



Updates from our University Partners @ Berkeley, CMU, Cornell, Harvard, MIT, Stanford, and UW



Dr. Amin Vahdat, Google Fellow, presents “Cloud 3.0 and Software Defined Networking” at the Stanford Workshop on October 28, 2016.

IAP Newsletter Q4 2016

IAP Workshops

University of Washington Cloud Workshop – March 31, 2017

- The [UW Cloud Workshop](#) is scheduled for Friday March 31, 2017. We have a great space reserved on campus in the Husky Union Building (HUB), about a 5 min walk from the Paul Allen Center. Expect a full day of talks and posters from professors, students and experts in industry. Registration is open now.

Stanford Cloud Workshop - October 28, 2016

- The [Stanford Cloud Workshop](#) was held on Friday October 28, 2016 on the Stanford campus.

- Prof. Christos Kozyrakis summarized, “This was excellent opportunity for industry and academia experts across multiple areas to mingle. We got to discuss the state of the art and future of networking, OS, computer architecture, machine learning, etc. Looking forward to the next workshop!”
- Participating professors and students were predominantly from **Stanford**, but also from **Berkeley, Carnegie Mellon, Cornell** and **ETH Zurich**. Stanford research centers, groups and labs that were represented included **(1) the Computer Systems Lab, (2) the Future Data Systems Research Group, (3) the Pervasive Parallelism Lab, (4) the Platform Lab, and (5) the Secure Internet of Things Project.**

The speakers are listed below (alphabetical order)

- Prof. Peter Bailis, Stanford, “MacroBase: Prioritizing Attention in Fast Data”
- Dr. Derek Chiou, Microsoft, “Microsoft’s Production Configurable Cloud”
- Song Han , Prof. Bill Dally, and Prof. Mark Horowitz, “Deep Compression and Efficient Inference Engine: Deep Neural Network Model Compression and Hardware Acceleration”
- Dr. Qi Huang, Facebook, “A Streaming Video Engine for Distributed Encoding at Scale”
- Ana Klimovic, Dr. Heiner Litz, Prof. Christos Kozyrakis, Stanford, “ReFlex: Remote Flash \approx Local Flash”
- Prof. Phil Levis, Stanford, “Securing the Internet of Things”
- Prof. José Martínez, Cornell, “Fine-grain Management of Last-level Caches in Multicores with Minimal Hardware Support”
- Jan Medved, Cisco, "Overcoming Performance Challenges for a Massive Distributed Data Store: Network and IoT Data Management using the OpenDaylight SDN Controller"
- Dr. Pankaj Mehra, Sandisk, “Evolutionary Changes with Revolutionary Implications: Persistent Memory in the Data Center”
- Dr. Shubu Mukherjee, Cavium, “The Cavium Super Models”
- Prof. Timothy Roscoe, ETH Zurich, "Barrelfish: An OS for Real, Modern Hardware"
- Dr. Amin Vahdat, Google, “Cloud 3.0 and Software Defined Networking”
- **Best Poster Award:** Stanford PhD student Song Han won the Best Poster Award for "Deep Compression and Efficient Inference Engine: Deep

Neural Network Model Compression and Hardware Acceleration". Song is advised by Professor Bill Dally.

Recent Papers and Upcoming Events

Tech Reports

- [Derecho: Group Communication at the Speed of Light.](#) Jonathan Behrens, Ken Birman, Sagar Jha, Matthew Milano, Edward Tremel, Eugene Bagdasaryan, Theo Gkountouvas, Weijia Song, Robbert van Renesse. Sept 21, 2006.
- [Groups, Subgroups and Auto-Sharding in Derecho: A Customizable RDMA Framework for Highly Available Cloud Services.](#) Ken Birman, Jonathan Behrens, Sagar Jha, Matthew Milano, Edward Tremel, Robbert van Renesse. Sept 21, 2006.

TOCS

- [The IX Operating System: Combining Low Latency, High Throughput, and Efficiency in a Protected Dataplane.](#) Adam Belay, George Prekas, Ana Klimovic, Samuel Grossman, Christos Kozyrakis, Edouard Bugnion, ACM Transactions on Computer Systems, Volume 34, Issue 4, December 2016

[SoCC '16](#) ACM Symposium on Cloud Computing, Santa Clara, CA, October 5 - 7, 2016

- [Addressing the Straggler Problem for Iterative Convergent Parallel ML,](#) Aaron Harlap (CMU), Henggang Cui (CMU), Wei Dai (CMU), Jinliang Wei (CMU), Gregory R. Ganger (CMU), Phillip B. Gibbons (CMU), Garth A. Gibson (CMU), Eric P. Xing (CMU)
- [The Freeze-Frame File System,](#) Weijia Song (Cornell), Theo Gkountouvas (Cornell), Ken Birman (Cornell), Qi Chen (Peking University), Zhen Xiao (Peking University)
- [SNC-Meister: Admitting More Tenants with Tail Latency SLOs,](#) Timothy Zhu (CMU), Daniel S. Berger (U.Kaiserslautern), Mor Harchol-Balter (CMU)
- [Disciplined Inconsistency with Consistency Types,](#) Brandon Holt (U.Washington), James Bornholt (U.Washington), Irene Zhang (U.Washington), Dan Ports (U.Washington), Mark Oskin (U.Washington), Luis Ceze (U.Washington)

- **[Follow the Sun through the Clouds: Application Migration for Geographically Shifting Workloads](#)**, Zhiming Shen (Cornell), Qin Jia (Cornell), Gur-Eyal Sela (Cornell), Ben Rainero (Cornell), Weijia Song (Cornell), Robbert van Renesse (Cornell), Hakim Weatherspoon (Cornell)

HotNets 2016: Fifteenth ACM Workshop on Hot Topics in Networks, November 9-10, 2016, Atlanta, Georgia

- **[RackCC: Rack-level Congestion Control](#)**, Danyang Zhuo (University of Washington), Qiao Zhang (University of Washington), Thomas Anderson (University of Washington), Arvind Krishnamurthy (University of Washington), Vincent Liu (University of Pennsylvania)

RISC-V Workshop, Hosted by Google, Mountain View, CA, November 29-30, 2016

- **[A Java Virtual Machine for RISC-V Porting the Jikes Research VM](#)**, Martin Maas, UC Berkeley
- **[Adaptive Voltage Scaling in a 28nm RISC-V SoC](#)**, Keller, Martin Cochet, Brian Zimmer, Yunsup Lee, Milovan Blagojevic, Jaehwa Kwak, Alberto Puggelli, Stevo Bailey, Pi-Feng Chiu, Palmer Dabbelt, Colin Schmidt, Elad Alon, Krste Asanovic, Borivoje Nikolic

[HPCA, Austin TX, Feb 4-8, 2017](#)

- **SWAP: Effective fine-grain management of shared last-level caches with minimum hardware support**, X. Wang, S. Chen, J. Setter and J.F. Martínez
- **Maximizing Cache Performance Under Uncertainty**, Nathan Beckmann and Daniel Sanchez, MIT
- **SoftMC: A Flexible and Practical Open-Source Infrastructure for Enabling Experimental DRAM Studies**, Hasan Hassan, Nandita Vijaykumar, Samira Khan, Saugata Ghose, Kevin Chang, Gennady Pekhimenko, Oguz Ergin, Onur Mutlu
- **Vulnerabilities in MLC NAND Flash Memory Programming: Experimental Analysis, Exploits, and Mitigation Techniques**, Yu Cai, Seagate Technology, Saugata Ghose, Carnegie Mellon University, Yixin

Luo, Seagate Technology, Ken Mai, Carnegie Mellon University, Onur Mutlu, ETH Zurich, Erich Haratsch, Seagate Technology

USENIX Symposium on Networked Systems Design and Implementation (NSDI '17), Boston, MA, March 27-29, 2016

- [Curator: Self-Managing Storage for Enterprise Clusters](#), Cano, S. Aiyar, V. Arora, M. Bhattacharyya, A. Chaganti, C. Cheah, B. Chun, K. Gupta, V. Khot, A. Krishnamurthy, *NSDI*, 2017.
- [SCL: Simplifying Distributed SDN Control Planes](#), Panda, W. Zheng, X. Hu, A. Krishnamurthy, S. Shenker, *NSDI*, 2017.
- [Evaluating the Power of Flexible Packet Processing for Network Resource Allocation](#), N. Sharma, A. Kaufmann, T. Anderson, C. Kim, A. Krishnamurthy, J. Nelson, S. Peter, *NSDI*, 2017.
- [RAIL: A Case for Redundant Arrays of Inexpensive Links in Data Center Networks](#), D. Zhuo, M. Ghobadi, R. Mahajan, A. Phanishayee, X. Zou, H. Guan, A. Krishnamurthy, T. Anderson, *NSDI*, 2017.

BLOGS

- Prof. Peter Bailis, Stanford, blogs at [Highly Available, Seldom Consistent](#) on data management, distributed systems, and beyond.
- Prof. Ken Birman, Cornell, recently started a new blog, [thinking about distributed systems](#).
- Prof. Krste Asanović, UC Berkeley, and colleagues blog at the [Aspire Lab Blog](#)
- Prof. Emin Gün Sirer, self-described Hacker and professor at Cornell, owns [Hacking, Distributed](#) with topics that span distributed systems, OS'es and networking.
- Prof. Andy Pavlo, Carnegie Mellon, blogs on a [wide range of database topics](#) and offers advice to aspiring grad students and assistant profs

AWARDS

Scott Beamer receives 2016 SPEC Kaivalya Dixit Distinguished Dissertation Award

- Dr. Scott Beamer's dissertation titled "Understanding and Improving Graph Algorithm Performance" has been selected to receive the

2016 Standard Performance Evaluation Corp (SPEC) Kaivalya Dixit Distinguished Dissertation Award. The award recognizes outstanding doctoral dissertations in the field of computer benchmarking, performance evaluation, and experimental system analysis in general. Scott completed his Ph.D. in Computer Science at Berkeley, advised by Krste Asanović and David Patterson.

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