

EcoCloud e-newsletter

October 2016

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Welcome Message from the Executive Committee

We move towards the end of 2016 with pride, gratitude and optimism. The recent funding of several of our projects acknowledges the value of our work and allows us to go even further in our quest to drive innovation. We have also had the pleasure of welcoming another great talent to our faculty, while a leading global provider of ICT solutions has joined our Industrial Affiliates Program. You'll find details of all this and more in our roundup of news, which we hope you'll enjoy reading.

In the News

Annual Event 2017

Mark your calendar! EcoCloud Annual Event 2017 will take place on **Monday, June 12th and Tuesday, June 13th 2017 at the Royal Savoy Hotel in Lausanne, Switzerland**. Join us at this unique event, where industry and academia gather to share their insights and brainstorm about the future of data platforms. We look forward to seeing you.

Cyber Security Startup Secures Funding

Cyberhaven, a cyber security startup founded by EPFL's Professor George Candea and some of his PhD students, has raised more than \$2 million in a first round of financing. The startup, which is based in Boston, Massachusetts and Lausanne, has developed a new and simpler way of defining, managing and enforcing enterprise security to protect its clients from malware, malicious insiders and social

engineering. The technology was developed at EPFL DSLAB over seven years. It has been validated in the market and through open-source projects and is protected by four patents. Cyberhaven will use the funding to fuel research and development growth in Switzerland and expand business operations in the US. Find out more about Cyberhaven **here**.

CompuCast Features an Interview with EcoCloud

CompuCast, a podcast produced by and for computer scientists, featured an interview with Babak Falsafi on its June 2nd 2016 episode. You can listen to the interview on the themes of cloud computing and data center design **here**.

Microsoft Funds EcoCloud Projects

Microsoft has awarded funding to four EcoCloud projects in the context of the Swiss Joint Research Centre, a collaboration between EPFL, ETH and Microsoft Research. The projects selected for funding are: "Near-Memory System Services" by Babak Falsafi, "Co-located Deep Learning Training and Inference" by Babak Falsafi and Martin Jaggi, "Revisiting Transactional Computing on Modern Hardware" by Rachid Guerraoui, and "Toward Resource-Efficient Data Centers" by Florin Dinu. Projects by Pascal Fua and Michael Kapralov, from EPFL's School of Computer and Communication Sciences, and four ETH projects have also received funding.

Scala Center Opens at EPFL

EPFL, the birthplace of the Scala programming language, has opened a new center aimed at further improving the open-source language. EPFL professor Martin Odersky designed Scala 12 years ago and more than half a million developers worldwide now work with it. Users include banks, financial institutions, Netflix, Twitter, Swisscom and media organizations such as The New York Times and The Huffington Post. Read about the new center **here**.

New Members

Faculty Member

We are delighted to welcome Martin Jaggi to EcoCloud. Martin is a tenure track assistant professor at EPFL's School of Computer and Communication Sciences. He

heads the Machine Learning and Optimization laboratory, where he focuses on automated pattern recognition. Martin received his Ph.D. from ETH Zurich.

Industrial Affiliate Members

It is with great pleasure that EcoCloud welcomes Huawei Technologies Co. Ltd to its Industry Affiliate Program. Huawei is a multinational networking and telecommunications equipment company headquartered in China. The company counts 140,000 employees, 46% of whom are involved in research and development. We look forward to a very fruitful collaboration with Huawei.

New Projects

A Theoretical Approach to Robustness in Biological Algorithms

So-called biological or natural algorithms are designed to model natural processes and have emerged as a new discipline in computer science. Rachid Guerraoui's SNF-funded project will study the robustness of numerous biological algorithms, including neural networks in the brain and coordination within social insect colonies. His research will explore the inherent stability, adaptability, and scalability of these natural biological systems, develop a theoretical framework for them, and model them more robustly. The study is expected to generate new insights into developing resilient distributed algorithms by introducing fault tolerance techniques observed in nature into computer science.

Co-located Deep Learning Training and Inference

Deep Neural Networks (DNNs) are algorithms of choice for many prominent machine-learning tasks, including speech recognition and image analysis. While Field Programmable Gate Arrays (FPGAs) make it possible to co-locate DNN inference and training on the same platform – thereby eliminating the significant cost of buying dedicated clusters for training – co-locating presents a number of fundamental challenges. This Microsoft-funded project by Babak Falsafi and Martin Jaggi will address them. Their approach will involve redesigning inference and training algorithms to perform fixed-point low precision multiplications, identifying candidates for hard-logic blocks for next generation FPGAs to improve their computational density, and implementing FPGA-based load-balancing techniques. The implementation of these techniques will provide latency

guarantees for inference tasks under heavy loads and enable the use of idle accelerator cycles to train networks when operating under lower loads.

Memory-Centric Server Architecture

Babak Falsafi's SNF-funded project proposes a memory-centric architecture to improve performance density per dollar by moving computation closer to memory. This new approach takes advantage of near-memory accelerators to perform in-memory datacenter services operations such as pointer-intensive data-structure traversals. It eliminates unnecessary data movement while improving performance and saving energy. In addition to promising great flexibility for near-memory accelerators, this approach will open the door to potential innovation in the field.

Near-Memory System Services

Near-memory processing (NMP) has emerged as a promising approach to satisfying the performance requirements of modern datacenter services using just a fraction of the infrastructure power. This approach leverages die-stacked DRAM technology, which not only delivers high-bandwidth memory access but also features a logic die. Data movement – and consequently energy use – can be drastically reduced by pushing computation closer to the data. Babak Falsafi's new Near-Memory System Services project, funded by Microsoft, will evaluate the implementation of data-specific and simple system level functionalities near memory, determine how those services can be integrated within the system, and investigate how to employ near-threshold logic in near-memory processing.

RETHINK Big Roadmap

RETHINK Big, an FP7 Project, ended in February 2016 as planned and fulfilled its objective of delivering a strategic roadmap for hardware and network optimizations in Big Data over the next 10 years. The project, which began in March 2014, brought together key European hardware, networking and system architects with key producers and consumers of Big Data. Over a series of surveys and meetings, in which working groups played a central role, the project identified the industry coordination points for maximizing European competitiveness in Big Data processing and analysis. EPFL's Data-Intensive Applications and Systems (DIAS) laboratory, led by Anastasia Ailamaki, participated very actively in the

project and presented its outcome at the EcoCloud Annual Event 2016. You can read the roadmap and recommendations [here](#).

Transactional Computing on Modern Hardware

Modern networks with Remote Direct Memory Access (RDMA) capabilities have changed the way we design distributed algorithms and systems, with low-latency, high-throughput remote memory operations inside datacenters. Systems can be designed to offer a shared-memory interface across a cluster of machines. But scaling up transactional systems involves the use of expensive, non-commodity machines that are not available in the cloud. This project intends to take advantage of these new network and hardware capabilities by redesigning and building support for high-level transactions on distributed systems using Structured Query Language (SQL).

SQL can use the underlying architecture to fully realize the performance gains of these modern platforms, while providing a much easier interface for developers to work with. The project will involve researching both the transactional support to be offered and the execution plans for transactions in the distributed setting.

Awards

Conference Awards

Alp Yurtsever, a student of EPFL's doctoral program in computer and communication sciences, was one of three recipients of the Best Student Paper Awards at the 2015 IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP). Alp's paper, *Scalable Convex Methods for Phase Retrieval*, describes scalable convex optimization methods for phase retrieval and their principal characteristics, notably the low-cost per-iteration complexity and low-memory footprint.

Faculty Awards

Katerina Argyraki, tenure track assistant professor and head of the Network Architecture Lab, has won the second Eurosyst Jochen Liedtke Young Researcher Award for her outstanding contribution to the field of computer science. Katerina is the second EcoCloud and Computer Science faculty member at EPFL to receive this award; in 2014, the inaugural award honored the work of George Candea.

Katerina's research concerns fundamental questions on the design and building of dependable network systems, including the type of functionality and implementation deployed within them.

Jim Larus and his co-authors Manuel Fahndrich, Mark Aiken, Chris Hawblitzel, Orion Hodson, Galen Hunt and Steven Levi received the EuroSys Test of Time Award for their EuroSys 2006 paper *Language support for Fast and Reliable Message-based Communication in Singularity OS*. The paper describes language, verification, and run-time system features that make messages practical as the sole means of communication between processes in the Singularity Operating System. Jim Larus is dean of EPFL's School of Computer and Communication Sciences. His research focuses on the hardware and software challenges associated with very large-scale systems.

Student Awards

Pinar Tozun received an honorable mention from the ACM SIGMOD Jim Gray Doctoral Dissertation Award committee for her thesis *Transactions Chasing Scalability and Instruction Locality on Multicores*. Pinar has been a research staff member at IBM Almaden Research Center since January 2015. Two months earlier, she received her PhD from EPFL, working under the supervision of Anastasia Ailamaki in the Data-Intensive Applications and Systems Laboratory.

Pinar's research focuses on the scalability and efficiency of data management systems on modern hardware. Pinar was an intern at Oracle Labs (Redwood Shores, CA) during summer 2012. Before starting her PhD, she received her BSc degree in the Computer Engineering Department of Koc University in 2009.

Baris Kasikci received the Eurosys Roger Needham PhD Dissertation Award for his dissertation *Techniques for Detection, Root Cause Diagnosis and Classification of In-Production Concurrency Bugs*. The award honors doctoral students at European universities for exceptional and innovative contributions to knowledge in systems areas.

Baris graduated from the PhD program at EPFL under the guidance of George Candea in the Dependable Systems Lab. His research centered on building techniques, tools, and environments that will ultimately help developers build more reliable software. He is interested in finding solutions that will allow programmers to debug their codes more easily. In this regard, he strives to find efficient ways to deal with concurrency bugs in general, and data races in particular.

Bubacarr Bah, alumnus of EPFL's Laboratory for Information and Inference Systems (LIONS), has been elected holder of the German Research Chair in 'Mathematics with Specialization in Data Science' at the African Institute for Mathematical Sciences (AIMS) in South Africa. The nomination came from the Humboldt Foundation. Bubacarr took up his new position in October 2016.

Publications

Analytics, Control, IoT and Optimization

- **Adaptive-rate Reconstruction of Time-varying Signals with Application in Compressive Foreground Extraction**, João F. C. Mota, et al. IEEE Trans. Signal Processing 2016.
- **A Distributed Mining Framework for Influence in Evolving Entities**, Tian Guo, Karl Aberer. EDBT 2016.
- **A Parametric Nonconvex Decomposition Algorithm for Real-time and Distributed NMPC**, J.-H. Hours and C. N. Jones. In IEEE Transactions On Automatic Control 2016.
- **A Single-phase, Proximal Path-following Framework**, Quoc Tran-Dinh, Anastasios Kyrillidis, Volkan Cevher. CoRR 2016.
- **Binary Sparse Coding of Convolutional Mixtures for Sound Localization and Separation via Spatialization**, Afsaneh Asaei, et al. IEEE Trans. Signal Processing 2016.
- **Computational Methods for Underdetermined Convolutional Speech Localization and Separation via Model-based Sparse Component Analysis**, Afsaneh Asaei, et al. Speech Communication 2016.
- **Contextualized Ranking of Entity Types Based on Knowledge Graphs**, Alberto Tonon, et al. J. Web Sem. 2016.
- **Controller Design and Value Function Approximation for Non-linear Dynamical Systems**, M. Korda, D. Henrion and C. Jones. Automatica 2016.
- **Converse Bounds for Noisy Group Testing with Arbitrary Measurement Matrices**, Jonathan Scarlett, Volkan Cevher. ISIT 2016.
- **Convex Block-sparse Linear Regression with Expanders – Provably**, Anastasios Kyrillidis, et al. AISTATS 2016.
- **Detection of Hypoglycemic Events through Wearable Sensors**, Jean-Eudes Ranvier, et al. SEMPER@ESWC 2016.

- **Distributed Synthesis and Stability of Cooperative Distributed Model Predictive Control for Linear Systems**, C. Conte, C. Jones, M. Morari and M. N. Zeilinger. Automatica 2016.
- **Energy vs. Reliability Trade-offs Exploration in Biomedical Ultra-low Power Devices**, Loris Duch, et al. DATE 2016.
- **Frank-Wolfe Works for Non-Lipschitz Continuous Gradient Objectives: Scalable Poisson Phase Retrieval**, Gergely Ódor, et al. ICASSP 2016.
- **Inexact-aware Architecture Design for Ultra-low Power Bio-signal Analysis**, S. S. Basu, et al. IET Computers and Digital Techniques 2016.
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- **Learning-based Compressive Subsampling**, Luca Baldassarre, et al. J. Sel. Topics Signal Processing 2016.
- **Learning Data Triage: Linear Decoding Works for Compressive MRI**, Yen-Huan Li, Volkan Cevher. ICASSP 2016.
- **Limits on Sparse Support Recovery via Linear Sketching with Random Expander Matrices**, Jonathan Scarlett, Volkan Cevher. AISTATS 2016.
- **Lower Bounds on Active Learning for Graphical Model Selection**, Jonathan Scarlett, Volkan Cevher. CoRR 2016.
- **MPC for Tracking Periodic References**, D. Limon, et al. IEEE Transactions On Automatic Control 2016.
- **On Convergence and Performance Certification of a Continuous-time Economic Model Predictive Control Scheme with Time-varying Performance Index**, A. Alessandretti, A. P. Aguiar and C. N. Jones. Automatica 2016.
- **On the Difficulty of Selecting Ising Models with Approximate Recovery**, Jonathan Scarlett, Volkan Cevher. CoRR 2016.
- **Partial Recovery Bounds for the Sparse Stochastic Block Model**, Jonathan Scarlett, Volkan Cevher. ISIT 2016.
- **Phase Transitions in Group Testing**, Jonathan Scarlett, Volkan Cevher. SODA 2016.
- **PHIDIAS: Ultra-low-power Holistic Design for Smart Bio-signals Computing Platforms**, Daniele Bortoloti et al. Conf. Computing Frontiers 2016.
- **Stochastic MPC for Controlling the Average Constraint Violation for Periodic Linear System with Additive Disturbance**, L. Fabietti and C. Jones. American Control Conference 2016.
- **Stochastic Spectral Descent for Discrete Graphical Models**, David E. Carlson, et al. J. Sel. Topics Signal Processing 2016.

- **Time-varying Gaussian Process Bandit Optimization**, Ilija Bogunovic, Jonathan Scarlett, Volkan Cevher. AISTATS 2016.
- **Touch-based System for Beat-to-beat Impedance Cardiogram Acquisition and Hemodynamic Parameters Estimation**, Dionisije Sopic, et al. DATE 2016.
- **Toward Semantic Sensor Data Archives on the Web**, Jean-Paul Calbimonte, Karl Aberer. MEPDaW/LDQ@ESWC 2016.
- **Tree-structured Classifier for Acceleration-based Activity and Gesture Recognition on Smartwatches**. Joseph Korpela, et al. PerCom Workshops 2016.
- **Wearable System for Real-time Screening of Obstructive Sleep Apnea**, G. Surrel, F. J. Rincon Vallejos, S. Murali and D. Atienza Alonso. Low-Power IEEE Computer Society Annual Symposium on VLSI 2016.

Data Clouds & Management

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- **Cheap Data Analytics Using Cold Storage Devices**, Renata Borovica-Gajic, Raja Appuswamy, Anastasia Ailamaki. PVLDB 2016.
- **Designing Access Methods: The RUM Conjecture**, Manos Athanassoulis, et al. EDBT 2016.
- **Fast Queries over Heterogeneous Data through Engine Customization**, Manos Karpathiotakis, Ioannis Alagiannis, Anastasia Ailamaki. PVLDB 2016.
- **How to Architect a Query Compiler**, Amir Shaikhha, et al. SIGMOD Conference 2016.
- **How to Win a Hot Dog Eating Contest: Distributed Incremental View Maintenance with Batch Updates**, Milos Nikolic, Mohammad Dashti, Christoph Koch. SIGMOD Conference 2016.
- **Incremental View Maintenance for Collection Programming**, Christoph Koch, Daniel Lupei, Val Tannen. PODS 2016.
- **Load Balancing and Skew Resilience for Parallel Joins**, Aleksandar Vitorovic, Mohammed Elseidy, Christoph Koch. ICDE 2016.
- **Low-level Awareness Accompanies “Unconscious” High-level Processing during Continuous Flash Suppression**, H. Gelbard-Sagiv, N. Faivre, L. Mudrik and C. Koch. Journal of Vision 2016.

- **Micro-architectural Analysis of In-memory OLTP**, Utku Sirin, et al. SIGMOD Conference 2016.
- **More than a Network: Distributed OLTP on Clusters of Hardware Islands**, Danica Porobic, Pinar Tözün, Raja Appuswamy, Anastasia Ailamaki. DaMoN 2016.
- **Multi-objective Parametric Query Optimization**, Immanuel Trummer, Christoph Koch. SIGMOD 2016.
- **Multiple Query Optimization on the D-Wave 2X Adiabatic Quantum Computer**, Immanuel Trummer, Christoph Koch. PVLDB 2016.
- **OLTP on a Server-grade ARM: Power, Throughput and Latency Comparison**, Utku Sirin, Raja Appuswamy, Anastasia Ailamaki. DaMoN 2016.
- **Parallelizing Query Optimization on Shared-nothing Architectures**, Immanuel Trummer, Christoph Koch. PVLDB 2016.
- **Repairing Conflicts among MVCC Transactions**, Mohammad Dashti, et al. CoRR 2016.
- **Space Odyssey: Efficient Exploration of Scientific Data**, Mirjana Pavlovic, et al. ExploreDB@SIGMOD/PODS 2016.
- **Squall: Scalable Real-time Analytics**, Aleksandar Vitorovic, et al. PVLDB 2016.
- **The Beckman Report on Database Research**, Daniel Abadi, et al. Commun. ACM 2016.
- **TRANSFORMERS: Robust Spatial Joins on Non-uniform Data Distributions**, Mirjana Pavlovic, et al. ICDE 2016.
- **Vectorizing an In Situ Query Engine**, Panagiotis Sioulas, Anastasia Ailamaki. SIGMOD 2016.

Power Management & Cooling

- **Boiling Heat Transfer and Two-phase Pressure Drops Within Compact Plate Heat Exchangers: Experiments and Flow Visualizations**, V. Solotych, D. Lee, J. Kim, R. L. Amalfi and J. R. Thome. International Journal of Heat And Mass Transfer 2016.
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- **Critical Heat Flux: Performance of R1234yf, R1234ze and R134a in an Aluminum Multi-minichannel Heat Sink at High Saturation Temperatures**, R. Mastrullo, et al. International Journal of Thermal Sciences 2016.

- **Dynamic Numerical Microchannel Evaporator Model to Investigate Parallel Channel Instabilities**, T. Saenen and J. R. Thome. Journal of Electronic Packaging 2016.
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- **Operational Regimes in a Closed Loop Pulsating Heat Pipe**, G. Spinato, N. Borhani and J. R. Thome. International Journal of Thermal Sciences 2016.
- **Working Fluid Charge Reduction, Part 1: CO2 Fin-tube Evaporator Designed for Light Commercial Appliances Utilizing Flow Pattern Based Phenomenological Prediction Models**, J. B. Marcinichen, J. R. Thome and R. H. Pereira. International Journal of Refrigeration - Revue Internationale du Froid 2016.
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Programming Models & Scalability

- **The Essence of Dependent Object Types**, Nada Amin, et al. A List of Successes That Can Change the World 2016.

Robust and Scalable Systems and Networks

- **An Analysis of Load Imbalance in Scale-out Data Serving**, Stanko Novakovic, et al. SIGMETRICS 2016.
- **Anomaly Detection with a Spatio-temporal Tracking of the Laser Spot**, David Atienza, Concha Bielza, Javier Diaz, Pedro Larrañaga. STAIRS 2016.
- **Automatic Generation of Efficient Accelerators for Reconfigurable Hardware**, David Koeplinger, et al. ISCA 2016.
- **Big-data Streaming Applications Scheduling Based on Staged Multi-armed Bandits**, K. Kanoun, C. Tekin, D. Atienza Alonso and M. Van Der Schaar. IEEE Transactions on Computers 2016.

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- **Creating Secrets Out of Packet Erasures**, Iris Safaka, et al. IEEE Trans. Information Forensics and Security 2016.
- **DRAF: A Low-power DRAM-based Reconfigurable Acceleration Fabric**, Mingyu Gao, et al. ISCA 2016.
- **Exploiting CPU-load and Data Correlations in Multi-objective VM Placement for Geo-distributed Data Centers**, Ali Pahlevan, Pablo Garcia Del Valle, David Atienza. DATE 2016.
- **Efficient Hardware Design of Iterative Stencil Loops**, V. Rana, I. Beretta, F. Bruschi, A. Nacci and D. Atienza Alonso et al. IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems 2016.
- **Enabling HPC for QoS-sensitive Applications: The MANGO Approach**, Jose Flich, et al. DATE 2016.
- **ESTIMA: Extrapolating Scalability of In-memory Applications**, Georgios Chatzopoulos, Aleksandar Dragojevic, Rachid Guerraoui. PPOPP 2016.
- **Failure Detectors**, Rachid Guerraoui. Encyclopedia of Algorithms 2016.
- **Fast and Robust Memory Reclamation for Concurrent Data Structures**, Oana Balmau, Rachid Guerraoui, Maurice Herlihy, Igor Zablotchi. SPAA 2016.
- **Flash Storage Disaggregation**, Ana Klimovic, et al. EuroSys 2016.
- **Frugal Topology Construction for Stream Aggregation in the Cloud**, Rachid Guerraoui, Erwan Le Merrer, Rhicheek Patra, Bao Duy Tran. INFOCOM 2016.
- **Generating Configurable Hardware from Parallel Patterns**, Raghu Prabhakar, et al. ASPLOS 2016.
- **HCloud: Resource-efficient Provisioning in Shared Cloud Systems**, Christina Delimitrou, Christos Kozyrakis. ASPLOS 2016.
- **HRL: Efficient and Flexible Reconfigurable Logic for Near-data Processing**, Mingyu Gao, Christos Kozyrakis. HPCA 2016.
- **Improving Resource Efficiency at Scale with Heracles**, David Lo, et al. ACM Trans. Comput. Syst. 2016.
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- **Introduction to the Special Issue on PPOPP'14**, James R. Larus, Sandhya Dwarkadas, José E. Moreira, Andrew Lumsdaine. TOPC 2016.
- **Job-aware Scheduling in Eagle: Divide and Stick to your Probes**, P. Delgado, D. Didona, F. Dinu and W. Zwaenepoel. SoCC 2016.
- **Matryoshka: Hiding Secret Communication in Plain Sight**, I. Safaka, C. Fragouli, K. Argyraki. FOCI 2016.

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- **Never Say Never - Probabilistic and Temporal Failure Detectors**, Dacfey Dzung, Rachid Guerraoui, David Kozhaya, Yvonne Anne Pignolet. IPDPS 2016.
- **Optimal Fair Computation**, Rachid Guerraoui, Jingjing Wang. DISC 2016.
- **Optimistic Concurrency with OPTIK**, Rachid Guerraoui, Vasileios Trigonakis. PPOPP 2016.
- **Parallelizing the Chambolle Algorithm for Performance-optimized Mapping on FPGA Devices**, Ivan Beretta, et al. ACM Trans. Embedded Comput. Syst. 2016.
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- **ProteusTM: Abstraction Meets Performance in Transactional Memory**, Diego Didona, et al. ASPLOS 2016.
- **Technical Perspective: The Power of Parallelizing Computations**, James R. Larus. Commun. ACM 2016.
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- **Verifying Reachability in Networks with Mutable Datapaths**, Aurojit Panda, et al. CoRR 2016.
- **VNToR: Network Virtualization at the Top-of-rack Switch**, J. Fietz, S. Whitlock, G. Ioannidis, K. Argyraki and E. Bugnion. VNToR. ACM Symposium on Cloud Computing 2016.
- **Who's on Board? Probabilistic Membership for Real-time Distributed Control Systems (Extended)**, R. Guerraoui, et al. SRDS 2016.

Security & Privacy

- **Bitcoin Meets Collective Signing**, E. Kokoris Kogias, P. S. Jovanovic, N. Gailly, I. Khoffi and L. Gasser et al. 37th IEEE Symposium on Security and Privacy 2016.
- **Building Privacy-preserving Cryptographic Credentials from Federated Online Identities**, John Maheswaran, et al. CODASPY 2016.

- **Data-driven Privacy Indicators**, Hamza Harkous, Rameez Rahman, Karl Aberer. WPI@SOUPS 2016.
- **Enhancing Bitcoin Security and Performance with Strong Consistency via Collective Signing**, Eleftherios Kokoris-Kogias, et al. USENIX Security Symposium 2016.
- **Keeping Authorities "Honest or Bust" with Decentralized Witness Cosigning**, Ewa Syta, et al. IEEE Symposium on Security and Privacy 2016.
- **Managing Identities Using Blockchains and CoSi**, L. Kokoris-Kogias, L. Gasser, I. Khoffi, P. Jovanovic and N. Gailly et al. HotPETs 2016.
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- **PriBots: Conversational Privacy with Chatbots**, Hamza Harkous, Kassem Fawaz, Kang G. Shin, Karl Aberer. WSF@SOUPS 2016.
- **Riffle: An Efficient Communication System with Strong Anonymity**, Albert Kwon, David Lazar, Srinivas Devadas, Bryan Ford. PoPETs 2016.
- **The Curious Case of the PDF Converter that Likes Mozart: Dissecting and Mitigating the Privacy Risk of Personal Cloud Apps**, Hamza Harkous, CoRR 2016.