010.

[W13] Jon Hourd, Chaofei Fan, Jiasi Zeng, Qiang Zhang, Micah J Best, Alexandra Fedorova and Craig Mustard. Exploring Practical Benefits of Asymmetric Multicore Processors. *Workshop on Parallel Execution of Sequential Programs on Multi-core Architectures (PESPMA)*, 2009.

[W12] Kishore Kumar Pusukuri, David Vengerov, and Alexandra Fedorova. A Methodology for Developing Simple and Robust Power Models Using Performance Monitoring Events. *Workshop on the Interaction between Operating Systems and Computer Architecture (WIOSCA),* 2009

[W11] Bo Chen, William Pak Tun Ma, Yan Tan, Alexandra Fedorova and Greg Mori. GreenRT: A Framework for the Design of Power-Aware Soft Real-Time Applications. *Workshop on the Interaction between Operating Systems and Computer Architecture (WIOSCA)*, 2008

[W10] Daniel Shelepov and Alexandra Fedorova. Scheduling on Heterogeneous Multicore Processors Using Architectural Signatures. *Workshop on the Interaction between Operating Systems and Computer Architecture (WIOSCA)*, 2008

[W9] Andrea Tagliasacchi, Ryan Dickie, Alex Couture-Beil, Micah J Best, Alexandra Fedorova, and Andrew Brownsword. Cascade: A Parallel Programming Framework for Video Game Engines. *Workshop on Parallel Execution of Sequential Programs on Multi-core Architectures (PESPMA)*, 2008

[W8] Alexandra Fedorova, Viren Kumar, Vahid Kazempour, Suprio Ray, and Pouya Alagheband. Cypress: A Scheduling Infrastructure for a Many-Core Hypervisor. *Workshop on Managed Multi-Core Systems (MMCS),* 2008

[W7] Alexandra Fedorova, David Vengerov and Daniel Doucette. Operating System Scheduling on Heterogeneous Core Systems. *First Workshop on Operating System Support for Heterogeneous Multicore Architectures*, 2007

[W6] Daniel Doucette and Alexandra Fedorova. Base Vectors: A Potential Technique for Microarchitectural Classification of Applications. *Workshop on the Interaction between Operating Systems and Computer Architecture (WIOSCA)*, 2007

[W5] Sven Bachthaler, Fernando Belli and Alexandra Fedorova. Desktop Workload Characterization for CMP/SMT and Implications for Operating System Design. *Workshop on the Interaction between Operating Systems and Computer Architecture (WIOSCA)*, 2007

[W4] Alexandra Fedorova, Margo Seltzer, and Michael D. Smith. A Non-Work-Conserving Operating System Scheduler for SMT Processors. *Workshop on the Interaction between the Operating Systems and Computer Architecture (WIOSCA)*, 2006

[W3] Aaron B. Brown, Anupam Chanda, Rik Farrow, Alexandra Fedorova, Petros Maniatis, and Michael L. Scott. The Many Faces of Systems Research - and How to Evaluate Them. *Tenth Workshop on Hot Topics in Operating Systems (HotOS),* 2005. *Invited.*

[W2] Alexandra Fedorova, Christopher Small, Daniel Nussbaum and Margo Seltzer. Chip Multithreading Systems Need a New Operating System Scheduler. *11th ACM SIGOPS*

European Workshop, 2004

[W1] Alexandra Fedorova, Margo Seltzer, Kostas Magoutis, and Salimah Addetia. Application Performance on the Direct Access File System. *Workshop on Software and Performance 2004 (WOSP'04)*, 2004

Thesis:

[TH1] Alexandra Fedorova. Operating System Scheduling for Chip Multithreaded Processors. *Harvard University,* 2006

Patents:

[P9] Lesley Shannon and Alexandra Fedorova, Modular Re-configurable Profiling Core for Multiprocessor Systems-On-Chip. *US Patent No. 8,818,760,* August 26, 2014.

[P8] Alexandra Fedorova, David Vengerov, Kishore Kumar Pusukuri, Cache-Aware Thread Scheduling in Multithreaded Systems. *US Patent No. 8,533,719,* September 10, 2013.

[P7] Alexandra Fedorova, Method and apparatus for achieving fair cache sharing on multi-threaded chip multiprocessors. *US Patent No. 8,069,444,* November 29, 2011.

[P6] Alexandra Fedorova, Methods and apparatus for scheduling threads on multicore processors under fair distribution of cache and other shared resources of the processors. *US Patent No. 8,028,286,* September 27, 2011.

[P5] Alexandra Fedorova and Christopher Small, Cache-aware scheduling for a chip multithreading processor. *US Patent No. 7,818,747*, October 19, 2010 (same as P3)

[P4] Alexandra Fedorova, Methods and apparatus for estimating fair cache miss rates on a chip multiprocessor. *US Patent No. 7,689,773,* March 30, 2010

[P3] Alexandra Fedorova and Christopher Small, Cache-aware scheduling for a chip multithreading processor. *US Patent No. 7,487,317*, February 3, 2009

[P2] Alexandra Fedorova. Method and apparatus for estimating multithreaded processor throughput based on processor cache performance. *US Patent No. 7,363,450*, April 25, 2008

[P1] Alexandra Fedorova, Method and apparatus for estimating the effect of processor cache memory bus delays on multithreaded processor throughput. *US Patent No. 7,457,931*, November 25, 2008

3.4 Invited talks and appearances

[T32] **Disaggregated Systems Meet Processing-in-Memory**, SYSTOR '21. Keynote talk.

[T31] **I Replaced SSD with Storage Class Memory And Here Is What I Learned**, Refereed Presentation at Persistence in Real Life (PIRL'20), October 23, 2020.

[T30] **Why mmap is faster than system calls**. Keynote talk. Adhoc.community virtual event. April 2020. https://adhoc.community

[T29] **My data or yours? Orchestrating the movement and placement of data on large multicore systems**, Keynote talk. *Diversity Workshop,* collocated with SOSP 2015

[T28] **My data or yours? Orchestrating the movement and placement of data on large multicore systems**, IBM TJ Watson Lab, February 2015

[T27] **My data or yours? Orchestrating the movement and placement of data on large multicore systems**, ACM Applicative Conference, February 2015

[T26] **Computer Systems and Energy**, SFU President's Faculty Lecture Series, November 2012.

[T25] **Traffic Management: A Holistic Approach to Memory Placement on NUMA Systems**, Workshop on Multicore Architectures and Language Virtual Machines, Paris, France, September 2012.

[T24] **P2012 as a Research Vehicle in Future Systems and Computer Architecture,** CMC Webinar, May 2012.

[T23] **Software Managed Memory on P2012**, P2012 Developer Conference, STM Grenoble, December 2011.

[T22] **Making Systems Ready for an Energy-Efficient Future**, VMWare, May 2011

[T21] **The Joys of Scheduling on Large Multicore Systems**, Columbia U., March 2011

[T20] **Multicore Software Systems Research Challenges**, CRA-W workshop on Multicore Systems for Women and Minorities, co-located with ASPLOS 2011

[T19] **A Case for NUMA-Aware Contention Management on Multicore Systems**, Oracle, December 2010

[T18] **The Joys of Scheduling on Large Multicore Systems**, Google, Fall 2010

[T18] **Managing All Kinds of Contention on Multicore Systems**, Vancouver Systems Colloquium, October 20, 2010

[T17] **The Joys of Scheduling on Large Multicore Systems**, IEEE Victoria Chapter, September 2010

[T16] **Managing Contention for the Shared Resources on Multicore Processors,** Intel Parallel Programming Talk, August 10, 2010

[T15] **The Joys of Scheduling on Large Multicore Systems**, VMWare, Fall 2009

[T14] **The Joys of Scheduling on Large Multicore Systems**, Sun Microsystems, Fall 2009

[T13] **Interviewed by Sun Microsystems' Eric Saxe** on the launch of OpenSolaris 2009.06, May 2009

[T12] **Unleashing the Potential of Asymmetric Multicore Processors Through Operating System Support**, Séminaire REGAL, Laboratoire d'Informatic de Paris 6, May 2009

[T11] **Unleashing the Potential of Asymmetric Multicore Processors Through Operating System Support**, AMD Computer Engineering Lecture Series, Cornell University, April

2009

[T10] **How I Got into the Operating Systems and Why I Decided to Stay**, PLOSA Workshop for Women and Minorities, co-located with ASPLOS 2009, Washington, DC

[T9] **How to Succeed in Grad School**, Diversity Workshop co-located with OSDI, 2008, San Diego, CA

[T8] **How to Succeed in Grad School**, Srivastava Graduate Workshop, University of British Columbia, May 2008

[T8] **What Every Developer Should Know About Software Performance on Multicore Processors**, IEEE Vancouver Section, UBC, October 4, 2007

[T7] **Software Hardware Interaction on Multicore and Multithreaded Processors**, PMC Sierra, Burnaby, May 5, 2007

[T6] **Operating System Scheduling for Multicore Processors**, Intel, Santa Clara, May 2006.

[T5] **Cache-fair Thread Scheduling for Multicore Processors**, Sun Microsystems Laboratories Seminar Series, February 3, 2006

[T4] **Operating System Methods For Improved Resource Sharing On Chip Multiprocessors**, Harvard Industrial Partnership Symposium, October 21, 2005

[T3] **A High-Performance Cache Model**. Cider Seminar, University of Toronto, Canada, June 21, 2005

[T2] **Operating System Scheduling for Chip Multithreaded Processors**. Sun Microsystems, Burlington, MA, June 6, 2005

[T1] **Throughput-Oriented Scheduling on Chip Multithreading Systems**, Performance Strategic Working Group, Sun Microsystems, Burlington, MA, September 2, 2004

4 Service

4.1 Board of Directors and Editor

- Associate Editor, ACM TOPC, 2012-2016
- USENIX Board of Directors, 2012-2014.

4.2 Technical Program committees

[PC42] FAST 2022 – USENIX Conf. on File Access and Storage Technologies (heavy PC)
[PC41] SOSP 2021 – Symposium on Operating Systems Principles (heavy PC)
[PC40] SYSTOR 2021 – ACM International Systems and Storage Conference
[PC39] SOSP 2021 – International Symposium on Operating Systems Principles (heavy PC)
[PC38] HotOS 2021 – USENIX Hot Topics in Operating Systems
[PC37] USENIX ATC 2021 – USENIX Annual Technical Conference (light PC)
[PC36] ASPLOS 2021 – ACM International Conference on Architectural Support for Programing Languages and Operating Systems (heavy PC)
[PC35] OSDI 2020 – USENIX International Symposium on Operating System Design and Implementation (heavy PC)
[PC34] HotStorage 2020 – USENIX Workshop on Hot Topics in Storage
[PC33] SOSP 2019 – International Symposium on Operating Systems Principles (heavy PC)
[PC32] PLDI 2019 – external review committee
[PC31] PLDI 2018 – ACM SIGPLAN on Programming Language Design and Implementation
[PC30] ASPLOS 2018 – ACM International Conference on Architectural Support for Programing Languages and Operating Systems
[PC29] HotOS 2017 – ACM SIGOPS Hot Topics in Operating systems
[PC28] OSDI 2016 – USENIX International Symposium on Operating System Design and Implementation (heavy PC)
[PC27] SOSP 2015 – International Symposium on Operating System Principles
[PC26] Technical program committee member, SYSTOR 2015 (ACM International Systems and Storage Conference)
[PC25] PLDI 2015 – International Symposium on Programming Language Design and Implementation
[PC24] EuroSys Roger Needham PhD Award Committee – 2013
[PC23] HotOS 2013 – USENIX Workshop on Hot Topics in Operating Systems
[PC22] HotPar 2012 – USENIX Workshop on Hot Topics in Parallelism
[PC21] USENIX 2012 – USENIX Annual Technical Conference
[PC20] VEE 2012 – ACM/SIGPLAN International Conference on Virtual Execution Environments
[PC19] ASPLOS 2012 – International Conference on Architectural Support for Programming Languages and Operating Systems
[PC18] USENIX 2011 – USENIX Annual Technical Conference
[PC17] HotPar 2011 – USENIX Workshop on Hot Topics in Parallelism
[PC16] EuroSys 2011 – ACM/SIGOPS European Systems conference
[PC15] HiPEAC 2011 – International Conference on High Performance and Embedded Architectures and Compilers
[PC14] PPoPP 2011 – ACM SIGPLAN Annual Symposium on Principles and Practice of Parallel Programming

[PC13] PACT 2010 – International Conference on Parallel Architectures and Compilation Techniques
[PC12] EuroSys 2010 – ACM/SIGOPS European Systems conference
[PC11] HotPar 2010 – USENIX Workshop on Hot Topics in Parallelism
[PC10] PESPMA 2009 – Workshop on Parallel Execution of Sequential Programs on Multicore Processors
[PC9] WIOSCA 2009 – Annual Workshop on the Interaction between Operating Systems and Computer Architecture
[PC8] ACM SIGOPS Operating Systems Review, Special Issue on the Interaction Among OS, Compilers and Multicore Processors, 2009.
[PC7] ASPLOS 2009 – International Conference on Architectural Support for Programming Languages and Operating Systems
[PC6] MMCS 2009 – Workshop on Managed Many-Core Systems
[PC5] WIOSCA 2008 – Annual Workshop on the Interaction between Operating Systems and Computer Architecture
[PC4] MMCS 2008 – Workshop on Managed Many-Core Systems
[PC3] HotPar 2009 – USENIX Workshop on Hot Topics in Parallelism
[PC2] SPAA 2008 – ACM Symposium on Parallelism in Algorithms and Architectures
[PC1] WIOSCA 2007 – Annual Workshop on the Interaction between Operating Systems and Computer Architecture

4.3 Conference organization and chairing

- Co-chair of the SOSP Diversity Workshop, 2019
- PC Chair, HotOS 2017 (ACM SIGOPS Hot Topics in Operating Systems)
- Chair, Provocative Ideas Session, ASPLOS 2012
- Local arrangements chair, High Performance Graphics 2011 (hosted at SFU)
- PC Co-chair, HotPar 2009
- Steering Committee, HotPar 2009-2013

4.4 Minority outreach activities and mentoring

- OSDI 2020 – Mentoring program: participated as the mentor to PhD students.
- OSDI 2020 – Ask Me Anything (AMA) panel participant.
- Co-chair of the SOSP Diversity Workshop, 2019
- Keynote talk at Diversity 2015, collocated with SOSP 2015
- Invited speaker at the CRA-W workshop on Multicore Systems, co-located with ASPLOS 2011
- Invited speaker at the PLOSA workshop, co-located with ASPLOS 2009
- ScienceAlive: Introduced research on multicore systems to 4-7th graders (2010)
- ScienceAlive: Introduced research on multicore systems to 4-7th graders (2009)
- Mentor in the Canadian Distributed Mentorship Program. Hosted an undergraduate student from University of Waterloo, Stacey Jefferey, in my research lab. (2008)
- Seminar Leader at the Srivatsava Graduate Workshop for Women and Minorities (2008)
- Invited speaker at the 2008 Diversity Workshop, co-located with OSDI 2008