

EMBEDDED
SYSTEMS
WEEK



Embedded Systems Week

www.esweek.org

Oct. 24 - Oct. 29
Scottsdale, AZ, USA



technical program

WELCOME TO SCOTTSDALE

On behalf of the Organizing Committee and the committees of our participating conferences - *CASES*, *CODES+ISSS*, and *EMSOFT* - we would like to welcome you Embedded Systems Week - *ESWEEK 2010* - in Scottsdale, Arizona. 2010 marks the 6th edition of *ESWEEK*. Earlier meetings were held in Jersey City, Seoul, Salzburg, Atlanta and Grenoble. This meeting has grown from two conferences and a handful of workshops to three conferences and a dynamic number of workshops that cover the most recent advances in embedded systems. *ESWEEK* is widely recognized as the premier technical event in embedded computing.

The combined program of the three conferences will offer three plenary keynotes and over 100 technical paper presentations. An industrial panel will conclude the conference. *ESWEEK* will also offer a number of half-day tutorials that survey hot topics of general interest to the embedded systems community. Additionally, the event will host eight workshops on a wide range of embedded systems topics that allow researchers and practitioners to share and discuss.

A complex event such as *ESWEEK* is a team effort that requires a dedicated group of volunteers to manage the success of the conference's growth in scale and offerings. We wish to thank every member of the organizing committee for their dedicated efforts in making the event a success. In particular, special thanks go to the following people for managing critical aspects of the conference organization: Franco Fummi for finances, Karam Chatha for local arrangements, Roman Lysecky for publications, Aviral Shrivastava for the conference website, Philipp Lucas for electronic media, Ahmed Jerraya and Karam Chatha for industrial contributions, Gabriela Nicolescu and Miguel Miranda for workshops and tutorials, and Wolfgang Rosenstiel for panels and special sessions. We also thank the Steering Committee members, the Program Chairs, and the Technical Program Committee members of each conference and workshop for selecting papers of the highest quality. *ESWEEK* continues to engage the active participation and involvement of industry. We greatly appreciate our major contributors: Intel, Xilinx, Cavium, Springer, the Artist Consortium and Arizona State University. Finally, we thank our sponsoring societies: ACM (SIGBED, SIGDA, SIGMICRO), IEEE (CAS, Computer, CEDA); and the cooperation with IFIP.

Scottsdale is situated in the greater Phoenix area which provides a perfect gateway to the natural beauty of the Grand Canyon state, Arizona. Besides the Heard museum (with one of finest collections of American Indian art), Frank Lloyd Wright's Taliesin West, many championship quality golf courses, elegant resorts (including the conference site), the area also has a large number of microelectronics and embedded system companies. We therefore invite you to attend *ESWEEK 2010*, learn about the latest in embedded system technologies, and also discover the American Southwest.

HOTEL INFORMATION

The conference will be held at The Westin - Kierland Resort & Spa hotel, where all additional events will take place.

Special room rates are reserved for attendees.

OVERVIEW

	Sun 24	Mon 25	Tue 26	Wed 27	Thu 28	Fri 29
CASES	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CODES + ISSS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
EMSOFT	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tutorials	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Workshops	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Page	8	9	10	11	12	13

SESSION LEGEND

A

**Welcome Reception - Sunday, Oct. 24rd 2010 - 18:00
@ The Westin - Kierland Resort & Spa**

**Gala Banquet - Tuesday, Oct. 26th 2010 - 19:00
@ The Westin - Kierland Resort & Spa**



Keynote: Monday Oct. 25, 2010

Embedded Market: Challenges and Opportunities

There is a convergence trend in the computing, communication and consumer markets and with a forecast of an additional 1 billion connected computing users by 2015, it is of high value to provide a common experience between the devices. Intel's vision of Compute Continuum will enable the users to realize the potential of a seamless cross-device experience with more consistency and accessibility to their information.

The convergence trend and the Compute Continuum make System-on-Chip [SoC] a key ingredient for the embedded markets. At Intel Labs, we are focusing on delivering differentiating technology solutions to enable our business partners to successfully capture their targeted market segments. We are working on a variety of research that will enable modular system architecture and silicon technology breakthroughs for rapid customization and integration facilitating faster time-to-market. Intel's vision along with some technology challenges and possible solutions will be highlighted.

Vida Ilderem,

Vice President, Intel Labs, Director, Integrated Platform Research Lab

Vida Ilderem is vice president of Intel Labs and director of the Integrated Platform Research Lab for Intel Corporation. The research lab focuses on deep integration on highly integrated platform-on-chip architectures as well as digital, analog and physical design factors.

Prior to joining Intel, Ilderem served as vice president of Systems and Technology Research at Motorola's Applied Research and Technology Center where she led research efforts that focused on delivering solutions for the next generation of communication and interaction technologies and integrated systems. She has also held the position of vice president of Physical & Digital Realization with focus on visual, computational and physical technologies, and served as director of RF/IF silicon technologies within Motorola's Semiconductor Products Sector.

Ilderem holds 27 issued patents and has been featured in numerous publications. She is a recipient of the Motorola's Distinguished Innovator Award.

Ilderem holds bachelor's degrees in electrical engineering and physics from Fresno State and a master's degree and doctorate degree in electrical engineering from the Massachusetts Institute of Technology (MIT).



Keynote: Tuesday Oct. 26, 2010

The Future of Computing from Phones to Warehouses: It's a New Day

John Hennessy, President, Stanford University

John Hennessy received his B.E. in Electrical Engineering from Villanova University in 1973. He received his Masters and Ph.D. degrees in Computer Science from SUNY at Stony Brook in 1975 and 1977, respectively. Since September 1977, he has been a faculty member at Stanford University, where he is currently a Professor of Electrical Engineering and Computer Science.

Prior to becoming President, Professor Hennessy served as the University Provost, the Dean of the School of Engineering and was Chairman of the Computer Science Department.



Keynote: Wednesday Oct. 27, 2010

A Marketplace for Cloud Resources

Cloud computing is an emerging paradigm aimed to offer users pay-per-use computing resources, while leaving the burden of managing the computing infrastructure to the cloud provider.

We present a new programming and pricing model that gives the cloud user the flexibility of trading execution speed and price on a per-job basis. We discuss the scheduling and resource management challenges for the cloud provider that arise in the implementation of this model. We argue that techniques from real-time and embedded software can be useful in this context.

This is joint work with Anmol V. Singh, Vasu Singh, Thomas Wies, and Damien Zufferey.

Thomas A. Henzinger, IST Austria

Tom Henzinger is President of IST Austria (Institute of Science and Technology Austria). He has a Ph.D. degree in Computer Science from Stanford University and held faculty positions at Cornell University, the University of California, Berkeley, the Max-Planck Institute for Computer Science, and EPFL. His research focuses on modern systems theory, especially models, algorithms, and tools for the design and analysis of software, hardware, and embedded systems. He is an ISI highly cited researcher, a member of Academia Europaea and of the German Academy of Sciences (Leopoldina), a Fellow of the ACM, and a dFellow of the IEEE.

8:00	Room: Kierland 1A TUTORIAL EMSOFT1	Room: Kierland 1B TUTORIAL CASES1	Room: Kierland 1C TUTORIAL CODES+ISSS1	Room: Powell A WORKSHOP WFCD	Room: Cushing B WORKSHOP WESS10	Room: Cushing A WORKSHOP WCPS
9:00	Model-based Analysis, Synthesis and Testing of Automotive Hardware/Software Architectures	MNEMEE - A Framework for Memory Management and Optimization of Static and Dynamic Data in MPSoC Systems	Modeling and Analyzing Real-Time MultiProcessor Systems	Artist Design Workshop on Foundations of Component Based Design	Workshop on Embedded Systems Security	First Workshop in Diversity in Embedded Computing and Cyber-Physical Systems
10:00						
11:00						
12:00						
13:00	TUTORIAL EMSOFT2	TUTORIAL CASES1	TUTORIAL CODES+ISSS2	WORKSHOP WFCD	WORKSHOP WESS10	WORKSHOP WCPS
14:00	Quantitative System Validation in Model Driven Design	Challenges for Embedded Multicore Architectures	Exploring Models of Computation using Protemy II	Artist Design Workshop on Foundations of Component Based Design	Workshop on Embedded Systems Security	First Workshop in Diversity in Embedded Computing and Cyber-Physical Systems
15:00						
16:00						
17:00						
18:00	Welcome Reception @ The Westin – Kierland Resort and Spa					
19:00						

8:00	Opening Session 8:00 – 8:30	
9:00	Keynote – Embedded Market: Challenges and Opportunities – Vida Ilderem @ Kierland 2 8:30 – 9:30	
10:00	Coffee break @ Hall of State 9:30 – 10:00	
11:00	EMSOFT Session 1 @ Kierland 1C 10:00 – 12:00	CASES Session 1 @ Cushing 10:00 – 12:00
12:00	Lunch @ Pavillion 12:00 – 13:00	
13:00	EMSOFT Session 2 @ Kierland 1C 13:00 – 15:00	CASES Session 2 @ Cushing 13:00 – 15:00
14:00		
15:00	Coffee break @ Hall of State 15:00 – 15:30	
16:00	EMSOFT Session 3 @ Kierland 1C 15:30 – 17:30	CASES Session 3 @ Cushing 15:30 – 17:30
17:00		CODES+ISSS Session 3A @ Kierland 1A 15:30 – 17:30
18:00	SystemC User Group Meeting @ Kierland 1A 18:00 – 21:00	
19:00		CODES+ISSS Session 1B @ Kierland 1B 10:00 – 12:00
		CODES+ISSS Session 2A @ Kierland 1A 13:00 – 15:00
		CODES+ISSS Session 2B @ Kierland 1B 13:00 – 15:00
		CODES+ISSS Session 3B @ Kierland 1B 15:30 – 17:30

8:00

EMSOFT Session 4
@ Kierland 1C
8:30 – 10:30

CASES Session 4
@ Cushing
8:30 – 10:30

CODES+ISSS Session 4A
@ Kierland 1A
8:30 – 10:30

CODES+ISSS Session 4B
@ Kierland 1B
8:30 – 10:30

10:00

Coffee break @ Hall of State
10:30 – 11:00

Keynote – John Hennessy
@ Kierland 2
11:00 – 12:00

12:00

Lunch @ Pavillion
12:00 – 13:00

EMSOFT Session 5
@ Kierland 1C
13:00 – 15:00

CASES Session 5
@ Cushing
13:00 – 15:00

CODES+ISSS Session 5A
@ Kierland 1A
13:00 – 15:00

CODES+ISSS Session 5B
@ Kierland 1B
13:00 – 15:00

13:00

14:00

15:00

Coffee break @ Hall of State
15:00 – 15:30

EMSOFT Session 6
@ Kierland 1C
15:30 – 17:30

CASES Session 6
@ Cushing
15:30 – 17:30

CODES+ISSS Session 6A
@ Kierland 1A
15:30 – 17:30

CODES+ISSS Session 6B
@ Kierland 1B
15:30 – 17:30

17:00

18:00

19:00

Gala Banquet
@ The Westin –Kierland Resort & Spa
19:00

8:00	Keynote – A Marketplace for Cloud Resources – Thomas A. Henzinger @ Kierland 2 8:30 – 9:30			
9:00	Coffee break @ Hall of State 9:30 – 10:00			
10:00	EMSOFT Session 7 @ Kierland 1C 10:00 – 12:00	CASES Session 7 @ Cushing 10:00 – 12:00	CODES+ISSS Session 7A @ Kierland 1A 10:00 – 12:00	CODES+ISSS Session 7B @ Kierland 1B 10:00 – 12:00
11:00				
12:00	Lunch @ Pavilion 12:00 – 13:00			
13:00	EMSOFT Session 8 @ Kierland 1C 13:00 – 15:00	CASES Session 8 @ Cushing 13:00 – 15:00	CODES+ISSS Session 8A @ Kierland 1A 13:00 – 15:00	CODES+ISSS Session 8B @ Kierland 1B 13:00 – 15:00
14:00				
15:00	Coffee break @ Hall of State 15:00 – 15:30			
16:00	ESWEEK Industrial Panel @ Kierland 2 15:30 – 17:30			
17:00				
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Room: Cushing A

Room: Powell A

Room: Powell B

Room: Lowell A

WORKSHOP
ESTIMEDIA

8th IEEE Workshop on Embedded Systems for Real-Time Multimedia

8:00 - 12:00

WORKSHOP
IWSSPS

The Fifth International Workshop on Software Support for Portable Storage

8:00 - 12:00

WORKSHOP
WESE

Workshop on Embedded Systems Education

8:00 - 12:00

WORKSHOP
CASA10

Workshop on Compiler Assisted Soc Assembly

8:00 - 12:00

Lunch
12:00 - 13:00

WORKSHOP
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13:00 - 17:30

Room: Cushing B

Room: Cushing A

WORKSHOP
WSS'10
Workshop on Software Synthesis
8:00 – 12:00

WORKSHOP
ESTIMEDIA
8th IEEE Workshop on Embedded Systems for Real-Time Multimedia
8:00 – 12:00

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EMSOFT

CASES

CODES + ISSS

Room: Klerland 1C

Session 1: Verification & Synthesis
Session chair: Edward Lee

1.1 Automatic Verification of Control System Implementations.
Adolfo Anra, Rupak Majumdar, Indranil Saha and Paulo Tabuada

1.2 Switching Logic Synthesis for Reachability.
Ankur Taly and Ashish Tiwari

1.3 (S) Online Dynamic Stability Verification Using Sector Search.
Joseph Porter, Graham Hemingway, Chris vanBuskirk, Nicholas Kot-

tenstette, Gabor Karsai and Janos Sztipanovits

1.4 (S) Components, Platforms and Possibilities: Towards Generic Automation for MDA.
Eunsuk Kang, Ethan Jackson, Dirk Seifert, Markus Dahlweid and Thomas Santen

Room: Cushing

Session 1: Compilers
Session chair: Scott Mahlke

1.1 Balancing Memory and Performance through Selective Flushing of Software Code Caches.
Apala Guha, Kim Hazelwood and Mary Lou Soffa

1.2 Erbium: A Deterministic, Concurrent Intermediate Representation to Map Data-Flow Tasks to Scalable, Persistent Streaming Processes.
Cupertino Miranda, Antoniu Pop, Philippe Dumont, Albert Cohen and Marc Duranton

1.3 Resource Recycling: Putting Idle Resources to Work on a Composable Accelerator.
Yongjun Park, Hyunchul Park, Scott Mahlke and Sukjin Kim

1.4 Instruction Selection by Graph Transformation.
Sebastian Burchwald and Andreas Zwinkau

Room: Klerland 1A

Session 1A: Application-Specific Algorithms and Architectures
Session chair: Robert A. Walker
Session co-chair: Todor Stefanov

1.1 Rank Based Dynamic Voltage and Frequency Scaling for Tiled Graphics Processors (Best Paper Candidate).
B.V.N Silpa, Krishniah Gunmidipudi and Preeti Ranjan Panda

1.2 Immediate Fabrics: Virtual Architectures for Circuit Portability and Fast Placement and Routing.
James Coole and Greg Stitt

1.3 An Elastic Software Cache with Fast Prefetching for Motion Compression in Video Decoding.
Ping Chao and Youn-Long Lin

Room: Klerland 1B

Session 1B: Reconfigurable and Real-time Systems
Session chair: Sudarshan Banerjee
Session co-chair: Pai Chou

1.1 Verification of Dynamically Reconfigurable Embedded systems by Model Transformation Rules.
Felix Madlener, Julia Weingart and Sorin A. Huss

1.2 Hardware/Software Optimization of Error Detection Implementation for Real-time Embedded Systems.
Adrian Ifta, Petru Eles, Zebao Peng and Vlachoslav Izosimov

1.3 Scheduling Garbage Collection in Realtime Systems.
Martin Kerro and Simon Aittamaa

POSTER SESSION @ 1:30

POSTER SESSION @ 1:30

October 25, Monday 13:00 - 15:00

EMSOFT

Room: Kierland 1C

Session 2: Applications and Tools
Session chair: Rodric Rabbah

2.1 Parallelizing the H.264 Decoder on the Cell BE Processor.
Yongjin Cho, Seungkyun Kim, Jaejin Lee and Heonshik Shin

2.2 Optimal WCET-Aware Code Selection for Scratchpad Memory.
Hui Wu, Jingling Xue and Sri Parameswaran

2.3 (S) A Model Based Approach for Debugging Embedded Systems in Real Time.
Padma Iyengar, Clemens Westerkamp, Juergen Wuebelmann and Elke Pulvermuller

2.4 (S) PinaVM: a SystemC Front-End Based on an Executable Intermediate Representation.
Kevin Marquet and Matthieu Moy

CASES

Room: Cushing

Session 2: Special session -- Embedded Systems for Future Medical Care
Session chair: Vincent J. Mooney

2.1 Routing-Based Synthesis of Digital Microfluidic Biochips.
Elena Mattei, Paul Pop and Jan Madsen

2.2 Mosaic of Organic Development Through Technology Intervention in the Rural Indian Context.
Pingali Rajeswarri and P. Niranjana (invited)

2.3 The Virtual Hospital.
Danny Petrasek, M.D. (invited)

2.4 Parsimonious Information Technologies for Pixels, Perception, Wetware and Simulation
Alan Barr (invited)

CODES + ISSS

Room: Kierland 1A

Session 2A: Special Session - From ESL-2010 to ESL-2015
Session chairs: Adam Donlin (Xilinx) and Karam Chatha (Arizona State University)

ESL and Modeling: Time to Get Rid of the Duct Tape and Bailing Wire.
Tor Jeremiassen, Texas Instruments.

Putting Virtual Prototypes Into Action,
Tim Koegel, Synopsys.

ESL Analysis, Verification and Synthesis of SoCs,
Andres Takach, Mentor Graphics

ESL 2015: The inevitable move to software programmability.
Grant Martin, Tensilica.

Room: Kierland 1B

Session 2B: Special Session - HW/SW Co-design for High Performance Computing: challenges and opportunities
Session chairs: X. Sharon Hu (Notre Dame) and Richard Murphy (Sandia)

A new era of HPC System Design.
Sudip Dossanjh, Sandia National Labs

Who were the enemies of high-performance computing system design in the past 20+ years?
Stephen Poole, US DoE/DoD

HW/SW Specialization for Heterogeneous Parallelism.
Kunle Olukotun, Stanford University

Research/funding opportunities in codesign for HPC systems.
Bill Harrod, DARPA

POSTER SESSION @ 14:30

EMSOFT

October 25, Monday 15:30 - 17:30

CASES

CODES + ISSS

Room: Kierland 1C

Session 3: Scheduling & Optimization
Session chair: Alessandro Pinto3.1 Online Robust Optimization Framework for QoS Guarantees in Distributed Soft Real-Time Systems.
Jinkyu Lee, Insik Shin and Arvind Easwaran3.2 Load-Based Schedulability Analysis of Certifiable Mixed-Criticality Systems.
Haohan Li and Sanjoy Baruah3.3 Reducing Stack with Intra-Task Threshold Priorities in Real-Time Systems.
Gang Yao and Giorgio Buttrazzo

Room: Cushing

Session 3: Architectures
Session chair: Aviral Shrivastava3.1 Implementing Virtual Secure Circuit Using A Custom-Instruction Approach.
Zhimin Chen, Ambuji Sinha and Patrick Schaumont3.2 Mighty-Morphing Power-SIMD.
Ganesh Dasika, Mark Woh, Sangwon Seo, Trevor Mudge, Nathan Clark and Scott Mahlke3.3 Towards Minimizing Reconfiguration Overhead in Dynamically Reconfigurable Processors: REDEFINE as a case study.
Ratna Krishnamoorthy, Keshavan Varadarajan, Ganesh Gargu, Mythri Alle, Ranjani Narayan, Masahiro Fujita and S. K. Nandy

Room: Kierland 1A

Session 3A: Optimising Multiprocessor and NoC Platforms for Performance, QoS, and Reliability
Session chair: Rainer Dörner
Session co-chair: Frank Vahid3.1 Exploring Programming Model-driven QoS Support for NoC-based Platforms (Best Paper Candidate).
Jaume Joven, Andrea Marongiu, Federico Angiolini and Luca Benini3.2 Optimal Synthesis of Latency and Throughput Constrained Pipelined MPSoCs targeting Streaming Applications.
Harris Javaid, Xin He, Aleksander Ignjatovic and Sri Parameswaran3.3 OE+OE: A Novel Turn Model Based Fault Tolerant Routing Scheme for Network-on-Chip.
Sudeep Pasricha, Yong Zou, Dan Connors and HJ Siegel

Room: Kierland 1B

Session 3B: Power-Aware Design
Session chair: Sarma Vrudhula
Session co-chair: Naehyuck Chang3.1 Power Aware SID-based Simulator for Embedded Multicore DSP Subsystems.
Cheng-Yen Lin, Po-Yu Chen, Chun-Kai Tseng, Chung-Wen Huang, Chia-Chieh Weng, Chi-Bang Kuan, Shih-Han Lin, Shi-Yu Huang and Jeng-Kuen Lee3.2 Accurate Online Power Estimation and Automatic Battery Behavior Based Power Model Generation for Smartphones.
Lide Zhang, Birjodh Tiwana, Zhiyun Qian, Zhaoguan Wang, Robert Dick, Morley Mao and Lei Yang3.3 Statistical Approach in a System Level Methodology to Deal With Process Variation.
Concepcion Sanz, Manuel Prieto, José Ignacio Gómez, Christian Tenllado and Francky Catthoor

POSTER SESSION @ 17:00

POSTER SESSION @ 17:00

MEET TODAY'S
AUTHORS

POSTER SESSION @ 17:00

CASES

CODES + ISSS

<p>Room: Kierland 1C Session 4: Automotive & Wireless Sensor Networks Session chair: Ken Butts</p> <p>4.1 Modeling Buffers with Data Refresh Semantics in Automotive Architectures. Linh Thi Xuan Phan, Reinhard Schneider, Samarjit Chakraborty and Insup Lee</p> <p>4.2 Schedulability and End-to-end Latency in Distributed ECU Networks: Formal Modeling and Precise Estimation. A. C. Rajeev, Swarup Mohalik, Manoj G. Dixit, Devesh B. Chokshi and S. Ramesh</p> <p>4.3 (S) TeScribe: A Scalable, Resumable Wireless Reprogramming Approach. Min-Hua Chen and Pai Chou</p> <p>4.4 (S) Nucleos: a Runtime System for Ultra-Compact Wireless Sensor Nodes. Jiwon Hahn and Pai Chou</p>	<p>Room: Kierland 1A Session 4A: MPSoC: Analysis and Synthesis Session chair: Andreas Gerstlauer Session co-chair: Roman Lysecky</p> <p>4.1 Worst-case Performance Analysis of Synchronous Dataflow Scenarios (Best Paper Candidate). Marc Ceilen</p> <p>4.2 Improving Platform-Based System Synthesis by Satisfiability Modulo Theories Solving. Felix Reimann, Michael Glass, Christian Haubelt, Michael Eberl and Jürgen Teich</p> <p>4.3 A Case for Lifetime-Aware Task Mapping in Embedded Chip Multiprocessors. Adam Hartman, Donald Thomas and Brett Meyer</p>	<p>Room: Kierland 1B Session 4B: Memory and Communication Architecture Session chair: Sundeep Pasricha Session co-chair: Christian Haubelt</p> <p>4.1 Automatic Memory Partitioning: Increasing Memory Parallelism via Data Structure Partitioning. Nadav Rotem and Yosi Ben Asher</p> <p>4.2 Towards a Synthesis Semantics for SystemC Channels. Kim Grüttner, Henning Kleen, Frank Oppenheimer, Achim Rettberg and Wolfgang Nebel</p> <p>4.3 Demand-based Block-level Address Mapping in Large-scale NAND Flash Storage Systems. Zhiwei Qin, Yi Wang, Duo Liu and Zili Shao</p>
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POSTER SESSION @ 10:00

POSTER SESSION @ 10:00

Room: Kierland 1C

Session 5: Flash Memory
Session chair: Dimitrios Soudris5.1 Using NAND Flash Memory for Executing Large Volume Real-Time Programs in Automotive Embedded Systems.
Kwangyoon Cho, Kyoung-Soo We, Chang-Gun Lee and Kanghee Kim

Room: Cushing

Session 5: Compiler Managed Caches/Memories
Session chair: Rodric Rabbah5.1 Improving Scratchpad Allocation with Demand-Driven Data Tiling.
Li Wang, Xuejun Yang, Jingling Xue, Tao Tang, Xiaoguang Ren and Shen Ye

Room: Kierland 1A

Session 5A: Embedded Tutorial - An Introduction to the SystemC Synthesis Subset Standard
Session Chairs:Introduction to high-level synthesis & SystemC synthesis subset.
Philippe Coussey, Université de Bretagne-Sud

Room: Kierland 1B

Session 5B: Embedded Tutorial - Compilation techniques for CGRAs: Exploring all parallelization approaches
Session chair: Tom Vander Aa (IMEC)Polymorphic pipeline arrays, expanding coarse-grained arrays beyond innermost loops.
Scott Mahlke, University of MichiganAchieving high-quality hardware results using SystemC synthesis.
Mike Meredith, Forte Design Systems5.2 Fine-grain Dynamic Instruction Placement for L0 Scratch-pad Memory.
Jongssoo Park, James Balfour and William DallySynthesizing systems containing both algorithmic and control blocks from high-level SystemC specifications using HLS.
Andres Takach, Mentor GraphicsCode-generation for coarse-grained arrays: flexibility and programmer productivity.
Bjorn De Sutter, Ghent University
Memory-aware compilation techniques for CGRAs.
Aviral Shrivastava, Arizona State University5.2 Janus-FTL: Finding Optimal Point on the Spectrum between Page and Block Mapping Schemes.
Hunki Kwon, Eunsam Kim, Jongmooh Choi, Donghee Lee and Sam H. Noh5.3 Improved Procedure Placement for Set Associative Caches.
Yun Liang and Tulika MitraSystemC synthesizability at the pin and transaction levels.
Mike McNamara, Cadence5.3 A Reliable MTD Design for MLC Flash-Memory Storage Systems.
Yuan-Hao Chang and Tei-Wei KuoSystemC synthesizability at the pin and transaction levels.
Mike McNamara, CadenceRetargetable Mapping of Loop Programs on Coarse-grained Reconfigurable Arrays.
Frank Hannig, Erlangen University

POSTER SESSION @ 14:30

Room: Kierland 1C
 Session 6: Distribution & Event Graphs
 Session chair: Walid Taha

6.1 A Unifying View of Loosely Time-Triggered Architectures.
 Albert Benveniste, Anne Bouillard and Paul Caspi

6.2 Semantics-Preserving Implementation of Synchronous Specifications over Dynamic TDMA Distributed Architectures.
 Dumitru Potop-Butucaru, Akramul Azim and Sebastian Fischmeister

6.3 (S) From High-level Component-Based Models to Distributed Implementations.
 Borzoo Bonakdarpour, Marius Bozga, Mohamad Jaber, Jean Quilbeuf and Joseph Sifakis

6.4 (S) Ptera: An Event-Oriented Model of Computation for Heterogeneous Systems.
 Thomas Huining Feng, Edward A. Lee and Lee W. Schruben

Room: Cushung
 Session 6: Special Session: IEEE McDowell Lecture and Novel Architectures
 Session chair: Vinod Kathail/Reid Tatge

6.1 Compilers, Architectures and Synthesis for Embedded Computing: Retrospect and Prospect.
 Prof. Krishna Palem

6.2 Optimizing Energy to Minimize Errors in Dataflow Graphs Using Approximate Adders.
 Zvi Kedem, Vincent Mooney, Kirithi Krishna, Krishna Palem, Avani Devarasetty and Phanideepak Parasuramuni

Room: Kierland 1A
 Session 6A: Memory architecture for embedded systems
 Session chair: Joerg Henkel
 Session co-chair: Andy Pimentel

6.1 Dynamic, Non-Linear Cache Architecture for Power-Sensitive Mobile Processors.
 Garo Bournoutian and Alex Orailoglu

6.2 A Greedy Buffer Allocation Algorithm for Power-aware Communication in Body Sensor Networks.
 Hassan Ghasemzadeh and Roozbeh Jafari

6.3 High Durability in NAND Flash Memory through Effective Page Reuse Mechanisms.
 Kwangyooun Lee and Alex Orailoglu

Room: Kierland 1B
 Session 6B: New Design Approaches for Network-on-Chip Systems
 Session chair: Sundeeep Pasricha
 Session co-chair: Kees Goossens

6.1 A Holistic Approach to Network-on-Chip Synthesis.
 Glenn Leary and Karam Chatha

6.2 NeuroNoC: Neural Network Inspired Runtime Adaptation for an On-chip Communication Architecture.
 Thomas Ebi, Mohammad Abdullah Al Faruque and Jörg Henkel

6.3 Workload Characterization and its Impact on Multicore Platform Design.
 Paul Bogdan and Radu Marculescu

6.4 Mini panel.
 Moderator: Petru Eles

POSTER SESSION @ 17:00

EMSOFT

CASES

CODES + ISSS

Room: Kierland 1C	Room: Cushing	Room: Kierland 1A	Room: Kierland 1B
Session 7: Model-Based Design & Patterns Session chair: Lothar Thiele	Session 7: Compilers Session chair: Tulika Mitra	Session 7A: Novel techniques for accelerating system simulation Session chair: Session co-chair:	Session 7.B: Embedded Software Performance Optimization Session chair: Aviral Shrivastava Session co-chair: Preeti Ranjan Panda
7.1 Model-Based Implementation of Real-Time Applications. Tesnim Abdellatif, Jacques Combaz and Joseph Sifakis	7.1 Eliminating False Phase Interactions to Reduce Optimization Phase Order Search Space. Michael Jantz and Prasad Kulkarni	7.1 parSC: Synchronous Parallel SystemC Simulation on Multi-Core Host Architectures. Christoph Schumacher, Rainer Leupers, Diemar Petras and Andreas Hoffmann	7.1 Automatic Parallelization of Embedded Software Using Hierarchical Task Graphs and Integer Linear Programming. Daniel Cordes, Peter Marwedel and Arindam Mallik
7.2 Model-based Specification of Timing Requirements. Christian Buckl, Irina Gaponova, Michael Geisinger, Alois Knoll and Edward Lee	7.2 Practical Aggregation of Semantic Learning Based Compilation. Mircea Narmolaru, Albert Cohen, Grigori Fursin, Ayal Zaks and Ari Freund	7.2 FastFwd: An Efficient Hardware Acceleration Technique for Trace-driven Network-on-Chip Simulation. Krishnalah Gummidipudi, B.V.N Silpa, Preeti Ranjan Panda and Anshul Kumar	7.2 Performance Modeling of Embedded Applications with Zero Architectural Knowledge. Marco Lattuada and Fabrizio Ferrandi
7.3 Initiating a Design Pattern Catalog for Embedded Network Systems. Sally K. Wahba, Jason O. Hallstrom and Neelam Soundarajan	7.3 Vertical Stealing: Robust, Locality-Aware Do-All Workload Distribution for 3D MPSoCs. Andrea Marongiu, Paolo Burgio and Luca Benini	7.3 FEMU: A Firmware-Based Emulation Framework for SoC Verification. Hao Li, Dong Tong, Kan Huang and Xu Cheng	7.3 A Performance Model and Code Overlay Generator for Scratchpad Enhanced Embedded Processors. Michael Baker, Amrit Panda, Nikhil Chaddge, Aniruddha Kadane and Karam Chatha
	7.4 Design space exploration of the Turbo decoding algorithm on the NVIDIA GPU Dongwon Lee, Marilyn Wolf and Hyesoon Kim		

POSTER SESSION @ 1:30

<p>Room: Kierland 1C</p> <p>Session 8: Scheduling & Control Session chair: Nicolas Halbwachs</p> <p>8.1 Power-Aware Temporal Isolation with Variable-Bandwidth Servers. Silviu Craciunas, Christoph Kirsch and Ana Sokolova</p> <p>8.2 Resource Adaptations with Servers for Hard Real-Time Systems. Nikolay Stoimenov, Lothar Thiele, Luca Santinelli and Giorgio Buttazzo</p> <p>8.3 (S) Energy-Aware Packet and Task Co-Scheduling for Embedded Systems. Luca Santinelli, Mauro Marinoni, Francesco Prosperi, Francesco Esposito, Gianluca Franchino and Giorgio Buttazzo</p> <p>8.4 (S) Dynamic Tuning of Feature Set in Highly Variant Interactive Applications. Tushar Kumar, Romain Cledat and Santosh Pande</p>	<p>Room: Cushing</p> <p>Session 8: Cache and Memory Architectures Session chair: Oliver Bringmann</p> <p>8.1 Characterization and Exploitation of Narrow-Width Loads: The Narrow-Width Cache Approach. Mafijul Md Islam and Per Stenstrom</p> <p>8.2 E < MC^2 : Less Energy through Multi-Copy Cache. Arup Chakraborty, Houman Homayoun, Amin Khajeh, Nikil Dutt, Ahmed Eltawil and Fadi Kurdahi</p> <p>8.3 Enabling Large Decoded Instruction Loop Caching for Energy-Aware Embedded Processors. Ji Gu and Hui Guo</p>	<p>Room: Kierland 1A</p> <p>Session 8A: Reliability and Memory Issues in MPSoCs Session chair: Aseem Gupta Session co-chair: Paul Pop</p> <p>8.1 System-Level Reliability Modeling of MPSoCs. Yun Xiang, Thidapat Chantem, Robert Dick, Sharon Hu and Li Shang</p> <p>8.2 A Task Re-Mapping Technique for Reliable Multi-core Embedded Systems. Chanhee Lee, Hokeun Kim, Hae-woo Park, Sungchan Kim, Hyunok Oh and Soonhoi Ha</p> <p>8.3 Heap Data Management for Limited Local Memory (LLM) Multi-core Processors. Ke Bai and Aviral Shrivastava</p>	<p>Room: Kierland 1B</p> <p>Session 8B: Special Session - Unconventional Fabrics, Architectures, and Models for Future Multi-core Systems Session chair: Radu Marculescu</p> <p>Self-assembled Nanoscale On-Chip Interconnect: The Good, the Bad and the Ugly. Christof Teuscher, Portland State University</p> <p>Small-World Hybrid Wireless Network-on-Chip Architecture for Massive Multi-Core Systems. Partha Pande, Washington State University</p> <p>Is the Network the Real Problem for Future Multi-core Systems? Radu Marculescu, CMU</p>
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ESWEEK Industrial PANEL

Wednesday, Oct. 27th 2010
15:30

The future of embedded architectures

Organizers: Wolfgang Rosenstiel, Karamvir S. Chatha

Moderator: Alberto L Sangiovanni-Vincentelli

Panelists:

~ Pranav Mehta

Senior Principal Engineer and Chief Technology Officer of Intel's Embedded and Communications Group

~ Nat Seshan

Distinguished Member Technical Staff, Director of DSP Architecture, Texas Instruments

~ Grant Martin

Chief Scientist, Tensilica Inc.

~ Jim Holt

Manager, Processor Core Architecture and Modeling, Networking and Multimedia Group, Freescale Inc.

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