

EcoCloud e-newsletter

October 2014

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Welcome Message from the Executive Committee

Welcome to EcoCloud's Electronic Newsletter! We are pleased to announce that EcoCloud Newsletter will be semiannual henceforth. In this issue, you will learn about new additions to our team, the latest about our research, accomplishments and outreach, and our visiting scholars this year. Last but not least, we are truly excited to announce in this newsletter the arrival of EcoCloud's new Deputy Director.

In the News

Annual Event 2014

EcoCloud held its annual event on June 5th and 6th 2014 at the Lausanne Palace. The event kicked off with the Keynote from Doug Burger from Microsoft Research who unveiled Catapult, the first industrial-scale web acceleration technology using FPGAs on Thursday evening. A poster session that showcased the diverse portfolio of EcoCloud research followed the keynote. Five industrial speakers from Mellanox, Microsoft Research, Cisco Systems, IBM, and Maxeler joined twelve EcoCloud researchers to cover topics on big data, databases, data center systems, scalability, performance and efficiency. 144 people attended the event including most of our industry affiliates and other industry partners. The event was very successful with 98% of surveyed attendees saying that we met our objectives of "showcasing activities of the center and enabling networking opportunities between EcoCloud researchers and industry partners.

Ed Bugnion appointed Professor

Ed Bugnion, co-founder of VMware and Nuova Systems (acquired by Cisco), was appointed Adjunct Professor by the ETH Board. Ed Bugnion joined EPFL in 2012. His research is focused on Data Center Systems including scale-out NUMA, domain-specific operating systems and virtual data planes.

IEEE Micro Special Issue on Big Data

Babak Falsafi from EPFL and Boris Grot from University of Edinburgh have highlighted the challenges and opportunities of system designs in the era of Big Data in the **IEEE Micro July/August 2014 edition**. You can find it [here](#).

Winter School on Data-centric Systems

EcoCloud hosted and co-sponsored the **CUSO Winter School on Data-centric Systems** from January 27th to 31st 2014 in Veysonnaz, Switzerland. The event covered a series of lectures on emerging technologies to address the energy challenges faced by data centers due to IT

services demands. Speakers from around the world from both academia and industry lectured on new hardware and software technologies that help bridge the gap between big data and big energy to 40 Ph.D. students.

Workshop on Design for 3D Silicon Integration (D43D)

EcoCloud co-sponsored the **6th Workshop on Design for 3D Silicon Integration (D43D)** on June 23-24 as part of its outreach program. The workshop welcomed technical experts from around the world to discuss 3D IC technological challenges and explore this “promising approach to extend Moore’s law, overcome pin bandwidth limitations, and improve digital platform density and cost beyond a single chip.”

New Members

Ousmane Diallo

We welcome Ousmane Diallo as the new Deputy Director for EcoCloud. Ousmane joined us with a wealth of experience in innovation, leadership development, global program management and chip design from Intel Corporation. Ousmane was responsible for the top innovation program that seeded new technology ideas over few months and presented successful one to the CEO and Executive staff.

New Affiliates

EcoCloud welcomes VMware, the industry-leading virtualization software company and Cisco Systems, the worldwide networking leader. Both companies will be key partners in streamlining operations and driving energy efficiency in datacenters.

New Projects

DIVIDEND: Vertically-Integrated Datacenters

The DIVIDEND project addresses the data center energy efficiency bottleneck through vertical integration, specialization, and cross-layer optimization by presenting heterogeneous data centers, combining CPUs, GPUs, and task-specific accelerators, as a unified entity to the application developer and let the runtime optimize the utilization of the system resources during task execution.

Scale-Out NUMA: Rack-Scale In-Memory Computing

Ed Bugnion and Babak Falsafi in collaboration with Boris Grot at University of Edinburgh have developed Scale-Out NUMA, a new architecture, programming model, and communication protocol for low latency distributed-in-memory processing. soNUMA layers an RDMA-inspired programming model directly on top of a NUMA memory fabric via a stateless messaging protocol. To facilitate interactions between the application, OS, and the fabric, soNUMA relies on the remote memory controller – a new architecturally-exposed hardware block integrated into the node’s local coherence hierarchy. The results based on cycle-accurate full-system simulation show that soNUMA performs remote reads at latencies that are within 4x of local DRAM, can fully utilize the available memory bandwidth, and can issue up to 10M remote memory operations per second per core. Scale-Out NUMA is a Microsoft Research funded project.

Toward Resource Efficient Datacenters

Florin Dinu received a Microsoft grant to enable data-parallel, big data applications to efficiently use data center resources. Based on an in-depth understanding of the resource requirements of big data applications, the project focuses on designing scalable and efficient scheduling techniques that can achieve and maintain high resource utilization while ensuring that performance goals of big data applications are met.

Visiting Scholars

Our visiting scholars' program continues to strive as we hosted Panagiota Fatourou from the University of Crete from March to June. Subhasish Mitra visited us from Stanford University from the end of June to the mid of September. We are pleased to announce that Sarita Adve and Vikram Adve are currently visiting us from University of Illinois at Urbana-Champaign for an academic year.

Awards

Conference Awards

Katerina Argyraki received the NSDI 2014 best paper award for "Software Dataplane Verification". The paper introduces a verification tool that enable developers to check whether their software dataplanes destabilize established networks or not, thus ensuring smooth network operation.

Ed Bugnion received the OSDI 2014 Jay Lepreau best paper award for "IX: A Protected Dataplane Operating System for High Throughput and Low Latency". The paper presents IX, a dataplane operating system that provides high I/O performance, while maintaining the key advantage of strong protection offered by existing kernels by using hardware virtualization to separate the management and scheduling functions of the kernel from network processing.

Christoph Koch received the VLDB 2014 best paper award for "Building Efficient Query Engines in a High-level Language". The paper advocates a radical rethinking of the database systems design by leveraging high-level programming without paying a price in efficiency.

John Thome received the 2014 ASME Journal of Electronic Packaging best paper award for "Modeling of Two-Phase Evaporative Heat Transfer in 3-Dimensional Microcavity High Performance Microprocessor Chip Stacks". The paper describes a 3-D heat transfer model for 3D-IC computer chip stacks with interlayer cooling.

"Clearing the Clouds" appeared in IEEE Micro's Top Picks in Computer Architecture in 2014. The paper identifies the key micro-architectural needs of cloud applications, calling for a change in the trajectory of server processors that would lead to improved computational density and power efficiency in data centers.

Faculty Awards

George Candea has won the 1st Eurosys Jochen Liedtke Young Researcher Award for outstanding contribution in the field of computer science.

David Atienza was named IEEE CASS Distinguished Lecturer for the period January 2014 to December 2015 for his work on "Thermal-Aware Design of 2D/3D MPSoC Architectures".

Student Awards

Cansu Kaynak has won the prestigious Anita Borg Memorial Scholarship award for 2014-2015. The Anita Borg Memorial Scholarship “encourages women to excel in computing and technology, and become active role models and leaders in this field.”

Cansu Kaynak received the prestigious and highly competitive IBM Ph.D. Fellowship award. The IBM Ph.D. Fellowship Awards Program is an intensely competitive worldwide program, which honors exceptional Ph.D. students who have an interest in solving problems that are important to IBM and fundamental to innovation in many academic disciplines and areas of study.

Ioannis Alagiannis has won the prestigious Symantec Fellowship award. Ioannis is the only European winner this year. The Symantec Fellowship Program funds innovative research with real world-value in areas where Symantec conducts businesses from outstanding Ph.D. Students around the world.

Onur Koçberber has won the Google Ph.D Fellowship award for 2014-2015. The Google European Doctoral Fellowship is awarded to outstanding doctoral students doing exceptional research in Computer Science or closely related areas.

Publications:

Analytics

- **A Cost-Benefit Analysis of Data Processing Architectures for the Smart Grid,**
A. S. N. Uttama Nambi, M. Vasirani, R. V. Prasad and K. Aberer, ACM International Workshop on Wireless and Mobile Technologies for Smart Cities (WiMobCity).
- **C3P: Context-Aware Crowdsourced Cloud Privacy,**
H. Harkous, R. Rahman and K. Aberer, 14th Privacy Enhancing Technologies Symposium (PETS 2014), Amsterdam, Netherlands, July 16–18, 2014.
- **Decentralizing the Cloud: How Can Small Data Centers Cooperate?**
H. Zhuang, R. Rahman and K. Aberer, IEEE Peer-to-Peer Computing conference P2P14, London, UK, September 8-12,2014.
- **Decentralized Planning of Energy Demand for the Management of Robustness and Discomfort,**
E. Pournaras, M. Vasirani, R. Kooij and K. Aberer, IEEE Transactions on Industrial Informatics, 2014.
- **Measuring and Controlling Unfairness in Decentralized Planning of Energy Demand,**
E. Pournaras, M. Vasirani, R. E. Kooij and K. Aberer, The 3rd IEEE International Energy Conference (EnergyCon'14), Dubrovnik, Croatia, May 2014.
- **Memo-it: Don't Write your Diary,**
K. Aberer, M. Catasta, G. Christodoulou, I. Gavrilovic, F. Hrisafov et al, 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp 2014).
- **Open Support Platform for Environmental Research (OSPER)-tools for the discovery and exploitation of environmental data,**
N. Dawes, M. Lehning, M. Bavay, S. Sofiane, I. Iosifescu et al, AGU Fall Meeting.
- **Pattern-wise Trust Assessment of Sensor Data,**

- R. Gwadera, M. Riahi and K. Aberer, IEEE MDM 2014 - 15th IEEE International Conference on Mobile Data Management, Brisbane, Australia, July 15-18, 2014.
- **Performance Analysis of Data Processing Architectures for the Smart Grid,**
A. S. N. Utama Nambi, M. Vasirani, R. V. Prasad and K. Aberer, 5th IEEE PES Innovative Smart Grid Technologies (ISGT) European Conference.
 - **Privacy Enhanced Demand Response with Reputation-based Incentive Distribution,**
M. Vasirani, T. K. Wijaya, G. Liassas and K. Aberer, International Workshop on Demand Response, June 10, 2014.
 - **Reconciling Schema Matching Networks Through Crowdsourcing,**
Q. V. H. Nguyen, T. Nguyen Thanh, Z. Miklos and K. Aberer, accepted in Transactions on Collaborative Computing.
 - **SmartD: Smart Meter Data Analytics Dashboard,**
A. Jarrah Nezhad, T. K. Wijaya, M. Vasirani and K. Aberer, The 5th ACM International Conference on Future Energy Systems (e-Energy'14), Cambridge, UK, June 11-13, 2014.
 - **Studying Web Content Credibility by Social Simulation,**
A. Wierzbicki, P. Adamska, K. Abramczuk, T. Papaioannou, K. Aberer et al, in Journal of Artificial Societies and Social Simulation, vol. 17, num. (3) 6, 2014.
 - **Top-k/w Publish/Subscribe: A Publish/Subscribe Model for Continuous Top-k Processing over Data Streams,**
K. Pripuzic, I. P. Zarko and K. Aberer, Information Systems, vol. 39, p. 256-276, 2014.
 - **Towards Enabling Probabilistic Databases for Participatory Sensing,**
Q. V. H. Nguyen, S. Sathe, C. T. Duong and K. Aberer, 10th IEEE International Conference on Collaborative Computing: Networking, Applications and Worksharing, Miami, Florida, United States, October 22–25, 2014.
 - **User-side Adaptive Protection of Location Privacy in Participatory Sensing,**
B. Agir, T. G. Papaioannou, R. Narendula, K. Aberer and J.-P. Hubaux, Geoinformatica, vol. 18, num. 1, p. 165-191, 2014.
 - **Using Identity Premium for Honesty Enforcement and Whitewashing Prevention,**
L.-H. Vu, J. Zhang and K. Aberer, in Computational Intelligence, 2014.
 - **When Bias Matters: An Economic Assessment of Demand Response Baselines for Residential Customers,**
T. K. Wijaya, M. Vasirani and K. Aberer, IEEE Transactions on Smart Grid, vol. 5, num. 4, p. 1755 - 1763, 2014.
 - **XGSN: An Open-source Semantic Sensing Middleware for the Web of Things,**
J.-P. Calbimonte, S. Sarni, J. Eberle and K. Aberer, 7th International Workshop on Semantic Sensor Networks, Riva del Garda, Trentino, Italy, October 19, 2014.

Data Clouds & Management

- **Abstraction without Regret in Database Systems Building: a Manifesto,**
C. Koch, IEEE Data Engineering Bulletin, vol. 37, num. 1, 2014.
- **Achievements and Challenges in Machine Vision-Based Inspection of Large Concrete Structures,**
C. Koch, S. G. Paal, A. Rashidi, Z. Zhu, M. Koenig et al, 1st International Conference on Performance-based and Life-cycle Structural Engineering (PLSE).
- **Adaptive Query Processing on RAW Data,**
M. Karpathiotakis, M. S. De Oliveira Branco, I. Alagiannis and A. Ailamaki, 40th International Conference on Very Large Databases, Hangzhou, China, September 1-5, 2014.
- **ADDICT: Advanced Instruction Chasing for Transactions,**
P. Tözün, I. Atta, A. Ailamaki and A. Moshovos, 41st International Conference on Very Large Databases, Waikoloa, Hawaii, USA, August 31 - September 4, 2015.
- **ATraPos: Adaptive Transaction Processing on Hardware Islands,**

- D. Porobic, E. Liarou, P. Tözün and A. Ailamaki, 30th IEEE International Conference on Data Engineering, Chicago, IL, USA, March 31 - Apr 4, 2014.
- **A Variational Approach to Stable Principal Component Pursuit**, A. Aravkin, S. Becker, V. Cevher and P. Olsen, 30th Conference on Uncertainty in Artificial Intelligence (UAI) 2014, Quebec City, Quebec, Canada, July 23-27, 2014.
 - **Barrier Smoothing for Nonsmooth Convex Minimization**, Q. Tran Dinh, Y.-H. Li and V. Cevher, IEEE International Conference on Acoustics, Speech, and Signal Processing, Florence, Italy, May 4-9, 2014.
 - **BF-Tree: Approximate Tree Indexing**, M. Athanassoulis and A. Ailamaki, 41st International Conference on Very Large Databases, Waikoloa, Hawaii, USA, 31 August- 4 September 2015.
 - **Building Efficient Query Engines in a High-Level Language**, I. Klonatos, C. Koch, T. Rompf and H. Chafi, 40th International Conference on Very Large Data Bases (VLDB), Hangzhou, China, September 1st - 5th 2014.
 - **Collaborative Schema Matching Reconciliation**, H. Q. V. Nguyen, X. H. Luong, Z. Miklos, T. T. Quan and K. Aberer, On The Move (OTM) Federated International Conference.
 - **Constrained convex minimization via model-based excessive gap**, Q. Tran Dinh and V. Cevher, Conference of Neural Information Processing Systems (NIPS) Foundation 2014, Montreal, Quebec, Canada, December 8-11, 2014.
 - **Consumer Segmentation and Knowledge Extraction from Smart Meter and Survey Data**, T. K. Wijaya, T. Ganu, D. Chakraborty, K. Aberer and D. P. Seetharam, SIAM International Conference on Data Mining (SDM14), Philadelphia, Pennsylvania, USA, April 24-26, 2014.
 - **Convex Optimization for Big Data: Scalable, Randomized, and Parallel Algorithms for Big Data Analytics**, V. Cevher, S. Becker, and M. Schmidt, IEEE Signal Processing Magazine Volume 31 Issue 5, P. 32-43.
 - **DBToaster: Higher-order Delta Processing for Dynamic, Frequently Fresh Views**, C. Koch, Y. Ahmad, O. Kennedy, M. Nikolic, A. Noetzli et al, VLDB Journal, vol. 23, num. 2, p. 253-278, 2014.
 - **Dynamic Fine-Grained Scheduling for Energy-Efficient Main-Memory Queries**, I. Psaroudakis, T. Kissinger, D. Porobic, T. Ilsche, E. Liarou et al, 10th International Workshop on Data Management on New Hardware, Snowbird, Utah, USA, June 22-27, 2014.
 - **Eliminating Unscalable Communication in Transaction Processing**, R. Johnson, I. Pandis and A. Ailamaki, Vldb Journal, vol. 23, num. 1, p. 1-23, 2014.
 - **H2O: A Hands-free Adaptive Store**, I. Alagiannis, S. Idreos and A. Ailamaki, ACM SIGMOD International Conference on Management of Data, Snowbird, Utah, USA, June 22-27, 2014.
 - **Fast Proximal Algorithms For Self-Concordant Function Minimization With Application To Sparse Graph Selection**, A. Kyriallidis and V. Cevher, IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP).
 - **Hippocampus: Answering Memory Queries using Transactive Search**, M. Catasta, A. Tonon, D. E. Difallah, G. Demartini, K. Aberer et al, 23rd International World Wide Web Conference, WWW '14, Seoul, Republic of Korea, April 7-11, 2014.
 - **How to Stop Under-Utilization and Love Multicores**, A. Ailamaki, E. Liarou, P. Tözün, D. Porobic and I. Psaroudakis, 2014 ACM SIGMOD International Conference on Management of Data, Snowbird, Utah, USA, June 22-27, 2014.
 - **Inferring the Direction of Implied Motion Depends on Visual Awareness**, N. Faivre and C. Koch, Journal of Vision, vol. 14, num. 4, p. 1-14, 2014.
 - **Information Integration without Awareness**, L. Mudrik, N. Faivre and C. Koch, Trends in Cognitive Sciences, 2014.

- **LINVIEW: Incremental View Maintenance for Complex Analytical Queries**, M. Nikolic, M. El Seidy and C. Koch, SIGMOD, Snowbird, UT, USA, June 22-27, 2014.
- **MAP Estimation for Bayesian Mixture Models with Submodular Priors**, M. El Halabi, L. Baldassarre and V. Cevher, 2014 IEEE International Workshop on Machine Learning for signal processing, Reims, France, Sept 21-24, 2014.
- **Matrix Recipes for Hard Thresholding Methods**, A. Kyriillidis and V. Cevher, Journal Of Mathematical Imaging And Vision, vol. 48, num. 2, p. 235-265, 2014.
- **MemorySense: Reconstructing and Ranking User Memories on Mobile Devices**, K. Aberer, M. Catasta, H. Radu, J.-E. M. Ranvier, M. Vasirani et al, IEEE International Conference on Pervasive Computing and Communications, Budapest, Hungary, March 24-28, 2014.
- **Metric Learning with Rank and Sparsity Constraints**, B. Bah, V. Cevher, S. Becker and B. Gözcü, IEEE International Conference on Acoustics, Speech and Signal Processing, Florence, Italy, May 4-9, 2014.
- **Model-based Sketching and Recovery with Expanders**, B. Bah, L. Baldassarre and V. Cevher, ACM-SIAM Symposium on Discrete Algorithms, Portland, Oregon, USA, January 5-7, 2014.
- **Model-based Sparse Component Analysis for Reverberant Speech Localization**, A. Asaei, H. Bourlard, M. Taghizadeh and V. Cevher, IEEE International Conference on Acoustics, Speech and Signal Processing, Florence, Italy, May 4-9.
- **OCTOPUS: Efficient Query Execution on Dynamic Mesh Datasets**, F. Tauheed, T. Heinis, F. Schürmann, H. Markram and A. Ailamaki, 30th International Conference on Data Engineering (ICDE '14), Chicago, USA, April, 2014.
- **Online Indexing and Distributed Querying Model-view Sensor Data in the Cloud**, T. Guo, T. G. Papaioannou, H. Zhuang and K. Aberer, The 19th International Conference on Database Systems for Advanced Applications, Bali, Indonesia, 21-24 April 2014.
- **Pay-as-you-go Reconciliation in Schema Matching Networks**, Q. V. H. Nguyen, T. Nguyen Thanh, Z. Miklos, K. Aberer, A. Gal et al, The 30th IEEE International Conference on Data Engineering, Chicago, IL, USA, March 31-April 4, 2014.
- **PREDICT: Towards Predicting the Runtime of Large Scale Iterative Analytics**, A. D. Popescu, A. Balmin, V. Ercegovic and A. Ailamaki, VLDB, Hongzhou, China, 2014.
- **Privacy-Preserving Schema Reuse**, Q. V. H. Nguyen, S. T. Do, T. Nguyen Thanh and K. Aberer, 19th International Conference on Database Systems for Advanced Applications, Bali, Indonesia, 21-24 April 2014.
- **Reactive and Proactive Sharing Across Concurrent Analytical Queries**, I. Psaroudakis, M. Athanassoulis, M. Olma and A. Ailamaki, 2014 ACM SIGMOD International Conference on Management of Data (SIGMOD 2014), Snowbird, UT, USA, June 22-27, 2014.
- **Scalable Sparse Covariance Estimation via Self-concordance**, A. Kyriillidis, R. Karimi Mahabadi, Q. Tran Dinh and V. Cevher, Twenty-Eighth AAAI Conference on Artificial Intelligence, Quebec, Canada, July 27-31, 2014.
- **Scaling up Mixed Workloads: a Battle of Data Freshness, Flexibility, and Scheduling**, I. Psaroudakis, F. Wolf, N. May, T. Neumann, A. Böhm et al, Sixth TPC Technology Conference on Performance Evaluation & Benchmarking (TPCTC 2014), Hangzhou, China, September 1-5, 2014.
- **Spatial Data Management Challenges in the Simulation Sciences**, T. Heinis, F. Tauheed and A. Ailamaki, International Conference on Extending Database technology (EDBT '14), Athens, Greece, March, 2014.
- **Structured Sparsity Models for Reverberant Speech Separation**,

- A. Asaei, M. Golbabaee, H. Bourlard and V. Cevher, *Ieee-Acm Transactions On Audio Speech And Language Processing*, vol. 22, num. 3, p. 620-633, 2014.
- **Structured Sparsity Models for Reverberant Speech Separation**, A. Asaei, M. Golbabaee, H. Bourlard and V. Cevher, *IEEE Transactions on Audio, Speech and Language Processing*, p. 31, 2014.
 - **Temporal Structure Coding with and without Awareness**, N. Faivre and C. Koch, *Cognition*, vol. 131, num. 3, p. 404-414, 2014.

Power Management & Cooling

- **3D ALE Finite-Element Method for Two-Phase Flows With Phase Change**, G. Anjos, N. Mangiavacchi, N. Borhani and J. R. Thome, *Heat Transfer Engineering*, vol. 35, num. 5, p. 537-547, 2014.
- **3D-ICE: a Compact Thermal Model for Early-Stage Design of Liquid-Cooled ICs**, A. Sridhar, A. Vincenzi, D. Atienza Alonso and T. Brunswiler, in *IEEE Transactions on Computers*, vol. 63, num. 10, p. 2576-2589, 2014.
- **A 3D Moving Mesh Finite Element Method for two-phase Flows**, G. R. Anjos, N. Borhani, N. Mangiavacchi and J. R. Thome, *Journal Of Computational Physics*, vol. 270, p. 366-377, 2014.
- **A New Type of Flow Structure in Concurrent Adiabatic Vertically Downward Air-water Flow: Membrane Flow**, M. Milan, N. Borhani and J. R. Thome, *International Journal Of Multiphase Flow*, vol. 58, p. 246-256, 2014.
- **Application of Micro Particle Shadow Velocimetry Mu PSV to Two-phase Flows in Microchannels**, S. Khodaparast, N. Borhani and J. R. Thome, *International Journal Of Multiphase Flow*, vol. 62, p. 123-133, 2014.
- **Approximate Compressed Sensing: Ultra-Low Power Biosignal Processing via Aggressive Voltage Scaling on a Hybrid Memory Multi-core Processor**, D. Bortolotti, H. Mamaghanian, A. Bartolini, M. Ashouei, J. Stuijt et al, *International Symposium on Low Power Electronics and Design (ISLPED 2014)*, La Jolla, California, USA, August 11-13, 2014.
- **A Semi-analytical Approach for Optimized Design of Microchannel Liquid-cooled ICs**, A. Sridhar, M. M. Sabry and D. Atienza Alonso, *IEEE 2014 Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems (ITherm)*, Orlando, Florida, USA, May 27-30, 2014.
- **A Semi-Analytical Thermal Modeling Framework for Liquid-Cooled ICs**, A. Sridhar, M. M. S. Aly and D. Atienza Alonso, *IEEE Transactions on Computer Aided Design of Integrated Circuits and Systems*, vol. 33, num. 9, p. 1-14, 2014.
- **Dynamic Flow Control and Performance Comparison of Different Concepts of Two-phase On-chip Cooling cycles**, J. B. Marcinichen, D. Wu, S. Paredes, J. R. Thome and B. Michel, *Applied Energy*, vol. 114, p. 179-191, 2014.
- **Flow Boiling Data and Prediction Method for Enhanced Boiling Tubes and Tube Bundles with R-134a and R-236fa Including a Comparison with Falling Film Evaporation**, E. Van Rooyen and J. R. Thome, in *International Journal Of Refrigeration-Revue Internationale Du Froid*, vol. 41, p. 60-71, 2014.
- **Global Fan Speed Control Considering Non-Ideal Temperature Measurements in Enterprise Servers**, J. Kim, M. M. S. Aly, D. Atienza Alonso, K. Vaidyanathan and K. Gross, *IEEE/ACM 2014 Design Automation and Test in Europe (DATE) Conference*, Dresden, Germany, March 24-28, 2014.
- **Integrated Microfluidic Power Generation and Cooling for Bright Silicon MPSoCs**,

M. M. S. Aly, A. Sridhar, D. Atienza Alonso, P. Ruch and B. Michel, IEEE/ACM 2014 Design Automation and Test in Europe (DATE) Conference, Dresden, Germany, March 24-28, 2014.

- **Intensification of Highly Exothermic Fast Reaction by Multi-injection Microstructured Reactor,**
J. Haber, B. Jiang, T. Maeder, N. Borhani and J. Thome, Chemical Engineering and Processing: Process Intensification, 2014.
- **Low Power and Scalable Many-Core Architecture for Big-Data Stream Computing,**
K. Kanoun, M. Ruggiero, D. Atienza Alonso and M. Van Der Schaar, IEEE Annual Symposium on VLSI 2014 (ISVLSI), Tampa, Florida, USA, July 9-11, 2014.
- **Modeling of Two-Phase Evaporative Heat Transfer in Three-Dimensional Multicavity High Performance Microprocessor Chip Stacks,**
Y. Madhour, B. P. D'Entremont, J. B. Marcinichen, B. Michel and J. R. Thome, Journal Of Electronic Packaging, vol. 136, num. 2, 2014.
- **Near-optimal thermal monitoring framework for many-core systems on chip,**
J. Ranieri, A. Vincenzi, A. Chebira, D. Atienza Alonso and M. Vetterli, submitted to IEEE Transactions on Computers.
- **PowerCool: Simulation of Integrated Microfluidic Power Generation in Bright Silicon MPSoCs,**
A. Sridhar, M. M. Sabry, P. Ruch, D. Atienza Alonso and B. Michel, IEEE/ACM 2014 International Conference on Computer Aided-Design (ICCAD), San Jose, CA, USA, November 2-6, 2014.
- **Proposed Models, Ongoing Experiments, and Latest Numerical Simulations of Microchannel Two-phase Flow Boiling,**
S. Szczukiewicz, M. Magnini and J. R. Thome, International Journal of Multiphase Flow, vol. 59, p. 84-101, 2014.
- **Temperature-Aware Design and Management for 3D Multi-Core Architectures,**
M. M. S. Aly and D. Atienza Alonso, Foundations and Trends in Electronic Design Automation, vol. 8, num. 2, p. 117-197, 2014.
- **Thermo-Electric Analogy Method for Computing Transient Heat Transfer in a New Reciprocating Finned Piston Compressor,**
M. Heidari, A. Rufer and J. R. Thome, IHTC-15 : The 15th International Heat Transfer Conference, Kyoto, Japan, 10-15 August 2014.

Robust Systems & Networks

- **Clock-RSM: Low-Latency Inter-Datacenter State Machine Replication Using Loosely Synchronized Physical Clocks,**
J. Du, D. Sciascia, S. Elnikety, W. Zwaenepoel and F. Pedone, The 44th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN), Atlanta, Georgia, USA, June 23-26, 2014.
- **Closing The Performance Gap between Causal Consistency and Eventual Consistency,**
J. Du, C. Iorgulescu, A. Roy and W. Zwaenepoel, 1st Workshop on Principles and Practice of Eventual Consistency (PaPEC 2014), Amsterdam, The Netherlands, 13 April 2014.
- **Computing in Social Networks,**
A. Giurgiu, R. Guerraoui, K. Huguenin and A.-M. Kermarrec, Information And Computation, vol. 234, p. 3-16, 2014.
- **Democratizing Transactional Programming,**
V. Gramoli and R. Guerraoui, Communications Of The Acm, vol. 57, num. 1, p. 86-93, 2014.
- **ESPRES: Easy Scheduling and Prioritization for SDN,**
P. Peresini, M. Kuzniar, M. Canini and D. Kostic, Open Networking Summit (ONS) Research Track, 2014.
- **ESPRES: Transparent SDN Update Scheduling,**

- P. Peresini, M. Kuzniar, M. Canini and D. Kostic, The Workshop on Hot Topics in Software Defined Networking (HotSDN).
- **Finding Trojan Message Vulnerabilities in Distributed Systems,**
R. Banabic, G. Candea and R. Guerraoui, 19th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), Salt Lake City, Utah, USA, March 1-5, 2014.
 - **GentleRain: Cheap and Scalable Causal Consistency with Physical Clocks,**
J. Du, A. Roy, C. Iorgulescu and W. Zwaenepoel, 2014 ACM Symposium on Cloud Computing (SOCC), Seattle, WA, USA, November 3-5, 2014.
 - **High-Throughput Maps on Message-Passing Manycore Architectures: Partitioning versus Replication,**
O. Shahmirzadi, T. Ropars and A. Schiper, 20th International European Conference on Parallel Processing, Porto, Portugal, August 25-29, 2014.
 - **Leveraging Hardware Message Passing for Efficient Thread Synchronization,**
D. Petrovic, T. Ropars and A. Schiper, 19th ACM SIGPLAN Symposium on Principles and Practice of Parallel Programming, Orlando, Florida, USA, February 15-19, 2014.
 - **Network Neutrality Inference,**
Z. Zhang, O. S. Mara and K. Argyraki, ACM SIGCOMM Conference, Chicago, Illinois, USA, August 19-21.
 - **On the Performance of Delegation over Cache-Coherent Shared Memory,**
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