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Design,
Automation
and Test
in Europe
Conference

14-23 March 2022

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VIRTUAL PLATFORM



Proceedings of the

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Editors

Cristiana Bolchini, Ingrid Verbauwhede and Ioana Vatajelu

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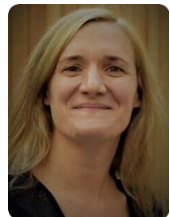
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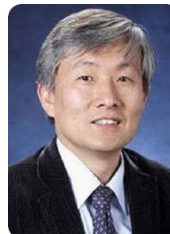
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DT4 Design and Test for Analog and Mixed-Signal Circuits and Systems, and MEMS	DT5 Design and Test of Hardware Security Primitives	DT6 Design and Test of Secure Systems
Chair: Rosa Rodríguez-Montañés, <i>UPC, ES</i>	Chair: Nele Mentens, <i>KU Leuven, BE</i>	Chair: Francesco Regazzoni, <i>University of Amsterdam and ALaRI - USI, CH</i>
Co-Chair: Helmut Graeb, <i>Technical University of Munich, DE</i>	Co-Chair: Kazuo Sakiyama, <i>The University of Electro-Communications, JP</i>	Co-Chair: Ricardo Chaves, <i>INESC-ID, IST, Universidade de Lisboa, PT</i>
D7 Formal Methods and Verification	D8 Network-on-Chip and On-Chip Communication	D9 Architectural and Microarchitectural Design
Chair: Anna Slobodova, <i>Centaur Technology, US</i>	Chair: Romain Lemaire, <i>CEA-List, FR</i>	Chair: Olivier Sentieys, <i>INRIA, FR</i>
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D10 Low-power, Energy-efficient and Thermal-aware Design	D11 Approximate Computing	D12 Reconfigurable Systems
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D13 Logical and Physical Analysis and Design	D14 Emerging Design Technologies for Future Computing	D15 Emerging Design Technologies for Future Memories
Chair: L. Miguel Silveira, <i>INESC ID/IST - Lisbon University, PT</i>	Chair: Elena Gnani, <i>University of Bologna, IT</i>	Chair: Shahar Kvatinsky, <i>Technion, IL</i>
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Track Chair	Ilija Polian, <i>University of Stuttgart, DE</i>

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DT4 Design and Test for Analog and Mixed-Signal Circuits and Systems, and MEMS Chair: Rosa Rodríguez-Montañés, <i>UPC, ES</i> Co-Chair: Helmut Graeb, <i>Technical University of Munich, DE</i>	DT5 Design and Test of Hardware Security Primitives Chair: Nele Mentens, <i>KU Leuven, BE</i> Co-Chair: Kazuo Sakiyama, <i>The University of Electro-Communications, JP</i>	DT6 Design and Test of Secure Systems Chair: Francesco Regazzoni, <i>University of Amsterdam and ALaRI - USI, CH</i> Co-Chair: Ricardo Chaves, <i>INESC-ID, IST, Universidade de Lisboa, PT</i>



Track E	Embedded Systems Design
Track Chair	Liliana Cucu, <i>Inria, FR</i>

<p>E1 Embedded Software Architecture, Compilers and Tool Chains</p> <p>Chair: Sara Vinco, <i>Politecnico di Torino, IT</i> Co-Chair: Sudipta Chattopadhyay, <i>Singapore University of Technology and Design (SUTD), SG</i></p>	<p>E2 Real-time, dependable and privacy-enhanced systems</p> <p>Chair: Marko Bertogna, <i>University of Modena, IT</i> Co-Chair: Mitra Nasri, <i>Eindhoven University of Technology, NL</i></p>	<p>E3 Machine Learning Solutions for Embedded and Cyber-Physical Systems</p> <p>Chair: Luca Carloni, <i>Columbia University, US</i> Co-Chair: Mario R. Casu, <i>Politecnico di Torino, Department of Electronics and Telecommunications, IT</i></p>
<p>E4 Design Methodologies for Machine Learning Architectures</p> <p>Chair: Tushar Krishna, <i>Georgia Institute of Technology, US</i> Co-Chair: Marian Verhelst, <i>KU Leuven, BE</i></p>	<p>E5 Design Modelling and Verification for Embedded and Cyber-Physical Systems</p> <p>Chair: Davide Quaglia, <i>Università di Verona, IT</i> Co-Chair: Mohammad Al Faruque, <i>University of California Irvine, US</i></p>	



Keynotes at DATE 2022

Keynote 1	What is beyond AI? Societal Opportunities and Electronic Design Automation
Speaker	Valeria Bertacco <i>University of Michigan Ann Arbor, United States</i>

Abstract

The success of hardware in enabling AI acceleration and broadening its scope has been nothing short of remarkable. How do we use the power of hardware design and electronic design automation to instead make the world a better place? EDA will be the cornerstone of innovative solutions in ensuring data privacy, sustainable computing and taming the data flood.

Biography



Valeria Bertacco is Thurnau Professor of Computer Science and Engineering at the University of Michigan, and Adjunct Professor of Computer Engineering at the Addis Ababa Institute of Technology. Her research interests are in the area of computer design, with emphasis on specialized architecture solutions and design viability, in particular reliability, validation, and hardware-security assurance. Her research endeavors are supported by the Applications Driving Architectures (ADA) Research Center, which Valeria directs. The ADA Center, sponsored by a consortium of semiconductor companies, has the goal of reigniting computing systems design and innovation for the 2030-2040s decades, through specialized heterogeneity, domain-specific language abstractions, and new silicon devices that show benefit to applications.

Valeria joined the University of Michigan in 2003. She currently serves as the Vice Provost for Engaged Learning at the University of Michigan, supporting all co-curricular engagements and international partnerships for the institution, and facilitating the work of several central units, whose goals range from promoting environmental sustainability, to the promotion of the arts in research universities, and to increasing the participation of gender minorities in the academy.



Keynote 2	Cryo-CMOS Quantum Control: from a Wild Idea to Working Silicon
Speaker	Edoardo Charbon <i>EPFL, Switzerland</i>

Abstract

The core of a quantum processor is generally an array of qubits that need to be controlled and read out by a classical processor. This processor operates on the qubits with nanosecond latency, several millions of times per second, with tight constraints on noise and power. This is due to the extremely weak signals involved in the process that require highly sensitive circuits and systems, along with very precise timing capability. We advocate the use of CMOS technologies to achieve these goals, whereas the circuits will be operated at deep-cryogenic temperatures. We believe that these circuits, collectively known as cryo-CMOS control, will make future qubit arrays scalable, enabling a faster growth in qubit count. In the lecture, the challenges of designing and operating complex circuits and systems at 4K and below will be outlined, along with preliminary results achieved in the control and read-out of qubits by ad hoc integrated circuits that were optimized to operate at low power in these conditions. The talk will conclude with a perspective on the field and its trends.

Biography



Edoardo Charbon (SM'00 F'17) received the Diploma from ETH Zurich, the M.S. from the University of California at San Diego, and the Ph.D. from the University of California at Berkeley in 1988, 1991, and 1995, respectively, all in electrical engineering and EECS. He has consulted with numerous organizations, including Bosch, X-Fab, Texas Instruments, Maxim, Sony, Agilent, and the Carlyle Group. He was with Cadence Design Systems from 1995 to 2000, where he was the Architect of the company's initiative on information hiding for intellectual property protection. In 2000, he joined Canesta Inc., as the Chief Architect, where he led the development of wireless 3-D CMOS image sensors. Since 2002 he has been a member of the faculty of EPFL. From 2008 to 2016 he was with Delft University of Technology's as full professor and Chair of VLSI design. He has been the driving force behind the creation of deep-submicron CMOS SPAD technology, which is mass-produced since 2015 and is present in telemeters, proximity sensors, and medical diagnostics tools. His interests span from 3-D vision, LiDAR, FLIM, FCS, NIROT to super-resolution microscopy, time-resolved Raman spectroscopy, and cryo-CMOS circuits and systems for quantum computing. He has authored or co-authored over 400 papers and two books, and he holds 23 patents. Dr. Charbon is a distinguished visiting scholar of the W. M. Keck Institute for Space at Caltech, a fellow of the Kavli Institute of Nanoscience Delft, a distinguished lecturer of the IEEE Photonics Society, and a fellow of the IEEE.



Keynote 3	Batteries: Powering up the Next Generations
Speaker	Silvia Bodoardo <i>Politecnico di Torino, Italy</i>

Abstract

The quest for energy possibly from renewable sources is rapidly increasing, due to new digital technologies that are taking up more and more space in our lives, electric vehicles expected to replace old combustion ones. However, today's battery technology is lagging behind adjacent technological advances, with most devices using lithium-ion batteries, that bring with them some concerns and not the least their availability in Europe. To create a European energy platform for the future, bringing together renewable energy sources, electric transportation and a connected Internet of Things, a new solution for battery technology needs to be found.

This keynote will explore how current challenges can be overcome through the application of advances in new materials, what is Europe doing in the field of batteries, the need of skilled people and how the future of battery technology can contribute to build a better, greener and connected world.

Biography



Silvia Bodoardo is professor at Politecnico di Torino where she is responsible for the task force on batteries and leads the Electrochemistry Group@Polito. Her research activity is mainly focused on the study of materials for Li-ion and post Li-ion batteries. The research is also dealing with cells production and battery testing. She is participating in several EU funded projects (coordinator of STABLE project), as well as national and regional ones. She is leader of WP3 on Education in Battery2030+ initiative and is co-chair in WG3 of BatterieEurope. Silvia organized many conferences and workshops on materials with electrochemical application and was Chair woman at the launch of the Horizon Prize on Innovative Batteries.



Keynote 4	AI in the Edge; the Edge of AI
Speaker	Georges Gielen <i>University of Leuven, Belgium</i>

Abstract

In the world of IoT, both humans and objects are continuously connected, collecting and communicating data, in a rising number of applications including industry 4.0, biomedical, environmental monitoring, smart houses and offices. Local computation in the edge has become a necessity to limit data traffic. Additionally embedding AI processing in the edge adds potentially high levels of smart autonomy to these IoT 2.0 systems. Progress in nanoelectronic technology allows to do this in power- and hardware-efficient architectures and designs. This keynote gives an overview of key solutions, but also describes main limitations and risks, exploring the edge of edge AI.



Biography

Georges G.E. Gielen received the MSc and PhD degrees in Electrical Engineering from the Katholieke Universiteit Leuven (KU Leuven), Belgium, in 1986 and 1990, respectively. He currently is Full Professor in the MICAS research division at the Department of Electrical Engineering (ESAT) at KU Leuven. From August 2013 till July 2017 he was also appointed at KU Leuven as Vice-Rector for the Group of Sciences, Engineering and Technology, and he was also responsible for academic Human Resource Management. He was visiting professor in UC Berkeley and Stanford University. Since 2020 he is Chair of the Department of Electrical Engineering.

His research interests are in the design of analog and mixed-signal integrated circuits, and especially in analog and mixed-signal CAD tools and design automation. He is a frequently invited speaker/lecturer and coordinator/partner of several (industrial) research projects in this area, including several European projects. He has (co-)authored 10 books and more than 600 papers in edited books, international journals and conference proceedings. He is a 1997 Laureate of the Belgian Royal Academy of Sciences, Literature and Arts in the discipline of Engineering. He is Fellow of the IEEE since 2002, and received the IEEE CAS Mac Van Valkenburg award in 2015 and the IEEE CAS Charles Desoer award in 2020. He is an elected member of the Academia Europaea.



Keynote 5	Probabilistic and Deep Learning Techniques for Robot Navigation and Automated Driving
Speaker	Wolfgang Burgard <i>University of Freiburg, Germany</i>

Abstract

For autonomous robots and automated driving, the capability to robustly perceive environments and execute their actions is the ultimate goal. The key challenge is that no sensors and actuators are perfect, which means that robots and cars need the ability to properly deal with the resulting uncertainty. In this presentation, I will introduce the probabilistic approach to robotics, which provides a rigorous statistical methodology to deal with state estimation problems. I will furthermore discuss how this approach can be extended using state-of-the-art technology from machine learning to deal with complex and changing real-world environments.

Biography



Wolfram Burgard is a Professor of Computer Science at the University of Freiburg where he heads the Laboratory for Autonomous Intelligent Systems. His interests lie in Robotics, Artificial Intelligence, Machine Learning, and Computer Vision. He has published over 400 publications, more than 15 of which received best paper awards. In 2009, he was awarded the Gottfried Wilhelm Leibniz Prize, the most prestigious German research award. In 2010, he received an Advanced Grant from the European Research Council. In 2021, he received the IEEE Technical Field Award for Robotics and Automation. He is a Fellow of the IEEE, the AAAI, the EurAI, and a member of the German Academy of Sciences Leopoldina as well as of the Heidelberg Academy of Sciences and Humanities.



Session Title	Opening Session
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Date / Time	Monday, 14 March 2022 / 08:30 - 09:15 CET
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Co-Chair	Ingrid Verbauwhede, <i>KU Leuven, BE</i>
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Session Title	K.1 Opening Keynote
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Date / Time	Monday, 14 March 2022 / 09:20 - 10:10 CET
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Chair	Cristiana Bolchini, <i>Politecnico di Milano, IT</i>
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K.1.1
09:20 - 10:00 CET What is Beyond AI? Societal Opportunities and Electronic Design Automation
Valeria Bertacco, *University of Michigan, US*

K.1.2
10:00 - 10:10 CET LIVE Q&A
Cristiana Bolchini, *Politecnico di Milano, IT*

Session Title	K.2 Opening Keynote
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Date / Time	Monday, 14 March 2022 / 10:10 - 11:00 CET
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Chair	Giovanni De Micheli, <i>EPFL, CH</i>
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K.1.1
10:10 - 10:50 CET Cryo-Cmos Quantum Control: From A Wild Idea To Working Silicon
Edoardo Charbon, *École Polytechnique Fédérale de Lausanne (EPFL), CH*

K.1.2
10:50 - 11:00 CET LIVE Q&A
Cristiana Bolchini, *Politecnico di Milano, IT*



Session Title	1.1 Scalable Quantum Stacks: Current Status and Future Prospects
Date / Time	Monday, 14 March 2022 / 11:00 - 12:30 CET
Chair	AdriFabio Sebastiano, TU Delft, NL
Co-Chair	Giovanni De Micheli, EPFL, CH

1.1.1
11:00 - 11:30 CET
Full-Stack Quantum Computing Systems in the NISQ Era: Algorithm-Driven and Hardware-Aware Compilation Techniques
Medina Bandic, Sebastian Feld and Carmen G. Almudever

1.1.2
11:30 - 12:00 CET
Tweedledum: A Compiler Companion for Quantum Computing
Bruno Schmitt and Giovanni De Micheli

1.1.3
12:00 - 13:30 CET
A Cryo-CMOS Transmon Qubit Controller and Verification with FPGA Emulation
Kevin Tien, Ken Inoue, Scott Lekuch, David J. Frank, Sudipto Chakraborty, Pat Rosno, Thomas Fox, Mark Yeck, Joseph A. Glick, Raphael Robertazzi, Ray Richetta, John F. Bulzacchelli, Daniel Ramirez, Dereje Yilma, Andrew Davies, Rajiv V. Joshi, Devin Underwood, Dorothy Wisnieff, Chris Baks, Donald Bethune, John Timmerwilke, Blake R. Johnson, Brian P. Gaucher and Daniel J. Friedman

Session Title	K.3 Lunch Keynote: Batteries: powering up the next generations
Virtual Conference Room	TBA
Date / Time	Monday, 14 March 2022 / 12:30 - 14:00 CET
Chair	Marco Casale-Rossi, Synopsys, IT

K.3.1
10:10 - 10:50 CET
Batteries: Powering Up The Next Generations
Silvia Bodoardo, Politecnico di Torino, IT

K.3.2
10:50 - 11:00 CET
Q&A
Marco Casale-Rossi, Synopsys, IT

Session Title	2.1 Energy-autonomous systems for next generation of IoT
Date / Time	Monday, 14 March 2022 / 14:30 - 16:00 CET
Chair	Gilles Marco Casale-Rossi, Synopsys, IT
Co-Chair	Giovanni De Micheli, EPFL, CH

2.1.1
14:30 - 15:00 CET
Micropower Management Techniques For Energy Harvesting Applications
Aldo Romani

2.1.2
Fully Self-Powered Wireless Sensors Enabled By Optimized Power Management Modules



15:00 - 15:30 CET

Peter Spies

2.1.3

15:30 - 16:00 CET

Live Joint Q&A

Gilles Sassatelli, Miquel Moreto, David Bol and Marc Duranton

Session Title	3.1 Panel: Quantum Software Toolchain
Date / Time	Monday, 14 March 2022 / 16:30 - 18:00 CET
Chair	Arne Aida Todri Sanial, LIRMM, FR
Co-Chair	Anne Matsuura, Intel, US
Panellists	Xin-Chuan (Ryan) Wu, Intel, US
Session Title	4.1 Panel: Quantum Hardware
Date / Time	Tuesday, 15 March 2022 / 09:00 - 10:30 CET
Chair	Arne Anne Matsuura, Intel, US
Co-Chair	Aida Todri Sanial, LIRMM, FR
Panellists	Lieven Vandersypen, Delft University of Technology, NL Lotte Geck, Forschungszentrum Jülich, DE Steven Brebels, IMEC, BE Heike Riel, IBM Research, CH
Session Title	5.1 Novel Design Techniques for Emerging Technologies in Computing
Date / Time	Tuesday, 15 March 2022 / 11:00 - 12:30 CET
Chair	Arne Scott Robertson Temple, University of Utah, US

5.1.1

11:00 - 11:20 CET

Physically & Algorithmically Secure Logic Locking With Hybrid Cmos/Nanomagnet Logic Circuits

Alexander Edwards, Naimul Hassan, Dhritiman Bhattacharya, Mustafa Shihab, Peng Zhou, Xuan Hu, Jayasimha Atulasimha, Yiorgos Makris and Joseph Friedman

5.1.2

11:20 - 11:40 CET

Exploring Standard-Cell Design For Reconfigurable Nanotechnologies: A Formal Approach

Michael Raitza, Steffen Märcker, Shubham Rai and Akash Kumar

5.1.3

11:40 - 12:00 CET

Design Enablement of CFET Devices For Sub-2nm Cmos Nodes

Odyseas Zografos, Bilal Chehab, Pieter Schuddinck, Gioele Mirabeli, Naveen Kakarla, Yang Xiang, Pieter Weckx and Julien Ryckaert

5.1.4

12:00 - 12:30 CET

Majority-Based Design Flow for Aqfp Superconducting Family

Giulia Meuli, Vinicius Possani, Rajinder Singh, Siang-Yun Lee, Alessandro Tempia Calvino, Dewmini Marakkalage, Patrick Vuillod, Luca Amarù, Scott Chase, Jamil Kawa and Giovanni De Micheli



Session Title	K.4 Lunch Keynote: AI in the edge; the edge of AI
Date / Time	Tuesday, 15 March 2022 / 13:10 - 14:00 CET
Chair	Gi-Joon Nan, IBM, US

K.4.1 AI In the Edge; The Edge of AI
13:10 - 13:50 CET **Silvia Bodoardo, Politecnico di Torino, IT**

K.4.2 Q&A
13:50 - 14:00 CET Gi-Joon Nam, IBM Research, US

Session Title	6.1 Alternative design paradigms for sustainable IoT nodes
Date / Time	Tuesday, 15 March 2022 / 14:30 - 16:00 CET
Chair	David Atienza, EPFL, CH
Co-Chair	Ayse Coskun, Boston University, US

6.1.1 BIO-Inspired Energy Efficient All-Spiking Internet of Things Nodes
14:30 - 15:00 CET *Adrian Ionescu*

6.1.2 Hybrid Digital-Analog Systems-On-Chip For Efficient Edge AI
15:00 - 15:30 CET *Marian Verhelst*

6.1.3 3D Compute Cubes For Edge Intelligence: Nanoelectronic-Enabled Adaptive Systems Based On Junctionless, Ambipolar, And Ferroelectric Vertical Fets
15:30 - 16:00 CET *Ian O'Connor, David Atienza, Jens Trommer, Oskar Baumgartner, Guilhem Larrieu and Cristell Maneux*

Session Title	7.1 Panel: Autonomous Systems Design as a Research Challenge
Date / Time	Tuesday, 15 March 2022 / 16:30 - 18:00 CET
Chair	Selma Saidi, TU Dortmund, DE
Co-Chair	Rolf Ernst, TU Braunschweig, DE
Panellists	Karl-Erik Arzen, Lund University, SE Peter Liggesmeyer, Fraunhofer Institute for Experimental Software Engineering IESE, DE Axel Jantsch, TU Wien, AT

Session Title	8.1 Young People Program: Career Fair
Date / Time	Wednesday, 16 March 2022 / 16:00 - 17:00 CET
Chair	Anton Klotz, Cadence, DE
Co-Chair	Xavier Salazar, Barcelona Supercomputing Center & HiPEAC, ES

Session Title	9.1 Young People Program: Sponsorship Fair
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Date / Time	Wednesday, 16 March 2022 / 17:00 - 18:30 CET
Chair	Sara Vinco, Politecnico di Torino, IT
Co-Chair	Anton Klotz, Cadence, DE

9.1.1 17:00 - 17:10 CET	Dutch Nao Team <i>Thomas Wiggers</i>
9.1.1 17:10 - 17:20 CET	Squadra Corse Polito <i>Enrico Salvatore</i>
9.1.1 17:20 - 17:30 CET	Dynamis PRC <i>Ishac Oursana</i>
9.1.1 17:30 - 17:40 CET	HYPED <i>Marina Antonogiannaki</i>
9.1.1 17:40 - 17:50 CET	Oneloo AT UC Davis <i>Zbynka Kekula</i>
9.1.1 17:50 - 18:00 CET	Neurotech Leuven <i>Jonah Van Assche</i>
9.1.1 18:00 - 18:30 CET	Q&A SESSION <i>Sara Vinco and Anton Klotz</i>

Session Title	10.1 PhDForum
Date / Time	Wednesday, 16 March 2022 / 18:30 - 20:30 CET
Chair	Gabriela Nicolescu, école Polytechnique de Montréal, CA

10.1.01 18:30 CET	Novel Attack and Defense Strategies for Enhanced Logic Locking Security <i>Lilas Alrahis and Hani Saleh</i>
10.1.02 18:30 CET	Proper Abstractions For Digital Electronic Circuits: A Physically Guided Approach <i>Jürgen Maier</i>
10.1.03 18:30 CET	Retraining-Free Weight-Sharing For Cnn Compression <i>Etienne Dupuis, David Novo, Alberto Bosio and Ian O'Connor</i>
10.1.04 18:30 CET	Intelligent Circuit Design And Implementation With Machine Learning In EDA <i>Zhiyao Xie</i>



10.1.05 18:30 CET	Cross-Layer Techniques For Energy-Efficiency And Resiliency Of Advanced Machine Learning Architectures <i>Alberto Marchisio and Muhammad Shafique</i>
10.1.06 18:30 CET	Design & Analysis Of An On-Chip Processor For The Autism Spectrum Disorder (Asd) Children Assistance Using Their Emotions <i>Abdul Rehman Aslam and Muhammad Awais Bin Altaf</i>
10.1.07 18:30 CET	Resilience And Energy-Efficiency For Deep Learning And Spiking Neural Networks For Embedded Systems <i>Rachmad Vidya Wicaksana Putra and Muhammad Shafique</i>
10.1.08 18:30 CET	Modeling And Optimization Of Emerging Ai Accelerators Under Random Uncertainties <i>Sanmitra Banerjee</i>
10.1.09 18:30 CET	Logic Synthesis In The Machine Learning Era: Improving Correlation And Heuristics <i>Walter Lau Neto and Pierre-Emmanuel Gaillardon</i>
10.1.10 18:30 CET	Accelerating Cnn Inference Near To The Memory By Exploiting Parallelism, Sparsity, And Redundancy <i>Palash Das and Hemangee Kapoor</i>
10.1.11 18:30 CET	Design Automation for Advanced Microfluidic Biochips <i>Debraj Kundu</i>
10.1.12 18:30 CET	Ultra-Fast Temperature Estimation Methods For Architecture-Level Thermal Modeling <i>Hameedah Sultan</i>
10.1.13 18:30 CET	Multi-Objective Digital VLSI Design Optimisation <i>Linan Cao</i>
10.1.14 18:30 CET	TINYDL: Efficient Design of Scalable Deep Neural Networks for Resource-Constrained Edge Devices <i>Mohammad Loni</i>
10.1.15 18:30 CET	Decision Diagrams in Quantum Design Automation <i>Stefan Hillmich</i>
10.1.16 18:30 CET	Dependable Reconfigurable Scan Networks <i>Natalia Lylina and Hans-Joachim Wunderlich</i>
10.1.17 18:30 CET	Breaking The Energy Cage Of Insect-Scale Autonomous Drones: Interplay Of Probabilistic Hardware And Co-Designed Algorithms <i>Priyesh Shukla and Amit Trivedi</i>



- 10.1.18**
18:30 CET Resilient: Protecting Design IP from Malicious Entities
Nimisha Limaye and Ozgur Sinanoglu
- 10.1.19**
18:30 CET Algorithm-Architecture Co-Design For Energy-Efficient, Robust, And Privacy-Preserving Machine Learning
Souvik Kundu
- 10.1.20**
18:30 CET Performance-Aware Design-Space Optimization And Attack Mitigation For Emerging Heterogeneous Architectures
Mitali Sinha
- 10.1.21**
18:30 CET Practical Side-Channel and Fault Attacks on Lattice-Based Cryptography
Prasanna Ravi, Anupam Chattopadhyay and Shivam Bhasin
- 10.1.22**
18:30 CET Memory Interference And Mitigations In Reconfigurable Hesocs For Embedded AI
Gianluca Brilli, Alessandro Capotondi, Paolo Burgio, Andrea Marongiu and Marko Bertogna

Session Title	IP.1_1 Interactive presentations
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Date / Time	Thursday, 17 March 2022 / 11:30 - 12:15 CET
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- IP.1_1.1** A Software Architecture To Control Service-Oriented Manufacturing Systems
Sebastiano Gaiardelli, Stefano Spellini, Marco Panato, Michele Lora and Franco Fummi
- IP.1_1.2** Comprehensive And Accessible Channel Routing For Microfluidic Devices
Gerold Fink, Philipp Ebner and Robert Wille
- IP.1_1.3** XST: A Crossbar Column-Wise Sparse Training For Efficient Continual Learning
Fan Zhang, Li Yang, Jian Meng, Jae-sun Seo, Yu Cao and Deliang Fan

Session Title	IP.1_2 Interactive presentations
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Date / Time	Thursday, 17 March 2022 / 11:30 - 12:15 CET
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- IP.1_2.1** Energy-Efficient Brain-Inspired Hyperdimensional Computing Using Voltage Scaling
Sizhe Zhang, Ruixuan Wang, Dongning Ma, Jeff Zhang, Xunzhao Yin and Xun Jiao
- IP.1_2.2** Error Generation For 3d Nand Flash Memory
Weihua Liu, Fei Wu, Songmiao Meng, Xiang Chen and Changsheng Xie
- IP.1_2.3** Estimating Vulnerability of All Model Parameters in Dnn With A Small Number of Fault Injections
Yangchao Zhang, Hiroaki Itsuji, Takumi Uezono, Tadanobu Toba and Masanori Hashimoto



Session Title	IP.1_3 Interactive presentations
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Date / Time	Thursday, 17 March 2022 / 11:30 - 12:15 CET
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IP.1_3.1 Exploiting Arbitrary Paths For The Simulation Of Quantum Circuits With Decision Diagrams
Lukas Burgholzer, Alexander Ploier and Robert Wille

IP.1_3.2 A Novel Neuromorphic Processors Realization Of Spiking Deep Reinforcement Learning For Portfolio Management
Seyyed Amirhossein Saeidi, Forouzan Fallah, Soroush Barmaki and Hamed Farbeh

IP.1_3.3 In-Situ Tuning Of Printed Neural Networks For Variation Tolerance
Michael Hefenbrock, Dennis Weller, Jasmin Aghassi, Michael Beigl and Mehdi Tahoori

Session Title	IP.1_4 Interactive presentations
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Date / Time	Thursday, 17 March 2022 / 11:30 - 12:15 CET
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IP.1_4.1 Practical Identity Recognition Using Wifi's Channel State Information
Cristian Turetta1, Florenc Demrozi, Philipp H. Kindt, Alejandro Masrur and Graziano Pravadelli

IP.1_4.2 A Rdma Interface for Ultra-Fast Ultrasound Data-Streaming over an Optical Link
Andrea Cossettini, Konstantin Taranov, Christian Vogt, Michele Magno, Torsten Hoefler and Luca Benini

IP.1_4.3 Robust Human Activity Recognition Using Generative Adversarial Imputation Networks
Dina Hussein, Aaryan Jain and Ganapati Bhat

Session Title	IP.1_5 Interactive presentations
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Date / Time	Thursday, 17 March 2022 / 11:30 - 12:15 CET
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IP.1_5.1 Hyperx: A Hybrid Rram-Sram Partitioned System For Error Recovery In Memristive Xbars
Adarsh Kosta, Efstathia Soufleri, Indranil Chakraborty, Amogh Agrawal, Aayush Ankit and Kaushik Roy

IP.1_5.2 A Resource-Efficient Spiking Neural Network Accelerator Supporting Emerging Neural Encoding
Daniel Gerlinghoff, Zhehui Wang, Xiaozhe Gu, Rick Siow Mong Goh and Tao Luo

IP.1_5.3 Scalable Hardware Acceleration of Non-Maximum Suppression
Chunyun Chen, Tianyi Zhang, Zehui Yu, Adithi Raghuraman, Shwetalaxmi Udayan, Jie Lin and Mohamed Aly



Session Title	IP.1_6 Interactive presentations
Date / Time	Thursday, 17 March 2022 / 11:30 - 12:15 CET

- IP.1_6.1** Active Learning of Abstract System Models from Traces Using Model Checking
Natasha Yogananda Jeppu, Tom Melham and Daniel Kroening
- IP.1_6.1** Reducing The Configuration Overhead Of The Distributed Two-Level Control System
Yu Yang, Dimitrios Stathis and Ahmed Hemani
- IP.1_6.3** Batchlens: A Visualization Approach For Analyzing Batch Jobs In Cloud Systems
Shaolun Ruan, Yong Wang, Hailong Jiang, Weijia Xu and Qiang Guan

Session Title	IP.1_7 Interactive presentations
Date / Time	Thursday, 17 March 2022 / 11:30 - 12:15 CET

- IP.1_7.1** Flowacc: Real-Time High-Accuracy Dnn-Based Optical Flow Accelerator In FPGA
Yehua Ling, Yuanxing Yan, Kai Huang and Gang Chen
- IP.1_7.1** On Exploiting Patterns For Robust Fpga-Based Multi-Accelerator Edge Computing Systems
Seyyed Ahmad razavi, Hsin-Yu Ting, Tootiya Giyahchi and Eli Bozorgzadeh
- IP.1_6.3** RLPLACE: Deep RL Guided Heuristics For Detailed Placement Optimization
Uday Mallappa, Sreedhar Pratty and David Brown

Session Title	IP.ASD Interactive presentations
Date / Time	Thursday, 17 March 2022 / 11:30 - 12:15 CET
Session chair	Philipp Mundhenk, Bosh, DE

- IP.ASD.1** Deadlock Analysis And Prevention For Intersection Management Based On Colored Timed Petri Nets
Tsung-Lin Tsou, Chung-Wei Lin and Iris Hui-Ru Jiang
- IP.ASD.1** Attack Data Generation Framework For Autonomous Vehicle Sensors
Jan Lauinger, Andreas Finkenzeller, Henrik Lautebach, Mohammad Hamad and Sebastian Steinhorst
- IP.ASD.3** Contract-Based Quality-Of-Service Assurance In Dynamic Distributed Systems
Lea Schönberger, Susanne Graf, Selma Saidi, Dirk Ziegenbein and Arne Hamann



Session Title	K.5 Lunch Keynote: Probabilistic and Deep Learning Techniques for Robot Navigation and Automated Driving
Date / Time	Thursday, 17 March 2022 / 12:30 - 14:00 CET
Chair	Marco Rolf Ernst, TU Braunschweig, DE
Co-Chair	Selma Saidi, TU Dortmund, DE

K.5.1 Probabilistic And Deep Learning Techniques For Robot Navigation And Automated Driving
12:30 - 14:00 CET **Wolfram Burgard, University of Freiburg, DE**

Session Title	11.1 Analog / mixed-signal EDA from system level to layout level
Date / Time	Thursday, 17 March 2022 / 14:30 - 15:30 CET
Chair	Manuel Barragan, Universite Grenoble Alpes, CNRS, Grenoble INP, TIMA, FR
Co-Chair	Lars Hedrich, Goethe University of Frankfurt/Main, DE

11.1.1 Efficsense: An Architectural Pathfinding Framework For Energy-Constrained Sensor Applications
14:30 - 14:34 CET *Jonah Van Assche, Ruben Helsen and Georges Gielen*

11.1.2 Topology Optimizaiton Of Operational Amplifier In Continuous Space Via Graph Embedding
14:34 - 14:38 CET *Jialin Lu, Liangbo Lei, Fan Yang, Li Shang and Xuan Zeng*

11.1.3 A Charge Flow Formulation For Guiding Analog/Mixed-Signal Placement
14:38 - 14:42 CET *Tonmoy Dhar, Ramprasath S, Jitesh Poojary, Soner Yaldiz, Steven Burns, Ramesh Harjani and Sachin S. Sapatnekar*

11.1.4 Are Analytical Techniques Worthwhile For Analog Ic Placement?
14:42 - 14:46 CET *Yishuang Lin, Yaguang Li, Donghao Fang, Meghna Madhusudan, Sachin S. Sapatnekar, Ramesh Harjani and Jiang Hu*

11.1.5 Routability-Aware Placement For Advanced Finfet Mixed-Signal Circuits Using Satisfiability Modulo Theories
14:46 - 14:50 CET *Hao Chen, Walker Turner, David Z. Pan and Haoxing Ren*

11.1.6 Constructive Common-Centroid Placement And Routing For Binary-Weighted Capacitor Arrays
14:50 - 14:54 CET *Nibedita Karmokar, Arvind Kumar Sharma, Jitesh Poojary, Meghna Madhusudan, Ramesh Harjani and Sachin S. Sapatnekar*

11.1.7 Q&A SESSION
14:50 - 15:30 CET *Manuel Barragan and Lars Hedrich*



Session Title	11.2 Approximate Computing Everywhere
Date / Time	Thursday, 17 March 2022 / 14:30 - 15:30 CET
Chair	Jie Han, University of Alberta, CA
Co-Chair	Ilaria Scarabottolo, Università della Svizzera, CH

11.2.1 14:30 - 14:34 CET	MUSCAT: Mus-Based Circuit Approximation Technique <i>Linus Witschen, Tobias Wiersema, Matthias Artmann and Marco Platzner</i>
11.2.2 14:34 - 14:38 CET	OPACT: Optimization of Approximate Compressor Tree for Approximate Multiplier <i>Weihua Xiao, Cheng Zhuo and Weikang Qian</i>
11.2.3 14:38 - 14:42 CET	Learning To Design Accurate Deep Learning Accelerators With Inaccurate Multipliers <i>Paras Jain, Safeen Huda, Martin Maas, Joseph Gonzalez, Ion Stoica and Azalia Mirhoseini</i>
11.2.4 14:42 - 14:46 CET	Cross-Layer Approximation For Printed Machine Learning Circuits <i>Giorgos Armeniakos, Georgios Zervakis, Dimitrios Soudris, Mehdi Tahoori and Joerg Henkel</i>
11.2.5 14:46 - 14:50 CET	A Target-Separable Bwn Inspired Speech Recognition Processor With Low-Power Precision-Adaptive Approximate Computing <i>Bo Liu, Hao Cai, Xuan Zhang, Haige Wu, Anfeng Xue, Zilong Zhang, Zhen Wang and Jun Yang</i>
11.2.6 14:50 - 14:54 CET	Towards Energy-Efficient Cgras Via Stochastic Computing <i>Bo Wang, Rong Zhu, Jiaying Shang and Dajiang Liu</i>
11.2.7 14:50 - 15:30 CET	Q&A SESSION <i>Jie Han and Ilaria Scarabottolo</i>

Session Title	11.3 Advanced Mapping and Optimization for Emerging ML Hardware
Date / Time	Thursday, 17 March 2022 / 14:30 - 15:30 CET
Chair	Jan Moritz Joseph, RWTH AACHEN, DE
Co-Chair	Elnaz Ansari, Meta/Facebook, US

11.3.1 14:30 - 14:34 CET	Dasc : A Dram Data Mapping Methodology For Sparse Convolutional Neural Networks <i>Bo-Cheng Lai, Tzu-Chieh Chiang, Po-Shen Kuo, Wan-Ching Wang, Yan-Lin Hung, Hung-Ming Chen, Chien-Nan Liu and Shyh-Jye Jou</i>
11.3.2 14:34 - 14:38 CET	VW-SDK: Efficient Convolutional Weight Mapping Using Variable Windows For Processing-In-Memory Architectures <i>Johnny Rhe, Sungmin Moon and Jong Hwan Ko</i>



- 11.3.3** A Uniform Latency Model For Dnn Accelerators With Diverse Architectures And Dataflows
14:38 - 14:42 CET *Linyan Mei, Huichu Liu, Tony Wu, H. Ekin Sumbul, Marian Verhelst and Edith Beigne*
- 11.3.4** MEDEA: A Multi-Objective Evolutionary Approach To Dnn Hardware Mapping
14:42 - 14:46 CET *Enrico Russo, Maurizio Palesi, Salvatore Monteleone, Davide Patti, Giuseppe Ascia and Vincenzo Catania*
- 11.3.5** DIGAMMA: Domain-Aware Genetic Algorithm For Hw-Mapping Co-Optimization For Dnn Accelerators
14:46 - 14:50 CET *Sheng-Chun Kao, Michael Pellauer, Angshuman Parashar and Tushar Krishna*
- 11.3.6** ANACONGA: Analytical Hw-Cnn Co-Design Using Nested Genetic Algorithms
14:50 - 14:54 CET *Nael Fafous, Manoj Rohit Vemparala, Alexander Frickenstein, Emanuele Valpreda, Driton Salihu, Julian Höfer, Anmol Singh, Naveen-Shankar Nagaraja, Hans-Joerg Voegel, Nguyen Anh Vu Doan, Maurizio Martina, Juergen Becker and Walter Stechele*
- 11.3.6** Q&A SESSION
14:50 - 15:30 CET *Jan Moritz Joseph and Elnaz Ansari*

Session Title	11.4 Reconfigurable Systems
Date / Time	Thursday, 17 March 2022 / 14:30 - 15:30 CET
Chair	Jan Michaela Blott, Xilinx, IE
Co-Chair	Shreejith Shanker, Trinity College Dublin, IE

- 11.4.1** ADAFLOW: A Framework For Adaptive Dataflow Cnn Acceleration On FPGAS
14:30 - 14:34 CET *Guilherme Korol, Michael Jordan, Mateus Beck Rutzig and Antonio Carlos Schneider Beck*
- 11.4.2** Raw Filtering Of Json Data On FPGAS
14:34 - 14:38 CET *Tobias Hahn, Andreas Becher, Stefan Wildermann and Jürgen Teich*
- 11.4.3** GRAPHWAVE: A Highly-Parallel Compute-At-Memory Graph Processing Accelerator
14:42 - 14:46 CET *Jinho Lee, Burin Amornpaisannon, Tulika Mitra and Trevor E. Carlson*
- 11.4.4** RF-CGRA: A Routing-Friendly Cgra With Hierarchical Register Chains
14:46 - 14:50 CET *Rong Zhu, Bo Wang and Dajiang Liu*
- 11.4.5** PATHSEEKER: A Fast Mapping Algorithm For CGRAS
14:50 - 14:54 CET *Mahesh Balasubramanian and Aviral Shrivastava*
- 11.4.6** Improving Technology Mapping For Aic-Based FPGAS
14:50 - 14:54 CET *Martin Thümmeler, Shubham Rai and Akash Kumar*
- 11.4.7** Q&A SESSION
14:50 - 15:30 CET *Michaela Blott and Shanker Shreejith*



Session Title	11.5 An Industrial Perspective on Autonomous Systems Design
Date / Time	Thursday, 17 March 2022 / 14:30 - 15:30 CET
Chair	Jan Rolf Ernst, TU Braunschweig, DE
Co-Chair	Selma Saidi, TU Dortmund, DE

- 11.5.1** Symbiotic Safety: Safe And Efficient Human-Machine Collaboration By Utilizing Rules
14:30 - 14:45 CET *Tasuku Ishigooka, Hiroyuki Yamada, Satoshi Otsuka, Nobuyasu Kanekawa and Junya Takahashi*
- 11.5.2** A Middleware Journey From Microcontrollers To Microprocessors
14:45 - 15:00 CET *Michael Pöhl, Alban Tamisier and Tobias Blaß*
- 11.5.3** Reliable Distributed Systems
15:00 - 15:15 CET *Philipp Mundhenk, Arne Hamann, Andreas Heyl and Dirk Ziegenbein*
- 11.5.4** PAVE 360 - A Paradigm Shift In Autonomous Driving Verification With A Digital Twin
15:15 - 15:30 CET *Tapan Vikas*

Session Title	12.1 AI as a Driver for Innovative Applications
Date / Time	Thursday, 17 March 2022 / 15:40 - 16:30 CET
Chair	Jan Xun Jiao, University of Villanova, US
Co-Chair	Srinivas Katkoori, University of South Florida, US

- 12.1.1** Algorithm-Hardware Co-Design for Efficient Brain-Inspired Hyperdimensional Learning On
15:40 - 15:44 CET Edge
Yang Ni, Yeseong Kim, Tajana S. Rosing and Mohsen Imani
- 12.1.2** POISONHD: Poison Attack On Brain-Inspired Hyperdimensional Computing
15:44 - 15:48 CET *Ruixuan Wang and Xun Jiao*
- 12.1.3** AIME: Watermarking AI Models by Leveraging Errors
15:48 - 15:52 CET *Philipp Mundhenk, Arne Hamann, Andreas Heyl and Dirk Ziegenbein*
- 12.1.4** THINGNET: A Lightweight Real-Time Mirai Iot Variants Hunter Through Cpu Power
15:52 - 15:56 CET Fingerprinting
Zhuoran Li and Danella Zhao
- 12.1.5** M2M-ROUTING: Environmental Adaptive Multi-Agent Reinforcement Learning Based
15:56 - 16:00 CET Multi-Hop Routing Policy For Self-Powered Iot Systems
Wen Zhang, Jun Zhang, Mimi Xie, Tao Liu, Wenlu Wang and Chen Pan
- 12.1.6** Q&A SESSION
15:56 - 16:00 CET *Saraju Mohanty and Srinivas Katkoori*



Session Title	12.2 Applications of optimized quantum and probabilistic circuits in emergent computing systems
Date / Time	Thursday, 17 March 2022 / 15:40 - 16:30 CET
Chair	Jan Xun Jiao, University of Villanova, US
Co-Chair	Srinivas Katkoori, University of South Florida, US

12.2.1 15:40 - 15:44 CET	Muzzle The Shuttle: Efficient Compilation For Multi-Trap Trapped-Ion Quantum Computers <i>Abdullah Ash-Saki, Rasit Onur Topaloglu and Swaroop Ghosh</i>
12.2.2 15:44 - 15:48 CET	Circuits For Measurement Based Quantum State Preparation <i>Niels Gleinig and Torsten Hoefler</i>
12.2.3 15:48 - 15:52 CET	Optic: A Practical Quantum Binary Classifier For Near-Term Quantum Computers <i>Tirthak Patel, Daniel Silver and Devesh Tiwari</i>
12.2.4 15:52 - 15:56 CET	Scalable Variational Quantum Circuits For Autoencoder-Based Drug Discovery <i>Junde Li and Swaroop Ghosh</i>
12.2.5 15:56 - 16:00 CET	Towards Low-Cost High-Accuracy Stochastic Computing Architecture For Univariate Functions: Design And Design Space Exploration <i>Kuncai Zhong, Zexi Li and Weikang Qian</i>
12.2.6 16:00 - 16:30 CET	Q&A SESSION <i>Giulia Meuli and Yvain Thonnart</i>

Session Title	12.3 Reliable safe and approximate systems
Date / Time	Thursday, 17 March 2022 / 15:40 - 16:30 CET
Chair	Angeliki Kritikakou, IRISA, FR
Co-Chair	Marcello Traiola, INRIA, FR

12.3.1 15:40 - 15:44 CET	Do Temperature And Humidity Exposures Hurt Or Benefit Your SSDS? <i>Adnan Maruf, Sashri Brahmakshatriya, Baolin Li, Devesh Tiwari, Gang Quan and Janki Bhimani</i>
12.3.2 15:44 - 15:48 CET	SAFEDM: A Hardware Diversity Monitor For Redundant Execution On Non-Lockstepped Cores <i>Francisco Bas, Pedro Benedicte, Sergi Alcaide, Guillem Cabo, Fabio Mazzocchetti and Jaume Abella</i>
12.3.3	Is Approximation Universally Defensive Against Adversarial Attacks In Deep Neural



- 15:48 - 15:52 CET** Networks?
Ayesha Siddique and Khaza Anuarul Hoque
- 12.3.4**
15:52 - 15:56 CET Reliability Analysis Of A Spiking Neural Network Hardware Accelerator
Theofilos Spyrou, Sarah A. Elsayed, Engin Afacan, Luis A. Camuñas Mesa, Barnabé Linares-Barranco and Haralampos-G. Stratigopoulos
- 12.3.5**
15:56 - 16:00 CET Reliability Of Google's Tensor Processing Units For Embedded Applications
Rubens Luiz Rech Junior and Paolo Rech
- 12.3.6**
16:00 - 16:30 CET Q&A SESSION
Angeliki Kritikakou and Marcello Traiola

Session Title	12.4 Raising Performance and Reliability of the Memory Subsystem
Date / Time	Thursday, 17 March 2022 / 15:40 - 16:30 CET
Chair	Leonidas Kosmidis, Barcelona Supercomputing Center, ES
Co-Chair	Thaleia Dimitra Doudali, IMDEA Software Institute, ES

- 12.4.1**
15:40 - 15:44 CET STEALTH ECC: A Data-Width Aware Adaptive Ecc Scheme For Dram Error Resilience
Young Seo Lee, Gunjae Koo, Young-Ho Gong and Sung Woo Chung
- 12.4.2**
15:44 - 15:48 CET Accelerate Hardware Logging To Efficiently Guarantee Pm Crash Consistency
Zhiyuan Lu, Jianhui Yue, Yifu Deng and Yifeng Zhu
- 12.4.3**
15:48 - 15:52 CET MEMPOOL-3D: Boosting Performance And Efficiency Of Shared-L1 Memory Many-Core Clusters With 3D Integration
Matheus Cavalcante, Anthony Agnesina, Samuel Riedel, Moritz Brunion, Alberto Garcia-Ortiz, Dragomir Milojevic, Francky Catthoor, Sung Kyu Lim and Luca Benini
- 12.4.4**
15:52 - 15:56 CET REPAIR: A Reram-Based Processing-In-Memory Accelerator For Intel Realignment
Ting Wu, Chin-Fu Nien, Kuang-Chao Chou and Hsiang-Yun Cheng
- 12.4.5**
15:56 - 16:00 CET SIC Processors For Extreme High-Temperature Venus Surface Exploration
Heewoo Kim, Javad Bagherzadeh and Ronald Dreslinski
- 12.4.6**
16:00 - 16:30 CET Q&A SESSION
Leonidas Kosmidis and Thaleia Dimitra Doudali



Session Title	12.5 Bringing Robust Deep Learning to the Autonomous Edge: New Challenges and Algorithm-Hardware Solutions
Date / Time	Thursday, 17 March 2022 / 15:40 - 16:30 CET
Chair	Dirk Ziegenbein, Robert Bosch GmbH, DE
Co-Chair	Chung-Wei Lin, National Taiwan University, TW

12.5.1 15:40 - 15:50 CET	Unsupervised Test-Time Adaptation Of Deep Neural Networks At The Edge: A Case Study <i>Kshitij Bhardwaj, James Diffenderfer, Bhavya Kailkhura and Maya Gokhale</i>
12.5.2 15:50 - 16:00 CET	Super-Efficient Super Resolution For Fast Adversarial Defense At The Edge <i>Kartikeya Bhardwaj, Dibakar Gope, James Ward, Paul Whatmough and Danny Loh</i>
12.5.3 16:00 - 16:10 CET	Fault-Tolerant Deep Neural Networks For Processing-In-Memory Based Autonomous Edge Systems <i>Siyue Wang, Geng Yuan, Xiaolong Ma, Yanyu Li, Xue Lin and Bhavya Kailkhura</i>
12.5.4 16:10 - 16:20 CET	FRL-FI: Transient Fault Analysis For Federated Reinforcement Learning-Based Navigation Systems <i>Zishen Wan, Aqeel Anwar, Abdulrahman Mahmoud, Tianyu Jia, Yu-Shun Hsiao, Vijay Reddi and Arijit Raychowdhury</i>
12.5.5 16:20 - 16:40 CET	Q&A SESSION <i>Maya Gokhale and Kshitij Bhardwaj</i>

Session Title	13.1 New Perspectives in Test and Diagnosis
Date / Time	Thursday, 17 March 2022 / 16:40 - 17:20 CET
Chair	Melanie Schillinsky, NXP Semiconductors Germany GmbH, DE
Co-Chair	Riccardo Cantoro, Politecnico di Torino, IT

13.1.1 16:40 - 16:44 CET	Improving Cell-Aware Test for Intra-Cell Short Defects <i>Dong-Zhen Li, Ying-Yen Chen, Kai-Chiang Wu and Chia-Tso Chao</i>
13.1.2 16:44 - 16:48 CET	APUF Faults: Impact, Testing, and Diagnosis <i>Natasha Devroye, Vincent Dumoulin, Tim Fox, Wenjing Rao and Yeqi Wei</i>
13.1.3 16:48 - 16:52 CET	Graph Neural Network-Based Delay-Fault Localization For Monolithic 3D ICS <i>Shao-Chun Hung, Sanmitra Banerjee, Arjun Chaudhuri and Krishnendu Chakrabarty</i>
13.1.4 16:52 - 16:56 CET	A Compaction Method For STLS For Gpu In-Field Test <i>Juan Guerrero Balaguera, Josie Rodriguez Condia and Matteo Sonza Reorda</i>



13.1.5 Q&A SESSION
16:56 - 17:30 CET *Melanie Schillinsky and Riccardo Cantoro*

Session Title	13.2 From system-level specification to RTL and back
Date / Time	Thursday, 17 March 2022 / 16:40 - 17:20 CET
Chair	Andy Pimentel, University of Amsterdam, NL
Co-Chair	Matthias Jung, Fraunhofer IESE, DE

13.2.1 Automatic Generation Of Architecture-Level Models From Rtl Designs For Processors And Accelerators
16:40 - 16:44 CET *Yu Zeng, Aarti Gupta and Sharad Malik*

13.2.2 TWINE: A Chisel Extension For Component-Level Heterogeneous Design
16:44 - 16:48 CET *Shibo Chen, Yonathan Fisseha, Jean-Baptiste Jeannin and Todd Austin*

13.2.3 Towards Implementing RTL Microprocessor Agile Design Using Feature Oriented Programming
16:48 - 16:52 CET *Hongji Zou, Mingchuan Shi, Tun Li and Wanxia Qu*

13.2.4 CSLE: A Cost-Sensitive Learning Engine for Disk Failure Prediction In Large Data Centers
16:52 - 16:56 CET *Xinyan Zhang, Kai Shan, Zhipeng Tan and Dan Feng*

13.2.5 Q&A SESSION
16:56 - 17:30 CET *Andy Pimentel and Matthias Jung*

Session Title	13.3 Advances in permanent storage efficiency and NN-in-memory
Virtual Conference Room	TBA
Date / Time	Thursday, 17 March 2022 / 16:40 - 17:20 CET
Chair	Yi Wang, Shenzhen University, CN
Co-Chair	Zili Shao, The Chinese University of Hong Kong, HK

13.3.1 Robust Binary Neural Network Against Noisy Analog Computation
16:40 - 16:44 CET *Zong-Han Lee, Fu-Cheng Tsai and Shih-Chieh Chang*

13.3.2 MU-RMW: Minimizing Unnecessary Rmw Operations In The Embedded Flash With SMR Disk
16:44 - 16:48 CET *Chenlin Ma, Zhuokai Zhou, Yingping Wang, Yi Wang and Rui Mao*

13.3.3 Optimizing Cow-Based File Systems On Open-Channel Ssds With Persistent Memory
16:48 - 16:52 CET *Runyu Zhang, Duo Liu, Chaoshu Yang, Xianzhang Chen, Lei Qiao and Yujuan Tan*



13.3.4 MCMQ: Simulation Framework For Scalable Multi-Core Flash Firmware Of Multi-Queue
16:52 - 16:56 CET SSDS
Xinyan Zhang, Kai Shan, Zhipeng Tan and Dan Feng

13.3.5 Q&A SESSION
16:56 - 17:30 CET *Yi Wang and Zili Shao*

Session Title	13.4 System-level security
Date / Time	Thursday, 17 March 2022 / 16:40 - 17:20 CET
Chair	Pascal Benoit, University of Montpellier, FR
Co-Chair	Mike Hamburg, Cryptography Research, US

13.4.1 Cr-Spectre: Defense-Aware Rop Injected Code-Reuse Based Dynamic Spectre
16:40 - 16:44 CET *Abhijit Dhavle, Setareh Rafatirad, Houman Homayoun and Sai Manoj Pudukotai Dinakarrrao*

13.4.2 Cacherewinder: Revoking Speculative Cache Updates Exploiting Write-Back Buffer
16:44 - 16:48 CET *Jongmin Lee, Junyeon Lee, Taeweon Suh and Gunjae Koo*

13.4.3 SAFETEE: Combining Safety And Security On Arm-Based Microcontrollers
16:48 - 16:52 CET *Martin Schönstedt, Ferdinand Brasser, Patrick Jauernig, Emmanuel Stapf and Ahmad-Reza Sadeghi*

13.4.4 MCMQ: Simulation Framework For Scalable Multi-Core Flash Firmware Of Multi-Queue
16:52 - 16:56 CET SSDS
Xinyan Zhang, Kai Shan, Zhipeng Tan and Dan Feng

13.4.5 Q&A SESSION
16:56 - 17:30 CET *Pascal Benoit and Mike Hamburg*

Session Title	13.5 Safe and Efficient Engineering of Autonomous Systems
Date / Time	Thursday, 17 March 2022 / 16:40 - 17:20 CET
Chair	Sebastian Steinhorst, TU Munich, DE
Co-Chair	Sharon Hu, University of Notre Dame, US

13.4.1 Using Ontologies For Dataset Engineering In Automotive Ai Applications
16:40 - 16:44 CET *Martin Herrmann, Christian Witt, Laureen Lake, Stefani Guneshka, Christian Heinzemann, Frank Bonarens, Patrick Feifel and Simon Funke*

13.4.2 Using Formal Conformance Testing To Generate Scenarios For Autonomous Vehicles
16:44 - 16:48 CET *Jean-Baptiste Horel, Christian Laugier, Lina Marsso, Radu Mateescu, Lucie Muller, Anshul Paigwar, Alessandro Renzaglia and Wendelin Serwe*



- 13.4.3** SAFETEE: Combining Safety And Security On Arm-Based Microcontrollers
16:48 - 16:52 CET *Martin Schönstedt, Ferdinand Brassler, Patrick Jauernig, Emmanuel Stapf and Ahmad-Reza Sadeghi*
- 13.4.4** Remote Sensing With Uav And Mobile Recharging Vehicle Rendezvous
16:52 - 16:56 CET *Michael Ostertag, Jason Ma and Tajana S. Rosing*

Session Title	A.1 Panel on Quantum and Neuromorphic Computing: Designing Brain-Inspired Chips
Date / Time	Thursday, 17 March 2022 / 17:30 - 19:00 CET
Chair	Aida Todri Sanial, LIRMM, FR
Co-Chair	Anne Matsuura, Intel, US
Panellists	Bhavin J. Shastri, Queen's University, CA Giacomo Indiveri, ETH Zürich, CH Mike Davies, INTEL, US

Session Title	14.1 University Fair
Date / Time	Thursday, 17 March 2022 / 19:00 - 20:30 CET
Chair	Aida Ioannis Sourdis, Chalmers, SE
Co-Chair	Nele Mentens, KU Leuven, BE

- 14.1.1** Chalmers Activities In Eurohpc Ju
19:00 - 19:10 CET *Per Stenstrom*
- 14.1.2** Hardware Designs For High Performance And Reliable Space Processors
19:10 - 19:20 CET *Leonidas Kosmidis*
- 14.1.3** New Position In The Ssh Team Of Télécom Paris
19:20 - 19:30 CET *Jean Luc Danger*
- 14.1.4** Designing Embedded Systems For The Automotive World
19:30 - 19:40 CET *Paolo Burgio*
- 14.1.5** Cosmos:A Combined System Of Optical Phase Change Memory And Optical Links
19:40 - 19:50 CET *Ayse Coskun and Ajay Joshi*
- 14.1.6** A Toolchain For Library Cell Characterization For Rfet Technologies
19:50 - 20:00 CET *Steffen Märcker, Akash Kumar, Michael Raitza and Shubham Rai*



- 14.1.7** Safety-Related Open Source Hardware Modules
20:00 - 20:10 CET *Jaume Abella1, Sergi Alcaide2 and Pedro Benedicte*
- 14.1.8** Research @Necslab In A Nutshell Aka Research Activities And Opportunities For
20:10 - 20:20 CET Prospective Phd Students
Marco D. Santambrogio
- 14.1.9** Power-Off Laser Attacks On Security Primitives
20:20 - 20:30 CET *Giorgio Di Natale*

Session Title	15.1 Young People Program: BarCamp
Date / Time	Friday, 18 March 2022 / 09:00 - 17:30 CET
Chair	<i>Anton Klotz, Cadence, DE</i>
Co-Chair	<i>Georg Glaeser, Institut für Mikroelektronik- und Mechatronik-Systeme, DE</i>

Session Title	15.2 Panel: Forum on Advancing Diversity in EDA (DivEDA)
Date / Time	Friday, 18 March 2022 / 18:30 - 20:30 CET
Chair	<i>Ayse K Coskun, Boston University, US</i>
Co-Chair	<i>Nele Mentens, KU Leuven, BE</i>

Session Title	A.2 Disruptive and Nanoelectronics-based edge AI computing systems
Date / Time	Monday, 21 March 2022 / 17:30 - 19:00 CET
Chair	<i>David Atienza, EPFL, CH</i>
Co-Chair	<i>Ayse Coskun, Boston University, US</i>

- A.2.1** Tiny Machine Learning for IOT 2.0
17:30 - 18:00 CET *Vijay Janapa Reddi*
- A.2.2** HD Computing With Applications
18:00 - 18:30 CET *Tajana S. Rosing*
- A.2.3** Improving Weight Perturbation Robustness For Memristor-Based Hardware Deployment
18:00 - 18:30 CET *Yiran Chen, Huanrui Yang and Xiaoxuan Yang*

Session Title	16.1 Young People Program Keynote: Engineering skills that will advance quantum computing
Date / Time	Monday, 21 March 2022 / 19:00 - 19:45 CET
Chair	<i>Sara Vinco, Politecnico di Torino, IT</i>
Co-Chair	<i>Anton Klotz, Cadence Design Systems, DE</i>

- 16.1.1** Engineering Skills That Will Advance Quantum Computing
19:00 - 19:45 CET *Elena Blokhina and Robert Staszewski*



Session Title	16.2 Young People Program Panel
Date / Time	Monday, 21 March 2022 / 19:45 - 20:30 CET
Chair	Anton Klotz, Cadence, DE
Co-Chair	Xavier Salazar, Barcelona Supercomputing Center & HiPEAC, ES
Panellists	Antonia Schmalz, SPRIN D.org, DE Ari Kulmala, Tampere University, FI Anna Puig-Centelles, HADEA, ES Alba Cervera, Barcelona Supercomputing Center, ES

Session Title	IP.2_1 Interactive Presentations
Date / Time	Tuesday, 22 March 2022 / 11:30 - 12:15 CET

- IP.2_1.1** G-GPU: A Fully-Automated Generator Of GPU-Like Asic Accelerators
Tiago Diadami Perez, Márcio Gonçalves, José Rodrigo Azambuja, Leonardo Gobatto, Marcelo Brandalero and Samuel Pagliarini
- IP.2_1.2** Efficient Traveling Salesman Problem Solvers Using The Ising Model With Simulated Bifurcation
Tingting Zhang and Jie Han
- IP.2_1.3** Providing Response Times Guarantees For Mixed-Criticality Network Slicing In 5G
Andrea Nota, Selma Saidi, Dennis Overbeck, Fabian Kurtz and Christian Wietfeld

Session Title	IP.2_2 Interactive presentations
Date / Time	Tuesday, 22 March 2022 / 11:30 - 12:15 CET

- IP.2_2.1** SCI-FI: Control Signal, Code, And Control Flow Integrity Against Fault Injection Attacks
Thomas Chamelot, Damien Couroussé and Karine Heydemann
- IP.2_2.2** XTENSTORE: Fast Shielded In-Memory Key-Value Store On A Hybrid X86-Fpga System
Hyunyoung Oh, Dongil Hwang, Maja Malenko, Myunghyun Cho, Hyungon Moon, Marcel Baunach and Yunheung Paek
- IP.2_2.3** Learning To Mitigate Rowhammer Attacks
Biresh Kumar Joardar, Tyler Bletsch and Krishnendu Chakrabarty



Session Title	IP.2_3 Interactive presentations
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Date / Time	Tuesday, 22 March 2022 / 11:30 - 12:15 CET
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IP.2_3.1 Once For All Skip: Efficient Adaptive Deep Neural Networks
Yu Yang, Di Liu, Hui Fang, Yi-Xiong Huang, Ying Sun and Zhi-Yuan Zhang

IP.2_3.2 Self-Aware Mimo Beamforming Systems: Dynamic Adaptation To Channel Conditions And Manufacturing Variability
Suhasini Komarraju and Abhijit Chatterjee

IP.2_3.3 Salvaging Runtime Bad Blocks By Skipping Bad Pages For Improving SSD Performance
Junoh Moon, Mincheol Kang, Wonyoung Lee and Soontae Kim

Session Title	IP.2_4 Interactive Presentations
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Date / Time	Tuesday, 22 March 2022 / 11:30 - 12:15 CET
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IP.2_4.1 SACC: Split And Combine Approach To Reduce The Off-Chip Memory Accesses Of Lstm Accelerators
Saurabh Tewari, Anshul Kumar and Kolin Paul

IP.2_4.2 Npu-Accelerated Imitation Learning For Thermal- And Qos-Aware Optimization Of Heterogeneous Multi-Cores
Martin Rapp, Nikita Krohmer, Heba Khdr and Joerg Henke

IP.2_4.3 BMPQ: Bit-Gradient Sensitivity Driven Mixed-Precision Quantization Of DNNs From Scratch
Souvik Kundu, Shikai Wang, Qirui Sun, Peter Beerel and Massoud Pedram

Session Title	IP.2_5 Interactive presentations
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Date / Time	Tuesday, 22 March 2022 / 11:30 - 12:15 CET
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IP.2_5.1 EM SCA & FI Self-Awareness And Resilience With Single On-Chip Loop & ML Classifiers
Saurabh Tewari, Anshul Kumar and Kolin Paul

IP.2_5.1 RTSEC: Automated RTL Code Augmentation For Hardware Security Enhancement
Orlando Arias, Zhaoxiang Liu, Xiaolong Guo, Yier Jin and Shuo Wang

IP.2_5.1 INTER-IP Malicious Modification Detection Through Static Information Flow Tracking
Zhaoxiang Liu, Orlando Arias, Weimin Fu, Yier Jin and Xiaolong Guo



Session Title	IP.2_6 Interactive presentations
Date / Time	Tuesday, 22 March 2022 / 11:30 - 12:15 CET

- IP.2_6.1** Many-Layer Hotspot Detection By Layer-Attentioned Visual Question Answering
Yen-Shuo Chen and Iris Hui-Ru Jiang
- IP.2_6.1** RESTORE: Real-Time Task Scheduling On A Temperature Aware Finfet Based Multicore
Yanshu Sharma, Sanjay Moulik and Shounak Chakraborty
- IP.2_6.1** Online Performance And Power Prediction For Edge Tpu Via Comprehensive Characterization
Yang Ni, Yeseong Kim, Tajana S. Rosing and Mohsen Imani

Session Title	IP.2_7 Interactive presentations
Date / Time	Tuesday, 22 March 2022 / 11:30 - 12:15 CET

- IP.2_7.1** Proactive Run-Time Mitigation For Time-Critical Applications Using Dynamic Scenario Methodology
Ji-Yung Lin, Pieter Weckx, Subrat Mishra, Alessio Spessot and Francky Catthoor
- IP.2_7.2** Analyzing Can's Timing Under Periodically Authenticated Encryption
Minqing Zhang, Philip Parsch, Henry Hoffmann and Alejandro Masrur
- IP.2_7.3** Towards Adc-Less Compute-In-Memory Accelerators For Energy Efficient Deep Learning
Utkarsh Saxena, Indranil Chakraborty and Kaushik Roy

Session Title	IP.MPP Multi-Partner Projects–Interactive Presentations
Date / Time	Tuesday, 22 March 2022 / 11:30 - 12:15 CET

- IP.MPP.1** Towards Reconfigurable Accelerators In HPC: Designing A Multipurpose EFPGA Tile For Heterogeneous Socs
Tim Hotfilter, Juan Miguel de Haro Ruiz, Fabian Kreß, Carlos Alvarez, Fabian Kempf, Daniel Jimenez-Gonzalez, Miquel Moreto, imen baili, Jesus Labarta and Juergen Becker
- IP.MPP.2** Towards Approximate Computing For Achieving Energy Vs. Accuracy Trade-Offs
Jari Nurmi and Aleksandr Ometo
- IP.MPP.3** The Selene Deep Learning Acceleration Framework For Safety-Relevant Applications
Laura Medina, Salvador Carrión, Pablo Cerezo, Tomás Picornell, Josè Flich, Carles Hernandez, Markel Sainz, Michael Sandoval, Charles-Alexis Lefebvre, Martin Ronnback, Martin Matschnig, Matthias Wess and Herber Taucher



Session Title	L.1 Panel on Quantum and Neuromorphic Computing: What's it like to be an Engineer for Emerging Computing Technologies?
Date / Time	Tuesday, 22 March 2022 / 12:30 - 14:00 CET
chair	Anne Matsuura, Intel, US
co-chair	Aida Todri Sanial, LIRMM, FR
Panellists	Fernando Gonzalez Zalba, Quantum Motion Technologies, GB Théophile Gonos, A.I. Mergence, FR Robert Wille, Johannes Kepler University Linz, AT
Session Title	17.1 Brain- and Bio-inspired Architectures and Applications
Date / Time	Tuesday, 22 March 2022 / 14:30 - 15:30 CET
chair	Michael Niemier, Notre Dame University, US
co-chair	François Rummens, CEA, FR
17.1.1	<u>Adaptive Droplet Routing For Meda Biochips Via Deep Reinforcement Learning</u> <i>Mahmoud Elfar, Tung-Che Liang, Krishnendu Chakrabarty and Miroslav Pajic</i>
17.1.2	<u>Contamination-Free Switch Design And Synthesis For Microfluidic Large-Scale Integration</u> <i>Duan Shen, Yushen Zhang, Mengchu Li, Tsun-Ming Tseng and Ulf Schlichtmann</i>
17.1.3	<u>Exploiting Parallelism With Vertex-Clustering In Processing-In-Memory-Based Gcn Accelerators</u> <i>Yu Zhu, Zhenhua Zhu, Guohao Dai, Kai Zhong, Huazhong Yang and Yu Wang</i>
17.1.4	<u>Accelerating Spatiotemporal Supervised Training Of Large-Scale Spiking Neural Networks on GPU</u> <i>LING LIANG, Zhaodong Chen, Lei Deng, Fengbin Tu, Guoqi Li and Yuan Xie</i>
17.1.5	<u>HYPERSPIKE: Hyperdimensional Computing For More Efficient And Robust Spiking Neural Networks</u> <i>Justin Morris, Hin Wai Lui, Kenneth Stewart, Behnam Khaleghi, Anthony Thomas, Thiago Marback, Baris Aksanli, Emre Neftci and Tajana S. Rosing</i>
17.1.6	Q&A Session <i>Michael Niemier and François Rummens</i>



Session Title	17.2 Attacks on Secure and Trustworthy Systems
Date / Time	Tuesday, 22 March 2022 / 14:30 - 15:30 CET
chair	Emanuele Valea,CEA LIST, FR
co-chair	Francesco Regazzoni,University of Amsterdam and Università della Svizzera italiana, CH

17.2.1 14:30 - 14:34 CET	<u>A Deep-Learning Approach To Side-Channel Based Cpu Disassembly At Design Time</u> <i>Hedi Fendri, Marco Macchetti, Jerome Perrine and Mirjana Stojilovic</i>
17.2.2 14:34 - 14:38 CET	<u>A Cross-Platform Cache Timing Attack Framework Via Deep Learning</u> <i>Ruyi Ding, Ziyue Zhang, Xiang Zhang, Cheng Gongye, Yunsi Fei and A. Adam Ding</i>
17.2.3 14:38 - 14:42 CET	<u>Design Of Ai Trojans For Evading Machine Learning-Based Detection Of Hardware Trojans</u> <i>Zhixin Pan and Prabhat Mishra</i>
17.2.4 14:42 - 14:46 CET	<u>Dip Learning On Cas-Lock: Using Distinguishing Input Patterns For Attacking Logic Locking</u> <i>Akashdeep Saha, Urbi Chatterjee, Debdeep Mukhopadhyay and Rajat Subhra Chakraborty</i>
17.2.5 14:46 - 14:50 CET	<u>MUXLINK: Circumventing Learning-Resilient Mux-Locking Using Graph Neural Network-Based Link Prediction</u> <i>Lilas Alrahis, Satwik Patnaik, Muhammad Shafique and Ozgur Sinanoglu</i>
17.2.6 14:50 - 15:30 CET	Q&A Session <i>Emanuele Valea1 and Francesco Regazzoni</i>

Session Title	17.3 Algorithmic techniques for efficient and robust ML hardware
Virtual Conference Room	TBA
Date / Time	Tuesday, 22 March 2022 / 14:30 - 15:30 CET
chair	Giulio Gambardella,Synopsys, IR
co-chair	Tony Wu,Meta/Facebook, US

17.3.1 14:30 - 14:34 CET	<u>Dtqatten: Leveraging Dynamic Token-Based Quantization For Efficient Attention Architecture</u> <i>Tao Yang, Dongyue Li, Zhuoran Song, Yilong Zhao, Fangxin Liu, Zongwu Wang, Zhezhi He and Li Jiang</i>
17.3.2 14:34 - 14:38 CET	<u>Mind The Scaling Factors: Resilience Analysis Of Quantized Adversarially Robust Cnns</u> <i>Nael Fafous, Lukas Frickenstein, Michael Neumeier, Manoj Rohit Vemparala, Alexander Frickenstein, Emanuele Valpreda, Maurizio Martina and Walter Stechele</i>



17.3.3 Variability-Aware Training And Self-Tuning Of Highly Quantized Dnns For Analog PIM
14:38 - 14:42 CET *Zihao Deng and Michael Orshansky*

17.3.4 Can Deep Neural Networks Be Converted To Ultra Low-Latency Spiking Neural Networks?
14:42 - 14:46 CET *Gourav Datta and Peter Beerel*

17.3.5 Value-Aware Parity Insertion Ecc For Fault-Tolerant Deep Neural Network
14:46 - 14:50 CET *Seo-Seok Lee and Joon-Sung Yang*

17.3.6 Q&A Session
14:50 - 15:30 CET *Giulio Gambardella and Tony Wu*

Session Title	17.4 Energy Efficiency with Emerging Technologies for the Edge and the Cloud
Date / Time	Tuesday, 22 March 2022 / 14:30 - 15:30 CET
chair	Qinru Qiu, Syracuse University, US
co-chair	Iraklis Anagnostopoulos, SIU, US

17.4.1 A Precision-Scalable Energy-Efficient Bit-Split-And-Combination Vector Systolic Accelerator For Nas-Optimized DNNS
14:30 - 14:34 CET *Kai Li, Junzhuo Zhou, Yuhang Wang, Junyi Luo, Zhengke Yang, Shuxin Yang, Wei Mao, Mingqiang Huang and Hao Yu*

17.4.2 Ternarized Tcn For μ j/Inference Gesture Recognition From Dvs Event Frames
14:34 - 14:38 CET *Georg Rutishauser, Moritz Scherer, Tim Fischer and Luca Benini*

17.4.3 REH: Redesigning Extendible Hashing For Commercial Non-Volatile Memory
14:38 - 14:42 CET *Zhengtao Li, Zhipeng Tan and Jianxi Chen*

17.4.4 Memory Management Methodology For Application Data Structure Refinement And Placement On Heterogeneous DRAM/NVM Systems
14:42 - 14:46 CET *Manolis Katsaragakis, Lazaros Papadopoulos, Christos Baloukas and Dimitrios Soudris*

17.4.5 Microfaas: Energy-Efficient Serverless On Bare-Metal Single-Board Computers
14:46 - 14:50 CET *Anthony Byrne, Yanni Pang, Allen Zou, Shripad Nadgowda and Ayse Coskun*

17.4.6 Q&A Session
14:50 - 15:30 CET *Qinru Qiu and Iraklis Anagnostopoulos*



Session Title	17.5 Putting Place and Route research on the right track
Date / Time	Tuesday, 22 March 2022 / 14:30 - 15:30 CET
chair	Behjat Laleh, University of Calgary, CA
co-chair	Jens Lienig, TU Dresden, DE

17.5.1 14:30 - 14:34 CET	FASTGR : Global Routing On Cpu-Gpu With Heterogeneous Task Graph Scheduler <i>Siting Liu, Peiyu Liao, Rui Zhang, Zhitang Chen, Wenlong Lv, Yibo Lin and Bei Yu</i>
17.5.2 14:34 - 14:38 CET	TRADER: A Practical Track-Assignment-Based Detailed Router <i>Zhen Zhuang, Genggeng Liu, Tsung-Yi Ho, Bei Yu and Wenzhong Guo</i>
17.5.3 14:38 - 14:42 CET	CR&P: An Efficient Co-Operation Between Routing And Placement <i>Erfan Aghaeekiasaraee, Aysa Fakheri Tabrizi, Tiago Fontana, Renan Netto, Sheiny Almeida, Upma Gandhi, Jose Guntzel, David Westwick and Laleh Behjat</i>
17.5.4 14:42 - 14:46 CET	Pin Accessibility-Driven Placement Optimization With Accurate And Comprehensive Prediction Model <i>Suwan Kim and Taewhan Kim</i>
17.5.5 14:46 - 14:50 CET	Mixed-Cell-Height Legalization On Cpu-Gpu Heterogeneous Systems <i>Haoyu Yang, Kit Fung, Yuxuan Zhao, Yibo Lin and Bei Yu</i>
17.5.6 14:50 - 15:30 CET	Q&A Session <i>Laleh Behjat and Jens Lienig</i>

Session Title	17.6 Multi-Partner Projects – Session 1
Virtual Conference Room	TBA
Date / Time	Tuesday, 22 March 2022 / 14:30 - 15:30 CET
chair	Leticia Maria Bolzani Poehls, RWTH Aachen University, DE
co-chair	Maksim Jenihhin, Tallinn UT, EE

17.6.1 14:30 - 14:34 CET	A Comprehensive Solution For Securing Connected And Autonomous Vehicles <i>Mohsin Kamal, Christos Kyrkou, Nikos Piperigkos, Andreas Papandreou, Andreas Kloukiniotis, Jordi Casademont, Natalia Mateu, Daniel Castillo, Rodrigo Rodriguez, Nicola Durante, Peter Hofmann, Petros Kapsalas, Aris Lalos, Konstantinos Moustakas, Christos Laoudias, Theocharis Theocharides and Georgios Ellinas</i>
17.6.2 14:34 - 14:38 CET	Physical And Functional Reverse Engineering Challenges For Advanced Semiconductor Solutions <i>Bernhard Lippmann, Matthias Ludwig, Johannes Mutter, Ann-Christin Bette, Alexander Hepp, Johanna Baehr, Martin Rasche, Oliver Kellermann, Horst Gieser, Tobias Zweifel and Nicola Kovac</i>



- 17.6.3**
14:38 - 14:42 CET
DE-RISC: A Complete Risc-V Based Space-Grade Platform
Nils-Johan Wessman, Fabio Malatesta, Stefano Ribes, Jan Andersson, Antonio Garcia-Vilanova, Miguel Masmano, Vicente Nicolau, Paco Gomez, Jimmy Le Rhun, Sergi Alcaide, Guillem Cabo, Francisco Bas, Pedro Benedicte, Fabio Mazzocchetti and Jaume Abella
- 17.6.4**
14:42 - 14:46 CET
The Scale4edge Risc-V Ecosystem
Wolfgang Ecker, Milos Krstic, Andreas Mauderer, Eyck Jentzsch, Andreas Koch, Wolfgang Müller, Vladimir Herdt, Daniel Mueller-Gritschneider, Rafael Stahl, Kim Grüttner, Jörg Bormann, Wolfgang Kunz1, Reinhold Heckmann, Ralf Wimmer, Bernd Becker, Philipp Scholl, Oliver Bringmann, Johannes Partzsch and Christian Mayr
- 17.6.5**
14:46 - 14:50 CET
XANDAR: Exploiting The X-By-Construction Paradigm In Model-Based Development Of Safety-Critical Systems
Leonard Masing, Tobias Dörr, Florian Schade, Juergen Becker, Georgios Keramidas, Christos Antonopoulos, Michail Mavropoulos, Efstratios Tiganourias, Vasilios Kelefouras, Konstantinos Antonopoulos, Nikolaos Voros, Umut Durak, Alexander Ahlbrecht, Wanja Zaeske, Christos Panagiotou, Dimitris Karadimas, Nico Adler, Andreas Sailer, Raphael Weber, Thomas Wilhelm, Geza Nemeth, Fahad Siddiqui, Rafiullah Khan, Vahid Garousi, Sakir Sezer and Victor Morales
- 17.6.6**
14:46 - 14:50 CET
FLODAM: CRoss-Layer Reliability Analysis Flow For Complex Hardware Designs
Angeliki Kritikakou, Olivier Sentieys, Guillaume Hubert, Youri Helen, Jean-francois Coulon and Patrice Deroux-Dauphin
- 17.6.6**
14:50 - 15:30 CET
Q&A Session
Leticia Maria Bolzani Poehls and Maksim Jenihhin

Session Title	18.1 Domain-specific co-design: From sensors to graph analytics
Date / Time	Tuesday, 22 March 2022 / 15:40 - 16:30 CET
chair	Jeronimo Castrillon, TU Dresden, DE
co-chair	Paula Herber, WWU Munster, DE

- 18.1.1**
15:40 - 15:44 CET
SNE: An Energy-Proportional Digital Accelerator For Sparse Event-Based Convolutions
Alfio Di Mauro, Arpan Prasad, Zhikai Huang, Matteo Spallanzani, Francesco Conti and Luca Benini
- 18.1.2**
15:44 - 15:48 CET
LRP: Predictive Output Activation Based On Svd Approach For Cnns Acceleration
Xinxin Wu, Zhihua Fan, Tianyu Liu, Wenming Li, Xiaochun Ye And Dongrui Fan
- 18.1.3**
15:48 - 15:52 CET
Exploiting Architecture Advances For Sparse Solvers In Circuit Simulation
Zhiyuan Yan, Biwei Xie, Xingquan Li and Yungang Bao
- 18.1.4**
15:52 - 15:56 CET
Data-Aware Cache Management For Graph Analytics
Neelam Sharma, Varun Venkitaraman, Newton Singh, Vikash Kumar, Shubham Singhania and Chandan Kumar Jha



18.1.5 Agape: Anomaly Detection With Generative Adversarial Network For Improved
15:52 - 15:56 CET Performance, Energy, And Security In Manycore Systems
Ke Wang, Hao Zheng, Yuan Li, Jiajun Li and Ahmed Louri

18.1.6 Q&A SESSION
15:56 - 16:00 CET *Jeronimo Castrillon and Paula Herber*

Session Title	18.2 Memory-centric and neural network systems: architectures, tools, and profilers
Date / Time	Tuesday, 22 March 2022 / 15:40 - 16:30 CET
chair	Mohamed M. Sabry Aly, Nanyang Technological University, SG
co-chair	Huichu Liu, Meta, Inc., US

18.2.1 PIMPROF: An Automated Program Profiler For Processing-In-Memory Offloading Decisions
15:40 - 15:44 CET *Yizhou Wei, Minxuan Zhou, Sihang Liu, Korakit Seemakhupt, Tajana S. Rosing and Samira Khan*

18.2.2 Analysis Of Power-Oriented Fault Injection Attacks On Spiking Neural Networks
15:44 - 15:48 CET *Karthikeyan Nagarajan, Junde Li, Sina Sayyah Ensan, Mohammad Nasim Imtiaz Khan, Sachhidh Kannan and Swaroop Ghosh*

18.2.3 GIBBON: Efficient Co-Exploration Of Nn Model And Processing-In-Memory Architecture
15:48 - 15:52 CET *Hanbo Sun, Chenyu Wang, Zhenhua Zhu, Xuefei Ning, Guohao Dai, Huazhong Yang and Yu Wang*

18.2.4 AID: Accuracy Improvement Of Analog Discharge-Based In-Sram Multiplication Accelerator
15:52 - 15:56 CET *Saeed Seyedfaraji, Baset Mesgari and Semeen Rehman*

18.2.5 Q&A SESSION
15:56 - 16:00 CET *Mohamed M. Sabry Aly and Huichu Liu*

Session Title	18.3 Persistent Memory
Date / Time	Tuesday, 22 March 2022 / 15:40 - 16:30 CET
chair	Joseph Friedman, UT Dallas, US
co-chair	Chengmo Yang, University of Delaware, US

18.3.1 Characterizing And Optimizing Hybrid Dram-Pm Main Memory System With Application
15:40 - 15:44 CET Awareness
Yongfeng Wang, Yinjin Fu, Yubo Liu, Zhiguang Chen and Nong Xiao

18.3.2 PATS: Taming Bandwidth Contention Between Persistent And Dynamic Memories
15:44 - 15:48 CET *Shu Cheng Wang, Qiang Cao, Hong Jiang and Yuanyuan Dong*



- 18.3.3** Unifying Temporal And Spatial Locality For Cache Management Inside SSDS
15:48 - 15:52 CET *Zhibing Sha, Zhigang Cai, Dong Yin, Jianwei Liao and Francois Trahay*
- 18.3.4** DWR: Differential Wearing For Read Performance Optimization On High-Density Nand
15:52 - 15:56 CET Flash Memory
Yunpeng Song, Qiao Li, Yina Lv, Changlong Li and Liang Shi
- 18.3.5** GATLB: A Granularity-Aware Tlb To Support Multi-Granularity Pages In Hybrid Memory
15:52 - 15:56 CET System
Yujuan Tan, Yujie Xie, Zhulin Ma, Zhichao Yan, Zhichao Zhang, Duo Liu and Xianzhang Chen
- 18.3.6** Q&A SESSION
15:56 - 16:00 CET *Joseph Friedman and Chengmo Yang*

Session Title	18.4 Energy Efficient Platforms: from Autonomous Vehicles to Intermittent Computing
Date / Time	Tuesday, 22 March 2022 / 15:40 - 16:30 CET
chair	Domenico Balsamo, Newcastle University, GB
co-chair	Bart Vermeulen, NXP Semiconductors, NL

- 18.4.1** OMU: A Probabilistic 3d Occupancy Mapping Accelerator For Real-Time Octomap At The
15:40 - 15:44 CET Edge
Tianyu Jia, En-Yu Yang, Yu-Shun Hsiao, Jonathan Cruz, David Brooks, Gu-Yeon Wei and Vijay Janapa Reddi
- 18.4.2** An FPGA Overlay For Efficient Real-Time Localization In 1/10th Scale Autonomous Vehicles
15:44 - 15:48 CET *Andrea Bernardi, Gianluca Brilli, Alessandro Capotondi, Andrea Marongiu4 and Paolo Burgio*
- 18.4.3** Enabling Fast Deep Learning On Tiny Energy-Harvesting Iot Devices
15:52 - 15:56 CET *Sahidul Islam, Jieren Deng, Shanglin Zhou, Chen Pan, Caiwen Ding and Mimi Xie*
- 18.4.4** Emulation Of Non-Volatile Digital Logic For Batteryless Intermittent Computing
15:52 - 15:56 CET *Simone Ruffini, Kasim Sinan Yildirim and Davide Brunelli*
- 18.4.5** Q&A SESSION
15:56 - 16:00 CET *Domenico Balsamo and Bart Vermeulen*



Session Title	18.5 Circuit Optimization and Analysis: No Time to Lose
Date / Time	Tuesday, 22 March 2022 / 15:40 - 16:30 CET
chair	Eleonora Testa, Synopsys Inc., CH
co-chair	Ibrahim Elfadel, Khalifa University, AE

18.5.1 15:40 - 15:44 CET A Systematic Removal Of Minimum Implant Area Violations Under Timing Constraint
Eunsol Jeong, Heechun Park and Taewhan Kim

18.5.2 15:44 - 15:48 CET DREAMPLACE 4.0: Timing-Driven Global Placement With Momentum-Based Net Weighting
Peiyu Liao, Siting Liu, Zhitang Chen, Wenlong Lv, Yibo Lin and Bei Yu

18.5.3 15:48 - 15:52 CET EEVENTTIMER: Fast And Accurate Event-Based Dynamic Timing Analysis
Zuodong Zhang, Zizheng Guo, Yibo Lin, Runsheng Wang and Ru Huang

18.5.4 15:52 - 15:56 CET Practical Substrate Design Considering Symmetrical And Shielding Routes
Hao-Yu Chi, Yi-Hung Chen, Hung-Ming Chen, Chien-Nan Liu, Yun-Chih Kuo, Ya-Hsin Chang and Kuan-Hsien Ho

18.5.5 15:56 - 16:00 CET Q&A SESSION
Eleonora Testa and Ibrahim (Abe) Elfadel

Session Title	18.6 Multi-Partner Projects – Session 2
Date / Time	Tuesday, 22 March 2022 / 15:40 - 16:30 CET
chair	Ernesto Sanchez, Politecnico di Torino, IT
co-chair	Maksim Jenihhin, Tallinn UT, EE

18.6.1 15:40 - 15:44 CET NEUROTEC I: Neuro-Inspired Artificial Intelligence Technologies For The Electronics Of The Future
Melvin Galicia, Stephan Menzel, Farhad Merchant, Maximilian Müller, Hsin-Yu Chen, Qing-Tai Zhao, Felix Cüppers, Abdur R. Jalil, Qi Shu, Peter Schüffelgen, Gregor Mussler, Carsten Funck, Christian Lanius, Stefan Wiefels, Moritz von Witzleben, Christopher Bengel, Nils Kopperberg, Tobias Ziegler, Rana Ahmad, Alexander Krüger, Leticia Pöhls, Regina Dittmann, Susanne Hoffmann-Eifert, Vikas Rana, Detlev Grützmacher, Matthias Wuttig, Dirk Wouters, Andrei Vescan, Tobias Gemmeke, Joachim Knoch, Max Lemme, Rainer Leupers and Rainer Waser

18.6.2 15:44 - 15:48 CET VEDLIOT: Very Efficient Deep Learning In IOT
Martin Kaiser, Rene Griessl, Nils Kucza, Carola Haumann, Lennart Tigges, Kevin Mika, Jens Hagemeyer, Florian Pormann, Ulrich Rückert, Micha vor dem Berge, Stefan Krupop, Mario Pormann, Marco Tassemeier, Pedro Trancoso, Fareed Qararyah, Stavroula Zouzoula,



Antonio Casimiro, Alysson Bessani, José Cecilio, Stefan Andersson, Oliver Brunnegard, Olof Eriksson, Roland Weiss, Franz Meierhöfer, Hans Salomonsson, Elaheh Malekzadeh, Daniel ödman, Anum Khurshid, Pascal Felber, Marcelo Pasin, Valerio Schiavoni, James Menetrey, Karol Gugula, Piotr Zierhoffer, Eric Knauss and Hans-Martin Heyn

18.6.3
15:52 - 15:56 CET

Intelligent Methods For Test And Reliability

Hussam Amrouch, Jens Anders, Steffen Becker, Maik Betka, Gerd Bleher, Peter Domanski, Nourhan Elhamawy, Thomas Ertl, Athanasios Gatzastras, Paul R. Genssler, Sebastian Hasler, Martin Heinrich, Andre van Hoorn, Hanieh Jafarzadeh, Ingmar Kalfass, Florian Klemme, Steffen Koch, Ralf Küsters, Andrés Lalama, Raphael Latty, Yiwen Liao, Natalia Lyliina, Zahra Paria Najafi-Haghi, Dirk Pflüger, Ilia Polian, Jochen Rivoir, Matthias Sauer, Denis Schwachhofer, Steffen Templin, Christian Volmer, Stefan Wagner, Daniel Weiskopf, Hans-Joachim Wunderlich, Bin Yang and Martin Zimmermann

18.6.4
15:52 - 15:56 CET

EVOLVE: Towards Converging Big-Data, High-Performance And Cloud-Computing Worlds

Achilleas Tzenetopoulos, Dimosthenis Masouros, Konstantina Koliogeorgi, Sotirios Xydis, Dimitrios Soudris, Antony Chazapis, Christos Kozanitis, Angelos Bilas, Christian Pinto, Huy-Nam Nguyen, Stelios Louloudakis, Georgios Gardikis, George Vamvakas, Michelle Aubrun, Christy Symeonidou, Vassilis Spitadakis, Konstantinos Xylogiannopoulos, Bernhard Peischl, Tahir Kalayci, Alexander Stocker and Jean-Thomas Acquaviva

18.6.5
15:56 - 16:00 CET

SDK4ED: One-Click Platform For Energy-Aware, Maintainable And Dependable Applications

Charalampos Marantos, Miltiadis Siavvas, Dimitrios Tsoukalas, Christos Lamprakos, Lazaros Papadopoulos, Paweł Boryszko, Katarzyna Filus, Joanna Domańska, Apostolos Ampatzoglou, Alexander Chatzigeorgiou, Erol Gelenbe, Dionysios Kehagias and Dimitrios Soudris

18.6.6
16:00 - 16:30 CET

Q&A SESSION

Ernesto Sanchez and Maksim Jenihhin

Session Title	19.1 Hardware Security Primitives and Attacks
Date / Time	Tuesday, 22 March 2022 / 16:40 - 17:20 CET
chair	Johanna Sepulveda, Airbus Defense and Space, DE
co-chair	Jorge Guajardo, Bosch, US

19.1.1
16:40 - 16:44 CET

Add-Based Spectral Analysis Of Probing Security

Maria Chiara Molteni, Vittorio Zaccaria and Valentina Ciriani

19.1.2
16:44 - 16:48 CET

GUaranteed Activation Of Capacitive Trojan Triggers During Post Production Test Via Supply Pulsing

Bora Bilgic and Sule Ozev

19.1.3
16:48 - 16:52 CET

FPGA-TO-CPU Undervolting Attacks

Dina Mahmoud, Samah Hussein, Vincent Lenders and Mirjana Stojilovic



19.1.4 Beware Of The Bias - Statistical Performance Evaluation Of Higher-Order Alphabet PUFs
16:52 - 16:56 CET *Christoph Frisch and Michael Pehl*

19.1.5 Q&A SESSION
16:56 - 17:20 CET *Johanna Sepúlveda¹ and Jorge Guajardo*

Session Title	19.2 Hardware components and architectures for Machine Learning
Date / Time	Tuesday, 22 March 2022 / 16:40 - 17:20 CET
chair	Charles Mackin, IBM, US
co-chair	Mladen Berekovic, University of Lübeck, DE

19.2.1 Design Of Many-Core Big Little Mbrains For Energy-Efficient Embedded Neuromorphic Computing
16:40 - 16:44 CET *M. Lakshmi Varshika, Adarsha Balaji, Federico Corradi, Anup Das, Jan Stuijt and Francky Catthoor*

19.2.2 HYDRA: A Near Hybrid Memory Accelerator For Cnn Inference
16:44 - 16:48 CET *Palash Das, Ajay Joshi and Hemangee Kapoor*

19.2.3 TCX: A Programmable Tensor Processor
16:48 - 16:52 CET *Tailin Liang, Lei Wang, Shaobo Shi, John Glossner and Xiaotong Zhang*

19.2.4 A Flash-Based Current-Mode Ic To Realize Quantized Neural Networks
16:52 - 16:56 CET *Kyler Scott, Cheng-Yen Lee, Sunil Khatri and Sarma Vrudhula*

19.2.5 Q&A SESSION
16:56 - 17:20 CET *Charles Mackin and Mladen Berekovic*

Session Title	19.3 NoC Optimization with Emerging Technologies
Date / Time	Tuesday, 22 March 2022 / 16:40 - 17:20 CET
chair	Romain Lemaire, CEA, FR
co-chair	Sebastien Le Beux, Concordia University, CA

19.3.1 NOCEPTION: A Fast Ppa Prediction Framework For Network-On-Chips Using Graph Neural Network
16:40 - 16:44 CET *Fuping Li, Ying Wang, Cheng Liu, Huawei Li and Xiaowei Li*

19.3.2 An Easy-To-Implement And Efficient Flow Control For Deadlock-Free Adaptive Routing
16:44 - 16:48 CET *Yi Dai, Kai Lu, Sheng Ma and Junsheng Chang*

19.3.3 DEFT: A Deadlock-Free And Fault-Tolerant Routing Algorithm for 2.5d Chiplet Networks
16:48 - 16:52 CET *Ebadollah Taheri, Sudeep Pasricha and Mahdi Nikdast*



19.3.4 Non-Volatile Phase Change Material Based Nanophotonic Interconnect
16:52 - 16:56 CET *Parya Zolfaghari, Joel Ortiz, Cedric Killian and Sébastien Le Beux*

19.3.5 Q&A SESSION
16:56 - 17:20 CET *Romain Lemaire and Sébastien Le Beux*

Session Title	19.4 Emerging devices for new computing paradigms
Date / Time	Tuesday, 22 March 2022 / 16:40 - 17:20 CET
chair	Georgiev Vihar, University of Glasgow, GB
co-chair	Gabriele Boschetto, CNRS-LIRMM, FR

19.4.1 A Reliability Concern On Photonic Neural Networks
16:40 - 16:44 CET *Yinyi LIU, Jiaxu Zhang, Jun Feng, Shixi Chen and Jiang Xu*

19.4.2 How Parallel Circuit Execution Can Be Useful For Nisq Computing?
16:44 - 16:48 CET *Siyuan Niu and Aida Todri-Sanial*

19.4.3 Space and Power Reduction In Bdd-Based Optical Logic Circuits Exploiting Dual Ports
16:48 - 16:52 CET *Ryosuke Matsuo and Shin-ichi Minato*

19.4.4 Design And Evaluation Frameworks For Advanced Risc-Based Ternary Processor
16:52 - 16:56 CET *Dongyun Kam, Jung Gyu Min, Jongho Yoon, Sunmean Kim, Seokhyeong Kang and Youngjoo Lee*

19.4.5 Q&A SESSION
16:56 - 17:20 CET *Vihar Georgiev1 and Gabriele Boschetto*

Session Title	19.5 Dealing with Correct Design and Robustness analysis for Complex Systems, MPSoCs and Circuits
Date / Time	Tuesday, 22 March 2022 / 16:40 - 17:20 CET
chair	Chung-Wei Lin, National Taiwan University, TW
co-chair	Dionisios N. Pnevmatikatos, NTUA, GR

19.5.1 Revisiting Pass-Transistor Logic Styles In A 12nm Finfet Technology Node
16:40 - 16:44 CET *Jan Lappas, André Chinazzo, Christian Weis, Chenyang Xia, Zhihang Wu, Leibin Ni and Norbert Wehn*

19.5.2 SAFESU-2: A Safe Statistics Unit For Space Mpsocs
16:44 - 16:48 CET *Guillem Cabo, Sergi Alcaide, Carles Hernandez, Pedro Benedicte1, Francisco Bas, Fabio Mazzocchetti1 and Jaume Abella*



- 19.5.3** Efficient Global Robustness Certification Of Neural Networks Via Interleaving Twin-Network Encoding
16:48 - 16:52 CET *Zhilu Wang, Chao Huang and Qi Zhu*
- 19.5.4** Opportunistic Communication With Latency Guarantees For Intermittently-Powered Devices
16:52 - 16:56 CET *Kacper Wardega, Wenchao Li, Hyoseung Kim, Yawen Wu, Zhenge Jia and Jingtong Hu*
- 19.5.5** Q&A SESSION
16:56 - 17:20 CET *Chung-Wei Lin and Dionisios Pnevmatikatos*

Session Title	20.1 Panel: The Good, the Bad and the Trendy of Multi-Partner Research Projects in Europe
Date / Time	Tuesday, 22 March 2022 / 18:00 - 20:30 CET
chair	Lorena Anghel, Grenoble INP, FR
co-chair	Maksim Jenihhin, Tallinn University of Technology, EE
Session Title	IP.3_1 Interactive Presentations
Date / Time	Wednesday, 23 March 2022 / 11:30 - 12:15 CET

- IP.3_1.1** REDMULE: A Compact Fp16 Matrix-Multiplication Accelerator For Adaptive Deep Learning On Risc-V-Based Ultra-Low-Power
Yvan Tortorella, Luca Bertaccini, Davide Rossi, Luca Benini and Francesco Conti
- IP.3_1.2** Increasing Cellular Network Energy Efficiency For Railway Corridors
Adrian Schumacher, Ruben Merz and Andreas Burg
- IP.3_1.3** Health Monitoring Of Milling Tools Under Distinct Operating Conditions By A Deep Convolutional Neural Network Model
Priscile Suawa and Michael Hübner

Session Title	IP.3_2 Interactive presentations
Date / Time	Wednesday, 23 March 2022 / 11:30 - 12:15 CET

- IP.3_2.1** Gradient-Based Bit Encoding Optimization For Noise-Robust Binary Memristive Crossbar
Youngeun Kim, Hyunsoo Kim, Seijoon Kim, Sang Joon Kim and Priyadarshini Panda
- IP.3_2.2** TAS: Ternarized Neural Architecture Search For Resource-Constrained Edge Devices
Mohammad Loni, Hamid Mousavi, Mohammad Riazati, Masoud Daneshalab and Mikael Sjodin
- IP.3_2.3** Examining And Mitigating The Impact Of Crossbar Non-Idealities For Accurate Implementation Of Sparse Deep Neural
Abhiroop Bhattacharjee, Lakshya Bhatnagar and Priyadarshini Panda



Session Title	IP.3_3 Interactive presentations
Date / Time	Wednesday, 23 March 2022 / 11:30 - 12:15 CET

- IP.3_3.1** [Cross-Level Processor Verification Via Endless Randomized Instruction Stream Generation With Coverage-Guided Aging](#)
Niklas Bruns, Vladimir Herdt, Eyck Jentzsch and Rolf Drechsler
- IP.3_3.2** [Hardware Acceleration Of Explainable Machine Learning](#)
Zhixin Pan and Prabhat Mishra
- IP.3_3.3** [Fast Simulation Of Future 128-Bit Architectures](#)
Fabien Portas and Frédéric Pétrot

Session Title	IP.3_4 Interactive presentations
Date / Time	Wednesday, 23 March 2022 / 11:30 - 12:15 CET

- IP.3_4.1** [A Generative Ai For Heterogeneous Network-On-Chip Design Space Pruning](#)
Maxime Mirka, Maxime France-Pillois, Gilles Sassatelli and Abdoulaye Gamatie
- IP.3_4.2** [SPARROW: A Low-Cost Hardware/Software Co-Designed Simd Microarchitecture For Ai Operations In Space Processors](#)
Marc Solé Bonet and Leonidas Kosmidis
- IP.3_4.3** [A Pluggable Vector Unit For RISC-V Vector Extension](#)
Vincenzo Maisto¹ and Alessandro Cilaro

Session Title	IP.3_5 Interactive presentations
Date / Time	Wednesday, 23 March 2022 / 11:30 - 12:15 CET

- IP.3_5.1** [Robust Reconfigurable Scan Networks](#)
Natalia Lylina, Chih-Hao Wang and Hans-Joachim Wunderlich
- IP.3_5.2** [SYNCLOCK: RF Transceiver Security Using Synchronization Locking](#)
Alan Rodrigo Díaz Rizo, Hassan Aboushady and Haralampos-G. Stratigopoulos
- IP.3_5.3** [Deep Reinforcement Learning For Analog Circuit Structure Synthesis](#)
Zhenxin Zhao and Lihong Zhang

Session Title	IP.3_6 Interactive presentations
Date / Time	Wednesday, 23 March 2022 / 11:30 - 12:15 CET

- IP.3_6.1** [Compatibility Checking For Autonomous Lane-Changing Assistance Systems](#)
Po-Yu Huang, Kai-Wei Liu, Zong-Lun Li, Sanggu Park, Edward Andert, Chung-Wei Lin and Aviral Shrivastava



IP.3_6.2 PAXC: A Probabilistic-Oriented Approximate Computing Methodology For ANN Learning
Pengfei Huang, Chenghua Wang, Ke Chen and Weiqiang Liu

IP.3_6.3 LAC: Learned Approximate Computing
Vaibhav Gupta, Tianmu Li and Puneet Gupta

Session Title	IP.3_7 Interactive presentations
Date / Time	Wednesday, 23 March 2022 / 11:30 - 12:15 CET

IP.3_7.1 EVA-CAM: A Circuit/Architecture-Level Evaluation Tool For General Content Addressable Memories
Liu Liu, Mohammad Mehdi Sharifi, Ramin Rajaei, Arman Kazemi, Kai Ni, Xunzhao Yin, Michael Niemier and X. Sharon Hu

IP.3_7.2 Hybrid Digital-Digital In-Memory Computing
Muhammad Rashedul Haq Rashed, Sumit Kumar Jha, Fan Yao and Rickard Ewetz

IP.3_7.3 NEUROHAMMER: INducing Bit-Flips In Memristive Crossbar Memories
Felix Staudigl, Hazem al Indari, Daniel Schön, Dominik Sisejkovic, Farhad Merchant, Jan Moritz Joseph, Vikas Rana, Stephan Menzel and Rainer Leupers

Session Title	IP.3_8 Interactive presentations
Date / Time	Wednesday, 23 March 2022 / 11:30 - 12:15 CET

IP.3_8.1 A Low-Cost Methodology For EM Fault Emulation On FPGA
Paolo Maistri and Jiayun Po

IP.3_8.2 Reliability Analysis Of Finfet-Based Sram Pufs For 16nm, 14nm, And 7nm Technology Nodes
Shayesteh Masoumian, Georgios Selimis, Rui Wang, Geert-Jan Schrijen, Said Hamdioui and Mottaqiallah Taouil

IP.3_8.3 BOILS: Bayesian Optimisation For Logic Synthesis
Antoine Grosnit, Cedric Malherbe, Xingchen Wan, Rasul Tutunov, Jun Wang and Haitham Bou Ammar

Session Title	L.2 Panel: The future of conferences - what will DATE and the others be like?
Date / Time	Wednesday, 23 March 2022 / 13:00 - 14:00 CET
chair	Ian O'Connor, Lyon Institute of Nanotechnology, FR
Panellists	David Atienza, école Polytechnique Fédérale de Lausanne (EPFL), CH Enrico Macii, Politecnico di Torino, IT Yiran Chen, Duke University, US

Session Title	21.1 Self-adaptive and Dynamic Resource Management, Learning at the Edge and
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	Applications
Date / Time	Wednesday, 23 March 2022 / 4:30 - 15:30 CET
chair	Heba Khdr, Karlsruhe Institute of Technology, DE
co-chair	Federico Corradi, imec, NL

21.1.1 14:30 - 14:34 CET	<u>Accurate Probabilistic Miss Ratio Curve Approximation For Adaptive Cache Allocation In Block Storage Systems</u> <i>Rongshang Li, Yingtian Tang, QIQUAN SHI, Hui Mao, Lei Chen, Jikun Jin, Peng Lu and Zhuo Cheng</i>
21.1.2 14:34 - 14:38 CET	<u>SGRM: Stackelberg Game-Based Resource Management For Edge Computing Systems</u> <i>Antonios Karteris, Manolis Katsaragakis, Dimosthenis Masouros and Dimitrios Soudris</i>
21.1.3 14:38 - 14:42 CET	<u>Runtime Energy Minimization Of Distributed Many-Core Systems Using Transfer Learning</u> <i>Dainius Jenkus, Fei Xia, Rishad Shafik and Alex Yakovlev</i>
21.1.4 14:42 - 14:46 CET	<u>Siamese Neural Encoders For Long-Term Indoor Localization With Mobile Devices</u> <i>Saideep Tiku and Sudeep Pasricha</i>
21.1.5 14:46 - 14:50 CET	<u>Discrete Samplers For Approximate Inference In Probabilistic Machine Learning</u> <i>Shirui Zhao, Nimish Shah, Wannes Meert and Marian Verhelst</i>
21.1.6 14:50 - 14:54 CET	<u>HEL CFL: High-Efficiency And Low-Cost Federated Learning In Heterogeneous Mobile-Edge Computing</u> <i>Yangguang Cui, Kun Cao, Junlong Zhou and Tongquan Wei</i>
21.1.7 14:54 - 15:30 CET	Q&A SESSION <i>Heba Khdr and Federico Corradi</i>

Session Title	21.2 Advances in defect detection and dependability
Date / Time	Wednesday, 23 March 2022 / 4:30 - 15:30 CET
chair	Leticia Maria Bolzani Poehls, RWTH Aachen University, DE
co-chair	Ernesto Sanchez, Politecnico di Torino, IT

21.2.1 14:30 - 14:34 CET	<u>Efficient Hotspot Detection via Graph Neural Network</u> <i>Shuyuan Sun, Yiyang Jiang, Fan Yang, Bei Yu and Xuan Zeng</i>
21.2.2 14:34 - 14:38 CET	<u>FITACT: Error Resilient Deep Neural Networks Via Fine-Grained Post-Trainable Activation Functions</u> <i>Behnam Ghavami, Mani Sadati, Zhenman Fang and Lesley Shannon</i>
21.2.3	<u>WRAP: Weight Remapping And Processing In Rram-Based Neural Network Accelerators Considering Thermal Effect</u>



- 14:38 - 14:42 CET** *Po-Yuan Chen, Fang-Yi Gu, Yu-Hong Huang and Ing-Chao Lin*
- 21.2.4**
14:42 - 14:46 CET Self-Terminated Write Of Multi-Level Cell Reram For Efficient Neuromorphic Computing
Zongwu Wang, Zhezhi He, Rui Yang, Shiquan Fan, Jie Lin, Fangxin Liu, Yueyang Jia, Chenxi Yuan, Qidong Tang and Li Jiang
- 21.2.5**
14:46 - 14:50 CET Sclcr1: Shuttling C-Elements Based Low-Cost And Robust Latch Design Protected Against Triple Node Upsets In Harsh Radiation Environments
Aibin Yan1, Zhixing Li, Shiwei Huang, Zijie Zhai, Xiangyu Cheng, Jie Cui, Tianming Ni, Xiaoqing Wen and Patrick Girard
- 21.2.6**
14:50 - 14:54 CET Leakage Power Analysis In Different S-Box Masking Protection Schemes
Javad Bahrami, Mohammad Ebrahimabadi, Jean Luc Danger, Sylvain Guilley and Naghmeh Karimi
- 21.2.7**
14:54 - 15:30 CET Q&A SESSION
Leticia Maria Bolzani Poehls and Ernesto Sanchez

Session Title	21.3 Real-Time Systems and Technology
Date / Time	Wednesday, 23 March 2022 / 4:30 - 15:30 CET
chair	Renato Mancuso, Boston University, US
co-chair	Yasmina Abdeddaim, UGE, FR

- 21.3.1**
14:30 - 14:34 CET Cache-Aware Schedulability Analysis Of Prem Compliant Tasks
Syed Aftab Rashid, Muhammad Ali Awan, Pedro Souto, Konstantinos Bletsas and Eduardo Tovar
- 21.3.2**
14:34 - 14:38 CET Reconciling Qos And Concurrency In Nvidia Gpus Via Warp-Level Scheduling
Jayati Singh, Ignacio Sañudo Olmedo, Nicola Capodieci, Andrea Marongiu and Marco Caccamo
- 21.3.3**
14:38 - 14:42 CET Counting Priority Inversions: Computing Maximum Additional Core Requests Of Dag Tasks
Morteza Mohaqeqi, Gaoyang Dai and Wang Yi
- 21.3.4**
14:42 - 14:46 CET SHYPER: An Embedded Hypervisor Applying Hierarchical Resource Isolation Strategies For Mixed-Criticality Systems
YiCong Shen, Lei Wang, YuanZhi Liang, SiRan Li and Bo Jiang
- 21.3.5**
14:46 - 14:50 CET Response Time Analysis For Energy-Harvesting Mixed-Criticality Systems
Kankan Wang, Yuhan Lin and Qingxu Deng
- 21.3.6**
14:50 - 14:54 CET Latency Analysis Of Self-Suspending Task Chains
Tomasz Kloda, Jiyang Chen, Antoine Bertout, Lui Sha and Marco Caccamo



21.3.7 Q&A SESSION
14:54 - 15:30 CET *Renato Mancuso and Yasmina Abdeddaim*

Session Title	21.4 Defense Techniques for Secure and Trustworthy Systems
Date / Time	Wednesday, 23 March 2022 / 4:30 - 15:30 CET
chair	Sophie Dupuis, LIRMM, University of Montpellier, FR
co-chair	Elif Bilge Kavun, Univ Passau, DE

21.4.1 Counteract Side-Channel Analysis Of Neural Networks By Shuffling
14:30 - 14:34 CET *Manuel Brosch, Matthias Probst and Georg Sigl*

21.4.2 GNN4GATE: A Bi-Directional Graph Neural Network For Gate-Level Hardware Trojan Detection
14:34 - 14:38 CET *Dong Cheng, Chen Dong, Wenwu He, Zhenyi Chen and Yi Xu*

21.4.3 Golden Model-Free Hardware Trojan Detection By Classification Of Netlist Module Graphs
14:38 - 14:42 CET *Alexander Hepp, Johanna Baehr and Georg Sigl*

21.4.4 Janus-Hd: Exploiting Fsm Sequentiality And Synthesis Flexibility In Logic Obfuscation To Thwart Sat Attack While Offering Strong Corruption
14:42 - 14:46 CET *Leon Li and Alex Orailoglu*

21.4.5 TRILOCK: IC Protection With Tunable Corruptibility And Resilience To Sat And Removal Attacks
14:46 - 14:50 CET *Yuke Zhang, Yinghua Hu, Pierluigi Nuzzo and Peter Beerel*

21.4.6 Q&A SESSION
14:50 - 15:30 CET *Sophie Dupuis and Elif Bilge Kavun*

Session Title	22.1 Heterogeneous system-on-chip design methods
Date / Time	Wednesday, 23 March 2022 / 15:40 - 16:30 CET
chair	Lana Josipovic, ETH Zurich, CH
co-chair	John Wickerson, Imperial College, GB

22.1.1 Understanding And Mitigating Memory Interference In Fpga-Based Hesocs
15:40 - 15:44 CET *Gianluca Brilli, Alessandro Capotondi, Paolo Burgio and Andrea Marongiu*

22.1.2 POWERGEAR: Early-Stage Power Estimation In Fpga Hls Via Heterogeneous Edge-Centric GNNS
15:44 - 15:48 CET *Zhe Lin, Zike Yuan, Jieru Zhao, Wei Zhang, Hui Wang and Yonghong Tian*

22.1.3 Energy Efficient, Real-Time And Reliable Task Deployment On Noc-Based Multicores With DVFS



15:48 - 15:52 CET *Lei Mo, Qi Zhou, Angeliki Kritikakou and Ji Liu*

22.1.4
15:52 - 15:56 CET COXHE: A Software-Hardware Co-Design Framework For Fpga Acceleration Of Homomorphic Computation
Mingqin Han, Yilan Zhu, Qian Lou, Zimeng Zhou, Shanqing Guo and Lei Ju

22.1.5
15:56 - 16:00 CET A Composable Design Space Exploration Framework To Optimize Behavioral Locking
Luca Collini, Ramesh Karri and Christian Pilato

22.1.6
16:00 - 16:30 CET Q&A SESSION
Lana Josipovic and John Wickerson

Session Title	22.2 Power, Thermal and Performance Management for Advanced Computing Systems
Date / Time	Wednesday, 23 March 2022 / 15:40 - 16:30 CET
chair	Pascal Vivet, CEA-LIST, FR
co-chair	Andrea Bartolini, Bologna University, IT

22.2.1
15:40 - 15:44 CET DIET: A Dynamic Energy Management Approach For Wearable Health Monitoring Devices
Nuzhat Yamin, Ganapati Bhat and Jana Doppa

22.2.2
15:44 - 15:48 CET Improve The Stability And Robustness Of Power Management Through Model-Free Deep Reinforcement Learning
Lin Chen, Xiao Li and Jiang Xu

22.2.3
15:48 - 15:52 CET Corememdtm: Integrated Processor Core And 3d Memory Dynamic Thermal Management For Improved Performance
Lokesh Siddhu, Rajesh Kedia and Preeti Ranjan Panda

22.2.4
15:52 - 15:56 CET Thermal- And Cache-Aware Resource Management Based On ML-Driven Cache Contention Prediction
Mohammed Bakr Sikal, Heba Khdr, Martin Rapp and Joerg Henkel

22.2.5
15:56 - 16:00 CET T-Skid: Predicting When To Prefetch Separately From Address Prediction
Toru Koizumi, Tomoki Nakamura, Yuya Degawa, Hidetsugu Irie, Shuichi Sakai and Ryota Shioya

22.1.6
16:00 - 16:30 CET Q&A SESSION
Pascal Vivet and Andrea Bartolini



Session Title	22.3 Compute in- and Near- Memory
Date / Time	Wednesday, 23 March 2022 / 15:40 - 16:30 CET
chair	Jean-Phillipe Noel, CEA, FR
co-chair	Pierre-Emmanuel Gaillardon, University of Utah, US

- 22.3.1 15:40 - 15:44 CET Lim-Hdl: Hdl-Based Synthesis For In-Memory Computing
Saman Froehlich and Rolf Drechsler
- 22.3.2 15:44 - 15:48 CET Triple-Skipping Near-Mram Computing Framework For AIOT ERA
Juntong Chen, Hao Cai, Bo Liu and Jun Yang
- 22.3.3 15:48 - 15:52 CET Achieving Crash Consistency By Employing Persistent L1 Cache
Akshay Krishna Ramanathan, Sara Mahdizadeh Shahri, Yi Xiao and Vijaykrishnan Narayanan
- 22.3.4 15:52 - 15:56 CET Referencing-In-Array Scheme For Rram-Based Cim Architecture
Abhairaj Singh, Rajendra Bishnoi and Said Hamdioui
- 22.3.5 15:56 - 16:30 CET Q&A SESSION
Jean-Philippe Noel and Pierre-Emmanuel Gaillardon

Session Title	22.4 Formal Methods in Design and Verification of Software and Hardware Systems
Date / Time	Wednesday, 23 March 2022 / 15:40 - 16:30 CET
chair	Stefano Quer, Politecnico di Torino, IT
co-chair	Christoph Scholl, University Freiburg, DE

- 22.4.1 15:40 - 15:44 CET BMC+FUZZ : Efficient And Effective Test Generation
Ravindra Metta, Raveendra Medicherla and Samarjit Chakraborty
- 22.4.2 15:44 - 15:48 CET DOLMEN: FPGA Swarm For Safety And Liveness Verification
Emilien Fournier, Ciprian Teodorov and Loïc Lagadec
- 22.4.3 15:48 - 15:52 CET Adding Dual Variables To Algebraic Reasoning For Gate-Level Multiplier Verification
Daniela Kaufmann, Paul Beame, Armin Biere and Jakob Nordström
- 22.4.4 15:52 - 15:56 CET On The Optimal Obdd Representation Of 2-Xor Boolean Affine Spaces
Anna Bernasconi, Valentina Ciriani and Marco Longhi
- 22.4.6 15:56 - 16:30 CET Q&A SESSION
Stefano Quer1 and Christoph Scholl



Session Title	23.1 Artificial Intelligence for embedded systems in healthcare
Date / Time	Wednesday, 23 March 2022 / 16:40 - 17:20 CET
chair	Marina Zapater , <i>University of Applied Sciences Western Switzerland, CH</i>
co-chair	Daniele Pagliari , <i>Politecnico di Torino, IT</i>

23.1.1 BIOFORMERS: Embedding Transformers For Ultra-Low Power Semg-Based Gesture Recognition
16:40 - 16:44 CET *Alessio Burrello, Francesco Bianco Morghet, Moritz Scherer, Simone Benatti, Luca Benini, Enrico Macii, Massimo Poncino and Daniele Jahier Pagliari*

23.1.2 INCLASS: Incremental Classification Strategy For Self-Aware Epileptic Seizure Detection
16:44 - 16:48 CET *Lorenzo Ferretti, Giovanni Ansaloni, Renaud Marquis, Tomas Teijeiro, Philippe Ryvlin, David Atienza and Laura Pozzi*

23.1.3 AMSER: Adaptive Multi-Modal Sensing For Energy Efficient And Resilient Ehealth Systems
16:48 - 16:52 CET *Emad Kasaeyan Naeini, Sina Shahhosseini, Anil Kanduri, Pasi Liljeberg, Amir M. Rahmani and Nikil Dutt*

23.1.4 Q&A SESSION
16:52 - 17:20 CET *Marina Zapater and Daniele Jahier Pagliari*

Session Title	23.2 Performance Evaluation & Optimization using Modeling, Simulation & Benchmarking
Date / Time	Wednesday, 23 March 2022 / 16:40 - 17:20 CET
chair	Avi Ziv , <i>IBM, IL</i>
co-chair	Daniel Grosse , <i>Johannes Kepler University, AT</i>

23.2.1 A Simple Hybrid Model For Accurate Delay Modeling Of A Multi-Input Gate
16:40 - 16:44 CET *Arman Ferdowsi, Juergen Maier, Daniel Oehlinger and Ulrich Schmid*

23.2.2 SYSCIM: Systemc-Ams Simulation Of Memristive Computation In Memory
16:44 - 16:48 CET *Seyed Hossein Hashemi Shadmehri, Ali BanaGozar, Mehdi Kamal, Sander Stuijk, Ali Afzali-Kusha, Massoud Pedram and Henk Corporaal*

23.2.3 PIMULATOR: A Fast And Flexible Processing-In-Memory Emulation Platform
16:48 - 16:52 CET *Sergiu Mosanu, Mohammad Nazmus Sakib, Tommy Tracy II, Ersin Cukurtas, Alif Ahmed, Preslav Ivanov, Samira Khan, Kevin Skadron and Mircea Stan*

23.2.3 BENQ: Benchmarking Automated Quantization On Deep Neural Network Accelerators
16:48 - 16:52 CET *Zheng Wei, Xingjun Zhang, Jingbo Li, Zeyu Ji and Jia Wei*

23.2.4 Q&A SESSION
16:52 - 17:20 CET *Avi Ziv and Daniel Grosse*



16:52 - 17:20 CET

Session Title	23.3 New Methods and Tools using Machine Learning
Date / Time	Wednesday, 23 March 2022 / 16:40 - 17:20 CET
chair	Shafique Muhammad, NYU Abu Dhabi, AE
co-chair	Niar Smail, Université Polytechnique Hauts-de-France, FR

23.3.1 GRAPHHD: Efficient Graph Classification Using Hyperdimensional Computing
Igor Nunes, Mike Heddes, Tony Givargis, Alex Nicolau and Alex Veidenbaum

23.3.2 DEEPPM: Transformer-Based Power And Performance Prediction For Energy-Aware Software
Jun S. Shim, Bogyong Han, Yeseong Kim and Jihong Kim

23.3.3 QUANTIZATION-AWARE In-Situ Training For Reliable And Accurate Edge AI
Joao Paulo Lima and Luigi Carro

23.3.3 ENCORE COMPRESSION: Exploiting Narrow-Width Values For Quantized Deep Neural Networks
Myeongjae Jang, Jinkwon Kim, Jesung Kim and Soontae Kim

23.3.4 Q&A SESSION
Muhammad Shafique¹ and Smail Niar

Session Title	23.4 Side-channel attacks and beyond
Date / Time	Wednesday, 23 March 2022 / 16:40 - 17:20 CET
chair	Begül Bilgin, RAMBUS Cryptography Research, NL
co-chair	Maria Mushtaq, Telecom Paristech, FR

23.4.1 PREFENDER: A Prefetching Defender Against Cache Side Channel Attacks As A Pretender
Luyi Li, Jiayi Huang, Lang Feng and Zhongfeng Wang

23.4.2 Stealthy Inference Attack On Dnn Via Cache-Based Side-Channel Attacks
Han Wang, Syed Mahub Hafiz, Kartik Patwari, Chen-Nee Chuah, Zubair Shafiq and Houman Homayoun

23.4.3 Know Your Neighbor: Physically Locating Xeon Processor Cores On The Core Tile Grid
Hyungmin Cho

23.4.3 REVEAL: Single-Trace Side-Channel Leakage Of The Seal Homomorphic Encryption Library
Furkan Aydin, Emre Karabulut, Seetal Potluri, Erdem Alkim and Aydin Aysu



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23.4.4

16:52 - 17:20 CET

Q&A SESSION

Begul Bilgin and Maria Mushtaq

Session Title	C.1 Closing
Date / Time	Wednesday, 23 March 2022 / 18:00 - 19:00 CET
chair	Cristiana Bolchini, <i>Politecnico di Milano, IT</i>
co-chair	Ingrid Verbauwhede, <i>KU Leuven, BE</i>



DATE PhD Forum 2022

Date: Wednesday, 16 March 2022

Time: 18:30 - 20:3

Session chair: Gabriela Nicolescu, *École Polytechnique de Montréal, CA*

The PhD Forum is an online poster session hosted by EDAA, ACM-SIGDA, and IEEE CEDA for PhD students who have completed their PhD thesis within the last 12 months or who are close to complete their thesis work. It represents an excellent opportunity for them to get feedback on their research and for the industry to get a glance of state-of-the-art in system design and design automation.

Admitted Presentations

- ▶ **FM01.1.1 Novel Attack And Defense Strategies For Enhanced Logic Locking Security**
Lilas Alrahis, New York University Abu Dhabi, AE
- ▶ **FM01.1.2 Proper Abstractions For Digital Electronic Circuits: A Physically Guided Approach**
Jurgen Maier, TU Wien, AT
- ▶ **FM01.1.3 Retraining-Free Weight-Sharing For Cnn Compression**
Etienne Dupuis, Lyon Institute of Nanotechnology, FR
- ▶ **FM01.1.4 Intelligent Circuit Design And Implementation With Machine Learning In EDA**
Zhiyao Xie, Duke University, US
- ▶ **FM01.1.5 Cross-Layer Techniques For Energy-Efficiency And Resiliency Of Advanced Machine Learning Architectures**
Alberto Marchisio, TU Wien, AT
- ▶ **FM01.1.6 Design & Analysis Of An On-Chip Processor For The Autism Spectrum Disorder (Asd) Children Assistance Using Their Emotions**
Abdul Rehman Aslam, Lahore University of Management Sciences, PK
- ▶ **FM01.1.7 Resilience And Energy-Efficiency For Deep Learning And Spiking Neural Networks For Embedded Systems**
Rachmad Vidya Wicaksana Putra, TU Wien, AT
- ▶ **FM01.1.8 Modeling And Optimization Of Emerging Ai Accelerators Under Random Uncertainties**
Sanmitra Banerjee, Duke University, US
- ▶ **FM01.1.9 Logic Synthesis In The Machine Learning Era: Improving Correlation And Heuristics**
Walter Lau Neto, University of Utah, US
- ▶ **FM01.1.10 Accelerating Cnn Inference Near To The Memory By Exploiting Parallelism, Sparsity, And Redundancy**
Palash Das, Indian Institute of Technology, Guwahati, IN
- ▶ **FM01.1.11 Design Automation For Advanced Microfluidic Biochips**
Debraj Kundu, IITR, IN
- ▶ **FM01.1.12 Ultra-Fast Temperature Estimation Methods For Architecture-Level Thermal Modeling**
Hameedah Sultan, Indian Institute of Technology Delhi, IN



- ▶ **FM01.1.13 Multi-Objective Digital Vlsi Design Optimisation**
Linan Cao, University of York, GB
- ▶ **FM01.1.14 Tinydl: Efficient Design Of Scalable Deep Neural Networks For Resource-Constrained Edge Devices**
Mohammad Loni, Mälardalen University, SE
- ▶ **FM01.1.15 Decision Diagrams In Quantum Design Automation**
Stefan Hillmich, Johannes Kepler University Linz, AT
- ▶ **FM01.1.16 Dependable Reconfigurable Scan Networks**
Natalia Lylina, University of Stuttgart, DE
- ▶ **FM01.1.17 Breaking The Energy Cage Of Insect-Scale Autonomous Drones: Interplay Of Probabilistic Hardware And Co-Designed Algorithms**
Priyesh Shukla, University of Illinois at Chicago, US
- ▶ **FM01.1.18 Resilient: Protecting Design Ip From Malicious Entities**
Nimisha Limaye, New York University, US
- ▶ **FM01.1.19 Algorithm-Architecture Co-Design For Energy-Efficient, Robust, And Privacy-Preserving Machine Learning**
Souvik Kundu, USC, US
- ▶ **FM01.1.20 Performance-Aware Design-Space Optimization And Attack Mitigation For Emerging Heterogeneous Architectures**
Mitali Sinha, IIT Delhi, IN
- ▶ **FM01.1.21 Practical Side-Channel And Fault Attacks On Lattice-Based Cryptography**
Prasanna Ravi, Nanyang Technological University, SG
- ▶ **FM01.1.22 Memory Interference And Mitigations In Reconfigurable Hesocs For Embedded AI**
Gialuca Brilli, University of Modena and Reggio Emilia, IT



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About DATE

DATE is a leading international event providing unique networking opportunities, bringing together designers and design automation users, researchers and vendors, as well as specialists in hardware and software design, test and manufacturing of electronic circuits and systems.

In 2022, the conference will take place as a virtual conference online. The 25th DATE conference will be held from 14 to 23 March and is chaired by Professor Cristiana Bolchini, Politecnico di Milano, Italy.

DATE 2022 was intended to have a special format, aiming at bringing back the community together after two editions online, trying to balance the uncertainty of the situation and the desire to be partially back in presence. A special program has been organized to start the conference with two days in presence in Antwerp, Belgium, full of outstanding talks and moments to meet and chat.

However, the current situation of the COVID-19 infections across Europe and the consequent travelling/quarantine restrictions adopted by governments, companies and institutions have a strong impact on our health concerns and travelling opportunities, for speakers as well as attendees.

The "in presence" experience remains a fundamental aspect of any conference and of DATE in the specific, for its many networking moments, as well as for the social activities, however the safety of the community is once more a priority. Therefore, the DATE Organizing Committees opted to move DATE 2022 to a completely virtual event, moving the program of the first two days online also.

Updated information about the conference is always available online at: <https://www.date-conference.com/>



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