

ASPLOS 2015

20th International Conference on Architectural Support for
Programming Languages and Operating Systems

March 14-18, 2015, Istanbul, TURKEY

PROGRAM



WORKSHOP/TUTORIAL PROGRAM

Saturday, March 14, 2015

8:30AM-12:30PM (Break 10:20-10:40)	Conference -Virtual Execution Environments (Pinar2)	VEE 2015
	Workshop - Cognitive Architectures (Pinar3)	CogArch 2015
	Tutorial - Sirius: An Open End-to-End Voice and Vision Personal Assistant like Apple's Siri, Google Now, Microsoft's Cortana, and Amazon's Echo (Esen1)	Sirius Tutorial
1:30PM-5:30PM (Break 3:20-3:40)	Conference -Virtual Execution Environments (Pinar2)	VEE 2015
	Workshop - Cognitive Architectures (Pinar3)	CogArch 2015
	Tutorial - DataFlow SuperComputing and the OpenSPL Paradigm for Energy-Aware Programming (Esen1)	DataFlow Tutorial
	Tutorial - Programming and Usage Models for Non-Volatile Memory (Esen2)	Non-Volatile Memory Tutorial

Sunday, March 15, 2015

8:30AM- 12:30PM (Break 10:20-10:40)	Conference -Virtual Execution Environments (Pinar2)	VEE 2015
	Workshop on Approximate Computing (Pinar3)	WACAS 2015
	Tutorial - Hardware Security (Esen1)	Hardware Security Tutorial
1:30PM-5:30PM (Break 3:20-3:40)	Conference -Virtual Execution Environments (Pinar2)	VEE 2015
	Workshop - The Next Big Little Thing : Hands-on Practice with the Internet of Things (Pinar3)	Workshops/Tutorials
	Tutorial - Hardware Security (Esen1)	Hardware Security Tutorial
	Tutorial - Accelerating big data processing with hadoop, spark and memcached on datacenters with modern architectures (Esen2)	Big Data Tutorial

MAIN PROGRAM

Sunday, March 15, 2015

PM 6:00-8:00 Reception (*Roof Bar*)

Monday, March 16, 2015

AM 8:30-8:45 *Welcoming Remarks (Ballroom)*

8:45-9:45 **Keynote I: Architectural Support for Cyber-Physical Systems,**
Edward A. Lee, University of California at Berkeley
Chair: Sandhya Dwarkadas, University of Rochester (*Ballroom*)

9:45-10:30 *Lightning Session -16 papers (Ballroom)*
Chair: Arrvindh Shriraman, Simon Fraser University

10:30-10:45 *Break (Ballroom)*

10:45-12:00 **Session 1A (Ballroom):**
Persistent Memory
Chair: Angela Demke Brown,
 University of Toronto

Session 1B (Pinar):
Memory Models 1
Chair: Alvin Lebeck,
 Duke University

PM 12:00-1:30 *Lunch (Turkuaz)*

1:30-2:45 **Session 2A (Ballroom):**
Memory and Security I
Chair: John Criswell,
 University of Rochester

Session 2B (Pinar):
Warehouse Scale Computing I
Chair: Lingjia Tang,
 University of Michigan, Ann Arbor

2:45-3:00 *Break (Ballroom - Pinar)*

3:00-3:50 **Session 3A (Ballroom):**
Memory and Security II
Chair: Dan Tsafir, Technion

Session 3B (Pinar):
Warehouse Scale Computing II
Chair: Yunji Chen, Inst. Comp. Tech.,
 Chinese Academy of Sciences

4:00-4:30 *Lightning Session -12 papers (Ballroom)*
Chair: Arrvindh Shriraman, Simon Fraser University

4:30-5:30 *ASPLOS Poster Session (Esen)*
Chair: Arrvindh Shriraman, Simon Fraser University

ACM SRC Poster Session (Esen)
Chair: Gurhan Kucuk, Yeditepe University

5:30-7:00 *Wild and Crazy Ideas (Ballroom)*
Chair: John Criswell, University of Rochester

7:00-8:00 *Business Meeting (Ballroom)*
Chair: Vivek Sarkar, Rice University

Tuesday, March 17, 2015

AM 8:30-10:10	Session 4A (Ballroom): Energy Chair: Arrvindh Shriraman, Simon Fraser University	Session 4B (Pinar): Reliability Chair: Emery Berger, University of Massachusetts, Amherst	ACM SRC Presentations (Esen) Chair: Gurhan Kucuk, Yeditepe University
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10:10-10:25 *Break (Ballroom - Pinar)*

10:25-11:15	Session 5A (Ballroom): I/O and Accelerators Chair: Ganesh Gopalakrishnan, University of Utah	Session 5B (Pinar): Approximation Chair: Steve Blackburn, Australian National University	ACM SRC Awards (Esen) Chair: Gurhan Kucuk, Yeditepe University
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11:15-11:45 *Lunch (Pickup Boxed Lunch)*

PM 11:45-12:45 **Debate:** It's time: academic systems venues should require authors to make their code and data publicly available; those that do not will be held to a higher standard.
Moderator: Dan Tsafir (Technion)

Excursion: Old City Tour, Dinner at Suada

Old City Tour

1:00-6:00	<ul style="list-style-type: none"> • Blue Mosque • Hagia (St.) Sophia • Hippodrome • Grand Covered Bazaar • Obelisk of Theodosius • Serpentine Column • Basilica Cistern
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7:00-8:00 Cocktail at Suada

8:00-11:30 Dinner at Suada

11:30-12:00 Transportation back to hotel

Wednesday, March 18, 2015

AM 8:30-9:30 **Keynote II: *Watson and the Era of Cognitive Computing*, Guruduth S. Banavar, VP, Cognitive Computing, T. J. Watson Research Center, IBM**
Chair: Kemal Ebcioglu, Global Supercomputing (*Ballroom*)

9:30-10:15 *Lightning Session -20 papers (Ballroom)*
Chair: Arrvindh Shriraman, Simon Fraser University

10:15-10:30 *Break (Ballroom)*

10:30-12:10 **Session 6A (Pinar): Parallelism and Compilation**
Chair: Xipeng Shen, North Carolina State University

Session 6B (Pinar): Testing and Tainting, Verification and Security
Chair: Josep Torrellas, University of Illinois at Urbana-Champaign

PM 12:10-2:00 *Awards Banquet (Ballroom)*

2:00-3:15 **Session 7A (Pinar): Memory Models 2**
Chair: Hans Boehm, Google

Session 7B (Pinar): GPUs
Chair: Ozcan Ozturk, Bilkent University

3:15-3:45 *Break (Pinar)*

3:45-5:00 **Session 8A (Pinar): Scalable Parallelism**
Chair: Osman Unsal, Barcelona Supercomputing Center

Session 8B (Pinar): Memory Management
Chair: Alper Buyuktosunoglu, IBM

5:00-5:15 *Closing Remarks (Pinar)*

Monday, March 16, 2015

**Monday, 8:45am-9:45am****Keynote I: Architectural Support for Cyber-Physical Systems****Edward A. Lee, University of California at Berkeley****Chair:** Sandhya Dwarkadas, University of Rochester

- *Bio:* Edward A. Lee is the Robert S. Pepper Distinguished Professor in the Electrical Engineering and Computer Sciences (EECS) department at U.C. Berkeley. His research interests center on design, modeling, and analysis of embedded, real-time computational systems. He is the director of the nine-university TerraSwarm Research Center (<http://terraswarm.org>), a director of Chess, the Berkeley Center for Hybrid and Embedded Software Systems, and the director of the Berkeley Ptolemy project. From 2005-2008, he served as chair of the EE Division and then chair of the EECS Department at UC Berkeley. He is co-author of nine books (counting second and third editions) and numerous papers. He has led the development of several influential open-source software packages, notably Ptolemy and its various spinoffs. He received the B.S. degree in Computer Science from Yale University, New Haven, CT, in 1979, the S.M. degree in EECS from the Massachusetts Institute of Technology (MIT), Cambridge, in 1981, and the Ph.D. degree in EECS from the University of California Berkeley, Berkeley, in 1986. From 1979 to 1982 he was a member of technical staff at Bell Telephone Laboratories in Holmdel, New Jersey, in the Advanced Data Communications Laboratory. He is a co-founder of BDTI, Inc., where he is currently a Senior Technical Advisor, and has consulted for a number of other companies. He is a Fellow of the IEEE, was an NSF Presidential Young Investigator, and won the 1997 Frederick Emmons Terman Award for Engineering Education.

Monday, 10:45am-12:00pm**Session 1A: Persistent Memory****Chair:** Angela Demke Brown, University of Toronto

- *Mojim: A Reliable and Highly-Available Non-Volatile Memory System*, Yiyang Zhang, Jian Yang, Amir Saman Memaripour, and Steven Swanson (University of California, San Diego)
- *SD-PCM: Constructing Reliable Super Dense Phase Change Memory under Write Disturbance*, Rujia Wang, Lei Jiang, Youtao Zhang, and Jun Yang (University of Pittsburgh)
- *DEUCE: Write Efficient Encryption for Secure Non-Volatile Memories*, Vinson Young, Prashant J. Nair, and Moinuddin K. Qureshi (Georgia Institute of Technology)

Monday, 10:45am-12:00pm

Session 1B: Memory Models 1

Chair: Alvin Lebeck, Duke University

- *Temporally Bounding TSO for Fence-Free Asymmetric Synchronization*, Adam Morrison (Technion) and Yehuda Afek (Tel Aviv University)
 - *Reduced Hardware NORec: A Safe and Scalable Hybrid Transactional Memory*, Alexander Matveev and Nir Shavit (MIT)
 - *Synchronization Using Remote-Scope Promotion*, Marc Orr (UW-Madison, AMD), Shuai Che, Ayse Yilmazer, and Brad Beckmann (AMD), and Mark D. Hill and David A. Wood (UW-Madison, AMD)
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Monday, 1:30pm-2:45pm

Session 2A: Memory and Security I

Chair: John Criswell, University of Rochester

- *GhostRider: A Hardware-Software System for Memory Trace Oblivious Computation*, Chang Liu (University of Maryland, College Park), Austin Harris (University of Texas at Austin), Martin Maas (University of California, Berkeley), Michael Hicks (University of Maryland, College Park), Mohit Tiwari (University of Texas at Austin), and Elaine Shi (University of Maryland, College Park)
 - *Freecursive ORAM: [Nearly] Free Recursion and Integrity Verification for Position-based Oblivious RAM*, Christopher W. Fletcher, Ling Ren, and Albert Kwon (MIT), Marten van Dijk (UConn), and Sriniv Devadas (MIT)
 - *Beyond the PDP-11: Architectural support for a memory-safe C abstract machine*, David Chisnall and Colin Rothwell (University of Cambridge), Brooks Davis (SRI International), Robert N.M. Watson, Jonathan Woodruff, Munraj Vadera, and Simon W. Moore (University of Cambridge), Peter G. Neumann (SRI International), and Michael Roe (University of Cambridge)
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Monday, 1:30pm-2:45pm

Session 2B: Warehouse Scale Computing I

Chair: Lingjia Tang, University of Michigan, Ann Arbor

- *Supporting Differentiated Services in Computers via Programmable Architecture for Resourcing-on-Demand (PARDo)*, Jiuyue Ma (ICT,CAS), Xiufeng Sui, Ninghui Sun, Yupeng Li, Zihao Yu, Bowen Huang, Tianni Xu, and Zhicheng Yao (ICT, CAS), Yun Chen and Haibin Wang (Huawei), and Lixin Zhang and Yungang Bao (ICT, CAS)

- *Improving Agility and Elasticity in Bare-metal Clouds*, Yushi Omote (University of Tsukuba), Takahiro Shinagawa (The University of Tokyo), and Kazuhiko Kato (University of Tsukuba)
 - *Few-to-Many: Incremental Parallelism for Reducing Tail Latency in Interactive Services*, Md E. Haque (Rutgers University), Yong hun Eom (University of California, Irvine), Yuxiong He and Sameh Elnikety (Microsoft Research), Ricardo Bianchini (Rutgers University and Microsoft Research), and Kathryn McKinley (Microsoft Research)
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Monday, 3:00pm-3:50pm

Session 3A: Memory and Security II

Chair: Dan Tsafir, Technion

- *Protecting Data on Smartphones and Tablets from Memory Attacks*, Patrick J. Colp (University of British Columbia), Jiawen Zhang, James Gleeson, Sahil Suneja, and Eyal de Lara (University of Toronto), and Himanshu Raj, Stefan Saroiu, and Alec Wolman (Microsoft Research)
 - *Nested Kernel: An Operating System Architecture for Intra-Kernel Privilege Separation*, Nathan Dautenhahn, Theodoros Kasampalis, and Will Dietz (University of Illinois at Urbana-Champaign), John Criswell (University of Rochester), and Vikram Adve (University of Illinois at Urbana-Champaign)
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Monday, 3:00pm-3:50pm

Session 3B: Warehouse Scale Computing II

Chair: Yunji Chen, Inst. Comp. Tech., Chinese Academy of Sciences

- *DIABLO: A warehouse-scale computer network simulator on FPGAs*, Zhangxi Tan, Zhenghao Qian, Xi Chen, krste Asanovic, and David Patterson (UC Berkeley)
- *Sirius: An Open End-to-End Voice and Vision Personal Assistant and Its Implications for Future Warehouse Scale Computers*, Johann Hauswald, Michael A. Laurenzano, Yunqi Zhang, Cheng Li, Austin Rovinski, Arjun Khurana, Ronald G. Dreslinski, Trevor Mudge, Vinicius Petrucci, Lingjia Tang, and Jason Mars (University of Michigan)

Monday, 5:30pm-7:00pm

Wild and Crazy Ideas

Chair: John Criswell, University of Rochester

- *Architecting Biodegradable Computers* by David Wentzlaff, Zhuozhi Yao, and Barry Rand, Princeton University, Department of Electrical Engineering
- *Performance Microscopy* by Xi Yang, Steve Blackburn, and Kathryn McKinley, Australian National University and Microsoft Research
- *Tortoises and Hares Among Online Data-Intensive Queries* by Christopher Stewart and Jaimie Kelley, The Ohio State University
- *Ultra-Fine Grain Power Management at Datapath-Level: Fact or Fiction* by Mehmet E. Belviranli, Weize Yu, and Selçuk Köse, University of California, Riverside, University of South Florida, and University of South Florida
- *Taming Heterogeneous Accelerators: Operating-Systems for Cores with no OS Support* by Nils Asmussen and Marcus Völp, Technische Universität Dresden, Operating-Systems Group
- *Hardware Platform for Graph Processing* by Serif Yesil, Naveed UI Mustafa, and Ozcan Ozturk, Bilkent University

Tuesday, March 17, 2015



Tuesday, 8:30am-10:10am

Session 4A: Energy**Chair:** Arrvindh Shriraman, Simon Fraser University

- *Automated OS-level Device Runtime Power Management*, Chao Xu (Rice University), Felix Xiaozhu Lin (Purdue University), Yuyang Wang (Tsinghua University), and Lin Zhong (Rice University)
 - *CoolAir: Temperature- and Variation-Aware Management for Free-Cooled Datacenters*, Íñigo Goiri (Microsoft Research), Thu D. Nguyen (Rutgers University), and Ricardo Bianchini (Rutgers University and Microsoft Research)
 - *A Probabilistic Graphical Model-based Approach for Minimizing Energy Under Performance Constraints*, Nikita Mishra, Huazhe Zhang, John D. Lafferty, and Henry Hoffmann (University of Chicago)
 - *More is Less, Less is More: Molecular-Scale Photonic NoC Power Topologies*, Jun Pang, Chris Dwyer, and Alvin R. Lebeck (Duke)
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Tuesday, 8:30am-10:10am

Session 4B: Reliability**Chair:** Emery Berger, University of Massachusetts, Amherst

- *Memory Errors in Modern Systems: The Good, The Bad, and The Ugly*, Vilas Sridharan (AMD, Inc.), Nathan DeBardleben and Sean Blanchard (Los Alamos National Lab), Kurt B. Ferreira and Jon Stearley (Sandia National Labs), John Shalf (Lawrence Berkeley National Lab), and Sudhanva Gurumurthi (AMD, Inc.)
- *CommGuard: Mitigating Communication Errors in Error-Prone Parallel Execution*, Yavuz Yetim, Sharad Malik, and Margaret Martonosi (Princeton University)
- *Dual Execution for On the Fly Fine Grained Execution Comparison*, Dohyeong Kim and Yonghwi Kwon (Purdue University), William N. Sumner (Simon Fraser University), and Xiangyu Zhang and Dongyan Xu (Purdue University)
- *Varan the Unbelievable: An efficient N-version execution framework*, Petr Hosek and Cristian Cadar (Imperial College London)

Tuesday, 10:25am-11:15am

Session 5A: I/O and Accelerators

Chair: Ganesh Gopalakrishnan, University of Utah

- *rIOMMU: Efficient IOMMU for I/O Devices that Employ Ring Buffers*, Moshe Malka, Nadav Amit, Muli Ben-Yehuda, and Dan Tsafir (Technion -- Israel Institute of Technology)
 - *PuDianNao: A Polyvalent Machine Learning Accelerator*, Daofu Liu, Tianshi Chen, and Shaoli Liu (Institute of Computing Technology, Chinese Academy of Sciences), Jinhong Zhou (School of Computer Science and Technology, University of Science and Technology of China), Shenyuan Zhou (Institute of Computing Technology, Chinese Academy of Sciences), Olivier Temam (Inria), Xiaobin Feng (Institute of Computing Technology, Chinese Academy of Sciences), Xuehai Zhou (School of Computer Science and Technology, University of Science and Technology of China), and Yunji Chen (Institute of Computing Technology, Chinese Academy of Sciences)
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Tuesday, 10:25am-11:15am

Session 5B: Approximation

Chair: Steve Blackburn, Australian National University

- *ApproxHadoop: Bringing Approximations to MapReduce Frameworks*, Íñigo Goiri (Microsoft Research), Ricardo Bianchini (Rutgers University and Microsoft Research), and Santosh Nagarakatte and Thu D. Nguyen (Rutgers University)
 - *Monitoring and Debugging the Quality of Results in Approximate Programs*, Michael Ringenburt and Adrian Sampson (University of Washington), Isaac Ackerman (Cornell University), and Luis Ceze and Dan Grossman (University of Washington)
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Tuesday, 11:45am-12:45pm

Debate: *It's time: academic systems venues should require authors to make their code and data publicly available; those that do not will be held to a higher standard.*

Abstract: Most scientific disciplines take reproducibility of experimental results much more seriously than computer science. (See, for example, the policies concerning supporting artefacts—such as code and data—of the *Nature* and *Science* journals.) In this panel, two teams of highly-opinionated experts will debate whether it is time to adopt a similar policy in top-tier systems conferences and journals. The idea is to change the review process such that papers that do not make their code and data available will be held to a higher standard when making the accept/reject decision, thereby incentivizing

authors to share. Attendees will be asked to vote whether they are in favor or against at the beginning and end of the panel.

Moderator: Dan Tsafir (*Technion – Israel Institute of Technology*)

Debaters in favor: Emery Berger (*University of Massachusetts Amherst*), Steve Blackburn (*Australian National University*), and Angela Demke Brown (*University of Toronto*)

Debaters against: Jim Larus (*EPFL*), Onur Mutlu (*Carnegie Mellon University*), Guri Sohi (*University of Wisconsin-Madison*)

Wednesday, March 18, 2015



Wednesday, 8:30am-9:30am

Keynote II: *Watson and the Era of Cognitive Computing*, Guruduth S. Banavar, VP, Cognitive Computing, T. J. Watson Research Center, IBM

Chair: Kemal Ebcioglu, Global Supercomputing

- *Bio:* Guruduth Banavar is vice president of cognitive computing at IBM Research, responsible for creating the next generation of cognitive systems in the Watson family. He has worked across IBM's businesses to coinnovate with clients, for example, to build a city operations center in Rio de Janeiro. Guru has served on Governor Cuomo's commission for improving New York state's resilience to natural disasters after Hurricane Sandy. His work has been featured in The New York Times, The Economist, and other international media. Earlier, Guru was the Director of IBM Research in India, which he helped establish as a pre-eminent center for Services Research and Mobile Computing. There, he and his team received a National Innovation Award by the President of India in 2009 for the Spoken Web project. His early work was on distributed systems and programming models at IBM's TJ Watson Research Center in New York, which he joined in 1995 after his PhD in Computer Science.

Wednesday, 10:30am-12:10pm

Session 6A: Parallelism and Compilation

Chair: Xipeng Shen, North Carolina State University

- *Ziria: An optimizing compiler for wireless PHY programming*, Gordon Stewart (Princeton), Mahanth Gowda (UIUC), Geoffrey Mainland (Drexel), Bozidar Radunovic and Dimitrios Vytiniotis (Microsoft Research), and Cristina Luengo Agulló (Polytechnical University of Catalonia)
- *PolyMage: Automatic Optimization for Image Processing Pipelines*, Ravi Teja Mullanpudi, Vinay Vasista, and Uday Bondhugula (Indian Institute of Science)
- *Compiler Management of Communication and Parallelism for Quantum Computation*, Jeff Heckey (UC Santa Barbara), Shruti Patil and Ali JavadiAbhari (Princeton University), Adam Holmes (Cornell University), Daniel Kudrow (UC Santa Barbara), Kenneth R. Brown (Georgia Inst. of Technology), Diana Franklin (UC Santa Barbara), Frederic T. Chong (UC Santa Barbara), and Margaret Martonosi (Princeton University)
- *Kinetic Dependence Graphs*, M. Amber Hassaan, Donald Nguyen, and Keshav Pingali (The University of Texas at Austin)

Wednesday, 10:30am-12:10pm

Session 6B: Testing and Tainting, Verification and Security

Chair: Josep Torrellas, University of Illinois at Urbana-Champaign

- *Targeted Automatic Integer Overflow Discovery Using Goal-Directed Conditional Branch Enforcement*, Stelios Sidiroglou-Douskos, Eric Lahtinen, Nathan Rittenhouse, Paolo Piselli, Fan Long, Deokhwan Kim, and Martin Rinard (MIT CSAIL)
 - *Architectural Support for Software-Defined Metadata Processing*, Udit Dhawan (University of Pennsylvania), Catalin Hritcu (INRIA), Raphael Rubin and Nikos Vasilakis (University of Pennsylvania), Silviu Chiricescu (BAE Systems), Jonathan M. Smith (University of Pennsylvania), Tom F. Knight (Ginkgo Bioworks), and Benjamin C. Pierce and Andre DeHon (University of Pennsylvania)
 - *A Hardware Design Language for Timing-Sensitive Information-Flow Security*, Danfeng Zhang, Yao Wang, G. Edward Suh, and Andrew C. Myers (Cornell University)
 - *SPECS: A Lightweight Runtime Mechanism for Protecting Software from Security-Critical Processor Bugs*, Matthew Hicks (University of Michigan), Cynthia Sturton (University of North Carolina), Samuel T. King (Twitter, Inc.), and Jonathan M. Smith (University of Pennsylvania)
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Wednesday, 2:00pm-3:15pm

Session 7A: Memory Models 2

Chair: Hans Boehm, Google

- *Asymmetric Memory Fences: Optimizing Both Performance and Implementability*, Yuelu Duan, Nima Honarmand, and Josep Torrellas (University of Illinois, Urbana-Champaign)
 - *DeNovoSync: Efficient Support for Arbitrary Synchronization without Writer-Initiated Invalidations*, Hyojin Sung and Sarita V. Adve (University of Illinois at Urbana-Champaign)
 - *Hybrid Static-Dynamic Analysis for Statically Bounded Region Serializability*, Aritra Sengupta, Swarnendu Biswas, Minjia Zhang, and Michael D. Bond (Ohio State University) and Milind Kulkarni (Purdue University)
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Wednesday, 2:00pm-3:15pm

Session 7B: GPUs

Chair: Ozcan Ozturk, Bilkent University

- *GPU Concurrency: Weak Behaviours and Programming Assumptions*, Jade Alglave (University College London), Mark Batty (University of Cambridge), Alastair Donaldson

(Imperial College London), Ganesh Gopalakrishnan (University of Utah), Jeroen Ketema (Imperial College London), Daniel Poetzl (Oxford University), Tyler Sorensen (University of Utah), and John Wickerson (Imperial College London)

- *Chimera: Collaborative Preemption for Multitasking on a Shared GPU*, Jason Jong Kyu Park (University of Michigan), Yongjun Park (Hongik University), and Scott Mahlke (University of Michigan)
 - *Page Placement Strategies for GPUs within Heterogeneous Memory Systems*, Neha Agarwal (University of Michigan/NVIDIA) and David Nellans, Mark Stephenson, Mike O'Connor, and Stephen W. Keckler (NVIDIA)
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Wednesday, 3:45pm-5:00pm

Session 8A: Scalable Parallelism

Chair: Osman Unsal, Barcelona Supercomputing Center

- *On-the-Fly Principled Speculation for FSM Parallelization*, Zhijia Zhao (College of William and Mary) and Xipeng Shen (North Carolina State University)
 - *Asynchronized Concurrency: The Secret to Scaling Concurrent Search Data Structures*, Tudor David, Rachid Guerraoui, and Vasileios Trigonakis (EPFL)
 - *iThreads: A Threading Library for Parallel Incremental Computation*, Pramod Bhatotia and Pedro Fonseca (MPI-SWS), Umut A. Acar (Carnegie Mellon University & Inria), Björn B. Brandenburg (MPI-SWS), and Rodrigo Rodrigues (Nova University of Lisbon/ CITI / NOVA-LINCS)
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Wednesday, 3:45pm-5:00pm

Session 8B: Memory Management

Chair: Alper Buyuktosunoglu, IBM

- *NumaGiC: a Garbage Collector for Big Data on Big NUMA Machines*, Lokesh Gidra (LIP6-INRIA/UPMC), Gaël Thomas (SAMOVAR-Telecom SudParis), Julien Sopena (LIP6-UPMC/INRIA), Marc Shapiro (LIP6-INRIA/UPMC), and Dang Nhan Nguyen (Chalmers university of technology)
- *Facade: A Compiler and Runtime for (Almost) Object-Bounded Big Data Applications*, Khanh Nguyen, Kai Wang, Yingyi Bu, Lu Fang, Jianfei Hu, and Guoqing (Harry) Xu (University of California, Irvine)
- *Architectural Support for Dynamic Linking*, Varun Agrawal, Abhiroop Dabral, Tapti Palit, Yongming Shen, and Michael Ferdman (Stony Brook University)

