International Workshop on Ising Machines – 2024
16th – 18th April, 2024 - Messina, Italy

Program update 09 April, 2024

	Tuesday, 16 April	Wednesday, 17 April	Thursday, 18 April
8:00-8:30	Registration	Registration	
8:30-9:00	Opening	Hiroki Takesue, NTT Basic Research Laboratories/Osaka Univ, Japan - "Coherent Ising machine based on degenerate optical parametric oscillators"	Aaron Danner, National University of Singapore, Singapore - "Photonic Chip-Based Ising Machine"
9:00-9:30	Federico Ricci Tersenghi, Sapienza University of Rome, Italy - "Benchmarking Ising machines against the most difficult optimization and inference problems"	Artem Litvinenko, University of Gothenburg, Sweden - "Time-multiplexed Ising machines based on solid-state delay lines"	Hyunsoo Yang, National University of Singapore, Singapore - "Magnetic tunnel junction based Ising machine"
9:30-10:00	Suyoun Lee, Korea Institute of Science and Technology, Korea - " Nano-oscillator based on Ovonic Threshold Switch (OTSNO) and its application in energy-efficient Ising machine"	Connor Bybee, University of California, Berkeley, USA - "Efficient optimization with higher-order Ising machines"	Pedram Khalili Amiri, DL IEEE Nanotechnology Council, Northwestern University, Evanston, USA - "Antiferromagnetic tunnel junctions for Ising Machines "
10:00-10:30	Nikhil Shukla , University of Virginia, USA - "Computational Capabilities of Oscillator-based Dynamical Systems – Ising Machines and Beyond"	Kosuke Tatsumura, Toshiba corporation, Japan - " Simulated bifurcation machines -Enabling NP-hard optimization-based judgement in real-time systems by quantum-inspired technology"	Jeremie Laydevant, USRA/Cornell University, New York, USA - "Training an Ising Machine with Equilibrium Propagation"
10:30-11:15	COFFEE BREAK		
11.15-11.45	Zoltan Toroczkai, University of Notre Dame, USA - "Continuous-time Analog Approach to Hard combinatorial Optimization Problems"	Dmitrii Dobrynin, Peter Grünberg Institut, Germany - "Energy landscapes of combinatorial optimization problems embedded to Ising machines: visualized with disconnectivity graphs"	Davide Venturelli USRA Research Institute for Advanced Computer Science, Quantum AI Laboratory at NASA ARC, USA - "Recursive Steering of Dissipative Ising Solvers"
11.45-12.15	Marcello Calvanese Strinati, Centro Ricerche Enrico Fermi (CREF), Italy - "Simulating continuous spin models via the hyperspin machine"	Kerem Camsari, DL IEEE Magnetics Society, University of California in Santa Barbara, USA- "Probabilistic Computing with p-bits: Optimization, Machine Learning and Quantum Simulation"	Natalia Berloff, University of Cambridge, United Kingdom, "Light-matter coupling in gain-based computing"
12.15-12.45	Kirill Kalinin, Microsoft Research Lab in Cambridge, UK - "Analog optical computing for optimization and machine learning applications"	Saavan Patel, InfinityQ Technologies, USA - "Parallel Probabilistic Architectures for Acceleration of Ising Machines"	Massimiliano Di Ventra, University of California, San Diego, USA - "MemComputing, long-range order and efficient computation"
12.45-14.00	LUNCH BREAK (Free)		
14:00-14:15	Abderrazak Hakam, SPINTEC, Grenoble, France - "Spin-torque nano-oscillators based Ising machines"	Jie Han , University of Alberta, Canada - "Efficient Simulated Bifurcation Machine using Emerging Computing Technologies"	Christian Benjamin Duffee , Northwestern University, USA - "Probabilistic computing with voltage-controlled dynamics in magnetic tunnel junctions"
14:15-14:30	Luciano Mazza , Politecnico di Bari, Italy - "Scaling oscillatory Ising Machine solver for extremely large Max-Cut problems"	Juntao Wang , Huawei Technologies, Hong Kong - "Continuous physical dynamics: the role of bifurcations in solving discrete optimization problems"	Jonas Köhler , Johannes Gutenberg-Universitat, Germany - "Superparamagnetic tunnel junctions for neuromorphic computing"
14.30-14.45	Theophile Rageau, Laboratoire Albert Fert, France - "Equilibrium Propagation for pattern recognition with a network of coupled Kuramoto oscillators"	Giacomo Orlandi , Politecnico di Torino, Italy - "Exploring discrete simulated bifurcation for high parallel FPGA-based Ising machines"	Toon Sevenants , Vrije Universiteit Brussel, Belgium - "Examining the impact of hardware resolution on the efficiency of photonic Ising machines"
14.45-15.00	Lucas Wetzel , Anabrid GmbH, Berlin, Germany - "The role of inert oscillator response and signaling time-delays when scaling up Ising machines based on electronic oscillators"	Andrea Grimaldi , University of Messina, Italy - "Parallel Tempering for Ising machines and high order Ising machines"	Soni Sandeep , Indian Institute of Technology Roorkee, India - "Applications of Ising Machine in Image Segmentation and Hardware Security"
15.00-15:15	Filip Sabo , Eindhoven University of Technology, the Netherlands - "Benchmarking max-cut on oscillatory Ising machines with Kuramoto and van der Pol oscillators"	Victor H. González , University of Gothenburg, Sweden - "Bitwidth tolerance for the wine aficionado: mapping and evaluation of the travelling salesman problem in a surface acoustic wave Ising	Round Table (Giovanni Finocchio, Johan Akerman, Davide Venturelli, Federico Ricci Tersenghi) Conclusive remarks and announcement of next edition.
15.15-15.30	Jacob Lamers , Vrije Universiteit Brussel, Belgium - "Using continuation methods to investigate the impact of the physical implementation of Ising machines on the best strategies to solve optimization problems"	Guy Verschaffelt , Vrije Universiteit Brussel, Belgium - "Using noise-injection in Ising machines to achieve fast Boltzmann sampling"	
15.30-15.45	Alex Gower , University of Cambridge & Nokia Bell Labs, UK - "Early Theoretical Results in the Operational Mechanism of Oscillator Ising Machines"	Roman Khymyn , University of Gothenburg, Sweden - "Numerical optimization of the delay line-based time-multiplexed Ising machines"	COFFEE BREAK
15.45-16.30	COFFEE BREAK		
16:30-16:45	Timothée Leleu , NTT Research, Sunnyvale, California, USA - "Optimizing Combinatorial Problem Solving: Unified Dynamics in Specialized Hardware Systems"	Eleonora Raimondo , INGV, Italy - "Simulated Quantum Annealing as a Robust Energy Minimization Algorithm for Hardware Probabilistic Ising Machines"	Free time
16:45-17:00	Wujie Fu, National University of Singapore, Singapore - "An Algorithmic Artificial Ising Optimization Framework"	Esteban Garzon , Università della Calabria, Italy - "Fully CMOS Ising machine for combinatorial optimization and probabilistic sampling problems"	
17:00-17:30	Johan Mentink, Radboud University, The Netherlands - "Identifying computational advantage of Ising machines for quantum many-body physics"	Daniel Lidar (virtual) , University of Southern California, USA - "Scaling Advantage in Approximate Optimization with Quantum Annealing"	
17:30-17:45	Dominique Koster , Radboud University, The Nederlands - "Benchmarking an Ising machine for quantum many-body physics with analog in-memory computing"	Sven Koeppel , and Shrish Roy anabrid GmbH, Berlin, Germany - "Simple ising machine for educational and research purposes"	
17:45-18:00	Mert Esencan , Icosa Computing Inc., USA - "Improving large language models with combinatorial optimization"		
18.30-19.00	Welcome Reception		
19.00-20.00			
19.45-22.15		Dinner "Toro Nero"	Social Dinner "La Corte dei Mari"