

ICRC 2017 Schedule at a Glance

Tuesday November 7		Wednesday November 8		Thursday November 9	
8:00-8:15 AM		Welcoming remarks (Ballroom Salon II-III)			
8:15-8:45 AM		Opening Address Dr. Hava Siegelmann (DARPA) <i>DARPA's Vision for the Future of Computing</i> (Ballroom Salon II-III)		8:15-8:45 AM Opening Address Dr. Robinson Pino (DOE) <i>DOE Vision and Programmatic Activities in Advanced Computing Technologies</i> (Ballroom Salon II-III)	
8:45-9:30 AM		Plenary Talk Prof. Karlheinz Meier (Heidelberg University) <i>Continuously Learning Neuromorphic Systems with High Biological Realism</i> (Ballroom Salon II-III)		8:45-9:30 AM Plenary Talk Prof. Margaret Martonosi (Princeton University) <i>End of Moore's Law Challenges and Opportunities: Computer Architecture Perspectives</i> (Ballroom Salon II-III)	
		Coffee break (Foyer)		Coffee break (Foyer)	
9:45-11:45 AM		Session 1A Neuromorphic Computing 1 (Plaza)	Session 1B Beyond CMOS (Colonnade)	9:45-11:35 AM Session 4A Neuromorphic Computing 3 (Plaza)	Session 4B Energy-efficient and Adiabatic Computing (Colonnade)
		Lunch (provided) (Ballroom Salon I)		Buffet Lunch (provided) (Ballroom Salon I) Poster Session (Foyer outside Ballroom Salon II-III)	
1:05-1:50 PM		Plenary Talk Prof. Robert Schoelkopf (Yale University) <i>The Prospects for Quantum Computing with Superconducting Circuits</i> (Ballroom Salon II-III)		1:05-1:50 PM Plenary Talk Prof. Luis Ceze (University of Washington) <i>Borrowing from Nature to Build Better Computers</i> (Ballroom Salon II-III)	
2:00-4:00 PM		Session 2A Neuromorphic Computing 2 (Plaza)	Session 2B <u>Special Session</u> on Future EDA (Colonnade)	2:00-4:00 PM Session 5A Quantum Computing (Plaza)	Session 5B Novel Architectures and Near-memory Computing (Colonnade)
		Coffee break (Foyer)		Coffee break (Foyer)	
4:15-6:15 PM		Session 3A Algorithms and Applications (Plaza)	Session 3B Quantum and Special Purpose Annealers (Colonnade)	4:15-6:25 PM Session 6A Optical Computing (Plaza)	Session 6B Probabilistic Computing and Nonlinear Dynamics (Colonnade)
6:30 PM	Joint IRDS/ICRC Reception (Old Dominion)	6:30 PM ICRC Banquet (Ballroom Salon II-III + Prefunction area)		6:30 PM Joint ICRC/Industry Summit Reception (Ballroom Salon II-III + Prefunction area)	
		7:45 – 9:15 PM Special Evening Panel Discussion <i>AI, Cognitive Information Processing, and Rebooting Computing</i> (Ballroom Salon II-III)			

Registration:

7am-5pm all days

Foyer area of Ballroom Salon II-III (5th floor)

Speaker preparation:

Attache Room

Wednesday November 8: Regular and Special Sessions

Session 1A: Neuromorphic Computing 1 Plaza Room 9:45-11:45 AM Chair: Thomas Van Vaerenbergh

1A.1 9:45-10:15 AM	Aaron J. Hill (Sandia National Laboratories) <i>A Spike-Timing Neuromorphic Architecture</i>
1A.2 10:15-10:45 AM	Stanislaw Wozniak (IBM Research, Zurich) <i>Feature Learning using Synaptic Competition in a Dynamically-Sized Neuromorphic Architecture</i>
1A.3 10:45-11:05 AM	Yan Fang (University of Pittsburgh) <i>Achieving Swarm Intelligence with Spiking Neural Oscillators</i>
1A.4 11:05-11:25 AM	Reginald Meeson (Institute for Defense Analyses) <i>Auditory Neural Pathway Simulation</i>
1A.5 11:25-11:45 AM	Michael Schneider (National Inst. of Standards and Technology) <i>Energy Efficient Single Flux Quantum Based Neuromorphic Computing</i>

Session 2A: Neuromorphic Computing 2 Plaza Room 2:00-4:00 PM Chair: Matt Marinella

2A.1 2:00-2:30 PM	Geoffrey Burr (IBM Research, Almaden) <i>Improved Deep Neural Network Hardware Accelerators Based on Non-Volatile-Memory: the Local Gains Technique</i>
2A.2 2:30-3:00 PM	David Mountain (US Department of Defense) <i>A Comparison Between Single Purpose and Flexible Neuromorphic Processor Designs</i>
2A.3 3:00-3:30 PM	Sumit Kumar Jha (University of Central Florida) <i>Flow-based Non-volatile Memory Crossbar Accelerators for Parallel Computations</i>
2A.4 3:30-4:00 PM	Aidana Irmanova (Nazarbayev University) <i>Neuromorphic Adaptive Edge-preserving Denoising Filter</i>

Session 3A: Algorithms and Applications Plaza Room 4:15-6:15 PM Chair: David Mountain

3A.1 4:15-4:45 PM	Invited: Dejan Milojicic (Hewlett Packard Labs) <i>Generalize or Die: Operating System Support for Memristor-based Accelerators</i>
3A.2 4:45-5:15 PM	Mohsen Imani (University of California, San Diego) <i>VoiceHD: Hyperdimensional Computing for Efficient Speech Recognition</i>
3A.3 5:15-5:35 PM	Bicky Marquez (Institut FEMTO-ST) <i>Embedding in Neural Networks: A-priori Design of Hybrid Computers for Prediction</i>
3A.4 5:35-5:55 PM	Dillon Graham (Rochester Institute of Technology) <i>Convolutional Drift Networks for Spatio-Temporal Processing</i>
3A.5 5:55-6:15 PM	Wafi Danesh (University of Missouri, Kansas City) <i>A New Approach for Multi-Valued Computing Using Machine Learning</i>

Session 1B: Beyond CMOS Colonnade Room 9:45-11:45 AM Chair: Larry Clevenger

1B.1 9:45-10:15 AM	Invited: Puneet Gupta (University of California, Los Angeles) <i>Advanced Packaging and Heterogeneous Integration to Reboot Computing</i>
1B.2 10:15-10:45 AM	Himanshu Thapliyal (University of Kentucky) <i>Low-Power and Secure Lightweight Cryptography Via TFET-Based Energy Recovery Circuits</i>
1B.3 10:45-11:05 AM	Sébastien Le Beux (Ecole Centrale de Lyon) <i>Hybrid Topologies for Reconfigurable Matrices Based on Nano-Grain Cells</i>
1B.4 11:05-11:25 AM	Naveen Kumar Macha (University of Missouri, Kansas City) <i>A New Concept for Computing using Interconnect Crosstalks</i>
1B.5 11:25-11:45 AM	Ronald DeMara (University of Central Florida) <i>Heterogeneous Technology Configurable Fabrics for Field Programmable Co-design of CMOS and Spin-based Devices</i>

Session 2B: Special Session on Future EDA: Next Generation Design Automation for Accelerating the Reboot Colonnade Room 2:00-4:00 PM Organizers: Shishpal Rawat & Ayse K. Coskun

2:00-2:10 PM	Shishpal Rawat & Ayse K. Coskun <i>Welcome and Overview</i>
2B.1 2:10-2:35 PM	Arijit Raychowdhury (Georgia Institute of Technology) <i>EDA Challenges in Designing Computing Systems with post-CMOS Devices</i>
2B.2 2:35-3:00 PM	Shobha Vasudevan (University of Illinois, Urbana-Champaign) <i>Verification in the Nanoscale Era of Computing</i>
2B.3 3:00-3:25 PM	Yu (Kevin) Kao (University of California, San Diego) <i>Random Sparse Adaptation for Accurate Inference with Inaccurate RRAM Arrays</i>
2B.4 3:25-3:50 PM	Douglas Densmore (Boston University) <i>How Bio-Design Automation Can Help Reboot Computing: Lessons, Challenges, and Future Directions</i>
3:50-4:00 PM	<i>Q&A and Final Thoughts</i>

Session 3B: Quantum and Special Purpose Annealers Colonnade Room 4:15-6:15 PM Chair: William Vanderlinde

3B.1 4:15-4:45 PM	Takuya Okuyama (Hitachi Ltd.) <i>An Ising Computer Based on Simulated Quantum Annealing by Path Integral Monte Carlo</i>
3B.2 4:45-5:15 PM	Zachary Baker (Los Alamos National Laboratories) <i>An FPGA-Quantum Annealer Hybrid System for Wide-Band RF Detection</i>
3B.3 5:15-5:45 PM	Georg Hahn (Imperial College London) <i>Reducing Binary Quadratic Forms for More Scalable Quantum Annealing</i>
3B.4 5:45-6:15 PM	Nga Nguyen (Los Alamos National Laboratories) <i>Solving Sparse Representation for Image Classification using Quantum D-Wave 2X Machine</i>

Thursday November 9: Regular Sessions

Session 4A: Neuromorphic Computing 3 Plaza Room 9:45-11:35 AM Chair: John Paul Strachan

4A.1 9:45-10:15 AM	Invited: Todd Hylton (University of California, San Diego) <i>On Thermodynamics and the Future of Computing</i>
4A.2 10:15-10:45 AM	James Plank (University of Tennessee, Knoxville) <i>A Unified Hardware/Software Co-Design Framework for Neuromorphic Computing Devices and Applications</i>
4A.3 10:45-11:15 AM	Robin Jacobs-Gedrim (Sandia National Laboratories) <i>Impact of Linearity and Write Noise of Analog Resistive Memory Devices in a Neural Algorithm Accelerator</i>
4A.4 11:15-11:35 AM	Baibhab Chatterjee (Purdue University) <i>An Energy-Efficient Mixed-Signal Neuron for Inherently Error-Resilient Neuromorphic Systems</i>

Session 4B: Energy-efficient and Adiabatic Computing Colonnade Room 9:45-11:35 AM Chair: Larry Clevenger

4B.1 9:45-10:15 AM	Michael Frank (Sandia National Laboratories) <i>Asynchronous Ballistic Reversible Computing</i>
4B.2 10:15-10:45 AM	Nicolas Jeannot (CNRS-LIRMM/University of Montpellier) <i>Synchronised 4-Phase Resonant Power Clock Supply for Energy Efficient Adiabatic Logic</i>
4B.3 10:45-11:15 AM	Yann Perrin (University Grenoble Alpes/CEA-LETI) <i>Low-energy Computation with Mechanical Encoding : Towards Truly Adiabatic Operation</i>
4B.4 11:15-11:35 AM	Neal Anderson (University of Massachusetts, Amherst) <i>Architecture and Dissipation: Thermodynamic Costs of General Purposeness in von Neumann Processors</i>

Session 5A: Quantum Computing Plaza Room 2:00-4:00 PM Chair: William Vanderlinde

5A.1 2:00-2:30 PM	Invited: Jerry Chow (IBM Research, Yorktown) <i>Building a Quantum Computing Community and Ecosystem</i>
5A.2 2:30-3:00 PM	Travis Humble (Oak Ridge National Laboratory) <i>Quantum Accelerators for High-Performance Computing Systems</i>
5A.3 3:00-3:20 PM	Stewart Allen (IonQ Inc) <i>Reconfigurable and Programmable Ion Trap Quantum Computer</i>
5A.4 3:20-3:40 PM	Enrico Prati (CNR - Istituto di Fotonica e Nanotecnologie) <i>From the Quantum Moore's Law toward Silicon Based Universal Quantum Computing</i>
5A.5 3:40-4:00 PM	Fernando Corinto (Politecnico di Torino) <i>Physical Constraints on Quantum Circuits</i>

Session 5B: Novel Architectures and Near-memory Computing Colonnade Room 2:00-4:00 PM Chair: Arvind Kumar

5B.1 2:00-2:30 PM	Invited: Wen-mei Hwu (University of Illinois, Urbana-Champaign) <i>Rebooting the Data Access Hierarchy in Computing Systems</i>
5B.2 2:30-3:00 PM	Sriveshan Srikanth (Georgia Institute of Technology) <i>The Superstrider Architecture: Integrating Logic and Memory towards non-von Neumann Computing</i>
5B.3 3:00-3:30 PM	Mohsen Imani (University of California, San Diego) <i>NNgine: Ultra-Efficient Nearest Neighbor Accelerator Based on In-Memory Computing</i>
5B.4 3:30-4:00 PM	Tarek Taha (University of Dayton) <i>Socrates-D: Multicore Architecture for On-line Learning</i>

Session 6A: Optical Computing Plaza Room 4:15-6:25 PM Chair: Erik Debenedictis

6A.1 4:15-4:45 PM	Sébastien Le Beux (Ecole Centrale de Lyon) <i>An Energy-efficient Reconfigurable Nanophotonic Computing Architecture Design: Optical Lookup Table</i>
6A.2 4:45-5:05 PM	Stefan Abel (IBM Research – Zurich) <i>Multi-Level Optical Weights in Integrated Circuits</i>
6A.3 5:05-5:25 PM	Matthias Freiberger (Ghent University - imec) <i>On-chip Passive Photonic Reservoir Computing with Integrated Optical Readout</i>
6A.4 5:25-5:45 PM	Jonathan George (The George Washington University) <i>Towards On-Chip Optical FFTs for Convolutional Neural Networks</i>
6A.5 5:45-6:05 PM	Zeb Barber (Montana State University) <i>Spatial-Spectral Materials for High Performance Optical Processing</i>
6A.6 6:05-6:25 PM	Thomas Van Vaerenbergh (Hewlett Packard Labs) <i>Demonstration of a Coherent Tunable Amplifier for All-optical Ising Machines</i>

Session 6B: Probabilistic Computing and Nonlinear Dynamics Colonnade Room 4:15-6:25 PM Chair: Neal Anderson

6B.1 4:15-4:45 PM	Invited: Sandip Tiwari (Cornell University) <i>On the Physical Underpinnings of the Unusual Effectiveness of Probabilistic and Neural Computation</i>
6B.2 4:45-5:15 PM	Eleonore Vissol-Gaudin (Durham University) <i>Computing Based on Material Training: Application to Binary Classification Problems</i>
6B.3 5:15-5:45 PM	Benham Kia (North Carolina State University) <i>Nonlinear Dynamics and Chaos for Flexible, Reconfigurable Computing</i>
6B.4 5:45-6:05 PM	Natesh Ganesh (University of Massachusetts, Amherst) <i>A Thermodynamic Treatment of Intelligent Systems</i>
6B.5 6:05-6:25 PM	Sourabh Kulkarni (University of Massachusetts, Amherst) <i>Magneto-electric Approximate Computation for Bayesian Inference</i>