

	Tuesday, August 23		Wednesday, August 24		Thursday, August 25
	CNNA 2016				
08:45 - 09:00	Welcome Address				
09:00 - 10:30	Wolfgang Porod Gerhard Fettweis		George Bourianoff Csaba Rekeczky		Jan Höntschel Ángel Rodríguez-Vázquez
10:30 - 11:00	Coffee Break		Coffee Break		Coffee Break
11:00 - 12:40	Regular Sessions		Regular Sessions		Regular Session
	RS1 Chair: G. Csaba	RS2 Chair: P. Szolgay	RS3 Chair: A. Paasio	RS4 Chair: A. Horváth	RS5 Chair: F. Corinto
12:40 - 13:50	Lunch		Lunch		Lunch
13:50 - 15:30	Special Sessions		Special Session	Demo Session	Klaus Mainzer
	SS1 Chair: R. Carmona	SS2 Chair: A. Slavova	SS5 Chair: P. Szolgay	Alexandrou Serb 13:50 – 14:30 Demonstrations	14:35
			15:10		Regular Session
			Coffee Break		RS6 Chair: R. Tetzlaff
			15:30		
15:30 - 15:50	Coffee Break		Special Session	Demonstrations	
			SS6 Chair: A. Zarandy		
15:50 - 17:50	Special Sessions		16:50		16:50
	SS3 Chairs: S. Kvatinsky / D. Fey	SS4 Chair: W. Porod			16:15
					Closing Ceremony
From 18:00			Bus Tour & Banquet		

Room „Frauenkirche“ (ground floor)	Room „Blaues Wunder“ (first floor)
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	authors	title	paper ID
Regular Session 1:	Theoretical advances of CNNs		
	Michele Bonnin, Valentina Lanza and Fernando Corinto	Amplitude and phase equations for nonlinear oscillators with noisy interactions	2
	Barnabas Garay and Miklos Koller	Metastable rotating waves in Chua-Yang ring networks	4
	Mika Laiho, Jussi Poikonen, Eero Lehtonen and Pentti Kanerva	On Robustness of Sparse High-D Computing	41
	Hannah Juarez, James Schmiedeler, Michael Niemier and György Cserey	Designing a Tactile Sensor Array for Shape Recognition	6
	Jussi Poikonen and Mika Laiho	Online Linear Subspace Learning in an Analog Array Computing Architecture	19
Regular Session 2:	Cellular architectures and algorithms		
	Shyam Adhikari, Hyongsuk Kim, Yang Changju and Leon Chua	Construction of CNN Template via Learning with Random Weight Change Algorithm	20
	Ari Paasio and Jonne Poikonen	Robust 2D Propagation Stopper Network for Asynchronous Binary Wave Computing	24
	Ari Paasio and Jonne Poikonen	Matlab Simulation Framework for Asynchronous Binary Wave Computing	25
	Ari Paasio	Ultra Low-Power Array Processor 1-D Test Structure Implementation	33
	Mihaly Radvanyi and Kristof Karacs	Saliency based Attention Mechanism for Topographic Architectures	58

Regular Session 3:	Applications on FPGAs and GPUs		
	Volkan Meric and Mustak Erhan Yalcin	A New Implementation of Fully Programmable Complete CNN Processor Core on FPGA	22
	Osman Levent Şavkay, Müştak Erhan Yalçın and Vedat Tavşanoğlu	Computer Assisted Sperm Motility Analysis Implemented on Hybrid CPU+FPGA Architecture As An Intelligent Microscope Application	23
	Kevin Leyden, Miklós Koller, Michael Niemier, James Schmiedeler and György Cserey	Kinect image processing by CNN algorithm for gait recognition	11
Regular Session 4:	Biological relevance of CNNs		
	Nathan Spulak, Sandor Foldi, Miklos Koller, Michael Niemier, James Schmiedeler and Gyorgy Cserey	Wrist pulse detection and analysis using three in-line sensors and linear actuators	29
	Paolo Arena and Luca Patanè	Cellular computation in the Insect Brain	38
	Jens Müller, Simon Walz and Ronald Tetzlaff	Learning Deep CNN Structures	60
	Laszlo Orzo, Antal Hiba and Ákos Zarándy	Deconvolution as a model of blur adaptation in the visual cortex	66
	Teuku Fawzul Akbar Teuku Fawzul Akbar, Bergoi Ibarlucea, Larysa Baraban, Gianaurelio Cuniberti, Alon Ascoli, Ronald Tetzlaff, Taiuk Rim, Chang Ki Baek and Dhahanjay Bodas	Phage-based environmental nanobiosensor	68

Regular Session 5:	Memristor materials, devices, circuits, and systems (1)		
	Israa Al-Mashhadani and Sillas Hadjiloucas	Linearized Bond Graph of Hodgkin-Huxley Memristor Neuron Model	7
	Valeri Mladenov and Stoyan Kirilov	A Nonlinear Memristor Model with Activation Thresholds and Variable Window Functions	9
	Alon Ascoli, Ronald Tetzlaff, Leon Ong Chua, John Paul Strachan and Richard Stanley Williams	DC behaviour of a non-volatile memristor: part I	16
	Alon Ascoli, Ronald Tetzlaff, Leon Ong Chua, John Paul Strachan and Richard Stanley Williams	DC behaviour of a non-volatile memristor: part II	17
	Janaki Radhakrishnan, Stefan Slesazeck, Thomas Mikolajick, Alon Ascoli, Ronald Tetzlaff and Helge Wylezich	A physics-based Spice model for the Nb2O5 threshold switching memristor	30
Regular Session 6:	Memristor materials, devices, circuits, and systems (2)		
	Anne Siemon, Sebastian Ferch, Stephan Menzel, Rainer Waser and Eike Linn	Impact of Quantized Conductance Effects of ReRAM Devices on Neuromorphic Networks	54
	Son Ngoc Truong, Khoa Van Pham, Wonsun Yang and Kyeong-Sik Min	Reduction of Memristance Drift in Twin Memristor Crossbar	28
	Timothy Molter and M. Alexander Nugent	The Generalized Metastable Switch Memristor Model	50
	Jacopo Secco and Fernando Corinto	Memristor–Based Binary Synapses for Deep Neural Networks	62
	Lucia Valentina Gambuzza, Mattia Frasca, Luigi Fortuna, Vasileios Ntinis, Ioannis Vourkas and Georgios Ch. Sirakoulis	A new approach based on memristor crossbar for synchronization	72

Special Session 1:	Cellular and Alternative Processing Architectures for Embedded Vision Systems		
	Ricardo Carmona-Galán, Jorge Fernández Berni and Angel Rodríguez-Vázquez	Experimental Evidence of Power Efficiency due to Architecture in Cellular Processor Array Chips	56
	Muhammad Imran, Xu Wang, Najeem Lawal and Mattias O'Nils	Pre-processing Architecture for IR-Visual Smart Camera Based on Post-Processing Constraints	61
	Gines Domenech-Asensi, Javier Garrigos, Paula Lopez, Victor Brea and Diego Cabello	Real time architectures for the Scale Invariant Feature Transform algorithm	65
	Gilles Sicard, Laurent Millet, Margaux Vigier and Stephane Chevobbe	3D Technologies for massive parallel computing vision system: Expected Performances, Design Constraints and Trends	69
	Franz Richter-Gottfried and Dietmar Fey	Cellular Neural Networks for FPGAs with OpenCL	70
Special Session 2:	Advances in the Theory of Cellular Nonlinear/Nanoscale Networks		
	Angela Slavova and Ventsislav Ignatov	Cellular Nanoscale Networks Computing of Piezoelectric Solid with Nano-Holes under Time-Harmonic Anti-Plane Load	3
	Mauro Di Marco, Mauro Forti and Luca Pancioni	A study on multistability of CNNs with memristors	8
	Arturo Buscarino, Claudia Corradino, Luigi Fortuna, Mattia Frasca and Leon Chua	Evidence of Turing patterns in Memristive Cellular Nonlinear Networks	10
	Angela Slavova and Galina Bobeva	Local Activity in Reaction-Diffusion CNN with Memristor Synapses	21
	Aleksy Barcz, Zbigniew Szymański and Stanisław Jankowski	Trajectory recognition by CNN with memristive units	52

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Stephan Menzel, Anne Siemon and Eike Linn	Impact of the Nonlinear Switching Kinetics on Logic Circuits based on Memristive Switching Devices		13
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Said Hamdioui, Mottaqiallah Taouil, Hoang Anh Du Nguyen, Muhammad Adib Bin Haron, Lei Xie and Koen Bertels	CIMx: Computation in-Memory Architecture Based on Resistive Devices		45
Rawan Naous and Khaled Nabil Salama	Approximate Computing with Stochastic Memristors		73
Timothy Molter and M. Alexander Nugent	Machine Learning with Memristors via Thermodynamic RAM		46
Ioannis Vourkas, Angel Abusleme, Georgios Ch. Sirakoulis and Antonio Rubio	1-D Memristor Networks as Ternary Storage Cells		18
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Fabrizio Cairo, Marco Vacca, Giovanna Turvani, Maurizio Zamboni, Mariagrazia Graziano and Luca Gnoli	Toward the design of mixed high-speed and low-power NML circuits		51
Daniel Heger and Katharina Krischer	Deterministic Pattern Recognition with the Oscillatory Network based MONACO-Architecture		55
Donald Chiarulli, Zachary Hull, Steven Levitan, Gyorgy Csaba, Wolfgang Porod, Matthew Pufall, William Rippard, Nigel Stepp, Praveen Pilly, Shankar Rao, Yongqiang Cao and David Payton	Computation with Coupled Oscillators in an Image Processing Pipeline		57
Gyorgy Csaba, Trond Ytterdal and Wolfgang Porod	Oscillatory neural network from ring oscillators		59
Suman Datta, Nikhil Shukla, A Raychowdhury and A Parihar	Computing with Coupled Dynamical Systems		63
Adam Papp, Wolfgang Porod, Emily Song and György Csaba	Wave-based signal processing devices using spin waves		64

Special Session 5:**Problems on Mega Core Architectures**

László Schäffer, Zoltán Nagy, Zoltán Kincses, Zsolt Vörösházi, Richárd Fiáth, István Ulbert and Péter Szolgay	FPGA-based clustering of multi-channel neural spike trains	14
Zoltan Nagy, Zoltán Gáspári and Ákos Kovács	Accelerating a charged single alpha-helix search algorithm in protein sequences using FPGA	37
Andras Kiss, Zoltán Nagy, György Csaba, Wolfgang Porod and Péter Szolgay	Accelerating Numerical Simulations of Spin-wave Dynamics on FPGA	39
Bence Borbely and Peter Szolgay	A system concept for EMG classification from measurement to deployment	53

Special Session 6:**CNN based vehicle control**

András Horváth, István Horváth, Csaba Rekeczky, Ákos Kiss, Domonkos Huszár, András Pálffy, Lóránt Kovács, Dóra Babicz, Bence Farkas and Gábor Majoros	Cellular Vision Based ADAS Applications	27
Antal Hiba, Akos Zarandy and Borbala Pencz	Remote Aircraft Detection against Sky Background	44
Julien N.P. Martel, Lorenz K. Muller, Stephen J. Carey and Piotr Dudek	A Real-time High Dynamic Range Vision System with Tone Mapping for Automotive Applications	67
Antal Hiba and László Orzó	Retina simulator challenges, image processing with a varying resolution sensor	26