



IEEE Computer Society Annual Symposium on VLSI, 2010

ISVLSI
2010

July, 5-7 2010

Lixouri, Kefalonia
Greece

<http://www.isvlsi2010.org/>



TECHNOLOGICAL
EDUCATIONAL
INSTITUTE
OF MESSOLONGHI



Department of Telecommunication
Systems and Networks



GREEK REPUBLIC
Prefecture of Kefalonia
Municipality of Paliki



IEEE Greece GOLD
Affinity Group



Conference organization

The organization of the IEEE Annual Symposium on VLSI, for 2010 is hosted by Technological Educational Institute of Messolonghi and the department of Telecommunication Systems and Networks.

Technological Educational Institute of Messolonghi

The Technological Educational Institution of Messolonghi was founded in 1983 (<http://www.teimes.gr>). It is located at about 4km from the city centre of Messolonghi (the capital of the Prefecture of Aetoloakarnania and of the Province of Messolonghi). The campus covers a part of the whole area owned by the institution, which comes up to 200 acres. Technological Educational Institute of Messolonghi has three main faculty areas:

A. Faculty of Agricultural Technology

- Department of Aquaculture and Fisheries
- Department of Greenhouse Crops and Floriculture
- Department of Agricultural Machinery & Irrigation

B. Faculty of Management and Economics

- Department of Accounting
- Department of Administration of Co-Operative Organisations
- Department of Applied Informatics In Management & Finance

C. Faculty of Technology

- Department of Telecommunication Systems and Networking

Department of Telecommunication Systems and Networks

The department of Telecommunication Systems and Networks aims at the promotion of Information Technology, Telecommunications and Network Technologies and Applications and through teaching and research it meets the increasing demand for graduates with a thorough grounding in the principles of these sciences. Students are equipped with knowledge and skills necessary to explore and implement IT applications and are further prepared to deal with future developments in this area.

In the rapidly changing Information Society the development of communication infrastructure, high performance computing and software, the large scale system integration, the integrated applications of content and added value the convergence of technologies (television, computers and networks), all demand graduates who have both good knowledge on new technologies and the necessary expertise to support the smooth network function and interconnection.

The subject of study of the Department covers the research, study, analysis, construction, supervision and maintenance of every kind of network, communications and computer systems, their installation and applications.

The four-year program offered covers a wide spectrum of IT topics and enables students to acquire an in depth knowledge of the areas a) communication networks, b) technology of communication systems and (c) design of embedded/VLSI systems covering the needs of the market in national and international level. With the education provided by the department, graduates will be able to cover the needs of a dynamically changing labor market that comprises enterprises and companies of computer software and hardware application products as well as Internet and telephone services.

The Department of Telecommunication Systems and Networks has strong research relationship in the context of national and international research co-operations with Greek and European telecommunication industry.

IEEE Computer Society Annual Symposium on VLSI 2010

July 5-7, 2010 Lixouri, Kefalonia, Greece



Message from General Chairs

On behalf of the Organizing Committee, it gives us a great pleasure to welcome you to the IEEE Computer Society Annual Symposium on VLSI (ISVLSI 2010). We are honoured to be the General Chairmen of such an important and interesting event, which will take place in Lixouri, Kefalonia, Greece, during July 5-7, 2010. The Telecommunication Systems and Networks Department (TESYD – <http://www.tesyd.teimes.gr>) and the Technological Educational Institute of Messolonghi (<http://www.teimes.gr>), are taking over the local host and organization of ISVLSI 2010 in Greece, with the support of Prefecture of Kefalonia and municipality of Paliki.

We are confident that we will be able to continue the well known tradition of IEEE Computer Society Annual Symposium on VLSI this year as well, by organizing a world wide meeting, for science and technology, that will bring together scientists, engineers, and practitioners all over the world. The conference has been organized to encompass both theory and technology, and both design and applications. In ISVLSI 2010, the authors will present their latest research results, ideas, developments, and applications in all areas of VLSI circuits, systems and design methods to system level design and Systems-on-Chip.

This year we organize special sessions for PhD students and young scientists, since we believe that it is important for conferences like ISVLSI to give young people the chance to present their novel ideas and preliminary research results.

Since conferences are not only the opportunity to gather experts and scientists from different countries but also a chance to visit new places and meet new cultures, this year we will offer all the ISVLSI participants special events and excursions that will allow you discover the beauties of Kephhalonia, the hidden treasure of Greece.

At this point we would like to thank the IEEE Computer Society and the Technical Committee on VLSI for sponsoring and fully supporting the conference, as well as IEEE Computer Press for publishing the conference proceedings.

Last but not least, we would like to express our deepest appreciation to the members of all organizing committees for their valuable efforts in making ISVLSI 2010 a successful event, as well as our army of volunteers. We would also like to thank the institutions and the companies, which have contributed to support the conference activities, and especially our sponsors for their valuable help. We are also grateful to CPR Conferences & Public Relations, for making our efforts as easy as they could be and for their unique ideas and initiative, both for science and enjoy.

We are looking forward to an exciting, vibrant assembly in our venue and welcoming both past and new attendees in ISVLSI 2010 conference in Lixouri and in Kefalonia.



Nikolaos Voros
Assistant Professor
ISVLSI 2010 General Chair



Dr Amar Mukherjee
Professor
ISVLSI 2010 General Co-Chair

Organizing Committee

General Chair

Prof. Nikolaos Voros Technological Educational Institute of Messolonghi, Greece

General Co-Chair

Prof. Amar Mukherjee University of Central Florida, USA

Program Chairs

Prof. Nicolas Sklavos Technological Educational Institute of Patras, Greece

Prof. Konstantinos Masselos University of Peloponnese, Greece

PhD Forum Chair

Dr Michael Hübner KIT - Karlsruhe Institute of Technology

Poster Session Chair

Dr Michael Hübner KIT - Karlsruhe Institute of Technology

Publicity Chairs

Prof Don Bouldin University of Tennessee

Prof Ricardo Reis Universidade Federal do Rio Grande do Sul, Brazil ITIV

Prof Jürgen Becker University of Karlsruhe (TH), Germany

Local Publicity Chairs

Prof Vaggelis Politis-Stergiou Technological Educational Institute of Messolonghi, Greece

Prof Ioannis Kougias Technological Educational Institute of Messolonghi, Greece

Local Arrangements Chair

Prof Vassileios Triantafillou Technological Educational Institute of Messolonghi, Greece

Web Chair

Prof Chrysovalantis Kavousianos University of Ioannina, Greece

Program Committee

Surname	Name	Company
AGRAWAL	Vishwani	Auburn University, USA
ALAM	Syed	Everspin Technologies, Inc, USA
ALEXIOU	George	University of Patras, Greece
ANGELIS	Konstantinos	Technological Educational Institute of Epirous, Greece
ATIENZA	David	EPFL (Embedded Systems Laboratory), Switzerland
BECKER	Juergen	KIT - Karlsruhe Institute of Technology, Germany
BHUNIA	Swarup	Case Western Reserve University, USA
BISDOUNIS	Labros	Technological Educational Institute of Patras, Greece
BONNOT	Philippe	THALES Research & Technology, France
BOUGANIS	Christos-Savvas	Imperial College, UK
CAMPI	Fabio	STMicroelectronics, Italy
CHANG	Naehyuck	Seoul National University, Korea
CHOULIARAS	Vassilios	Loughborough University, UK
DARBARI	Ashish	University of Southampton, UK
DENG	Yangdong	Tsinghua University, China
GORDON-ROSS	Ann	University of Florida, USA
GOUTIS	Konstantinos	University of Patras, Greece
GUPTA	Upavan	University of South Florida, USA
HANCHATE	Narender	Synopsys, USA
HILI	Laurent	European Space Agency, The Netherlands
HU	Shiyan	Michigan Technological University, USA
HUEBNER	Michael	KIT - Karlsruhe Institute of Technology, Germany
ISLAM	Syed	University of Tennessee, USA

Program Committee

Surname	Name	Company
KATKOORI	Srinivas	University of South Florida, USA
KAVOUSIANOS	Chrysovalantis	University of Ioannina, Greece
KITSOS	Paraskeuas	Hellenic Open University, Greece
KOJI	Inoue	Kyushu University, Japan
KORATZINOS	Vassilis	Intracom Telecom, Greece
KOUFOPAVLOU	Odysseas	University of Patras, Greece
KRITHARIDIS	Dimitris	Intracom Telecom, Greece
KURSUN	Eren	IBM Research, USA
LEE	Hsien-Hsin	Georgia Institute of Technology, USA
LEE	Jooheung	University of Central Florida, USA
LI	Jian	IBM Research - Austin, USA
MA	Yuchun	Tsinghua University, China
MACII	Alberto	Politecnico di Torino, Italy
MASSELOS	Konstantinos	University of Peloponnese, Greece
MEMIK	Seda	Northwestern University, USA
MISHRA	Prabhat	University of Florida, USA
MOHANTY	Saraju	University of North Texas, USA
MUKHOPADHYAY	Saibal	Georgia Institute of Technology, USA
MUTYAM	Madhu	Indian Institute of Technology, Madras, India
NICOPOULOS	Chrysostomos	University of Cyprus, Cyprus
NIEUWOUDT	Arthur	Synopsys, USA
PRADHAN	Dhiraj	University of Bristol, UK
RANGANATHAN	Nagarajan	University of South Florida, USA
RAO	Wenjing	University of Illinois, USA
REIS	Ricardo	Universidade Federal do Rio Grande do Sul, Brazil

Program Committee

Surname	Name	Company
SANTAMBROGIO	Marco Domenico	Politecnico di Milano, Italy Massachusetts Institute of Technology, USA
SAWITZKI	Sergei	FH Wedel University of Applied Sciences, Germany
SERPANOS	Dimitrios	University of Patras, Greece
SHANG	Li	University of Colorado, USA
SKLAVOS	Nicolas	Technological Educational Institute of Patras, Greece
SKODRAS	Atahanasios	Hellenic Open University
SMAILAGIC	Asim	Carnegie Mellon University, USA
SOUDRIS	Dimitrios	National Technical University of Athens, Greece
SRIVASTAVA	Ashish	Magma Design Automation, USA
SRIVASTAVA	Saket	University of Southampton, UK
STAN	Mircea	University of Virginia, USA
STOURAITIS	Athanasios	University of Patras, Greece
THEOCHARIDES	Theocharis	University of Cyprus, Cyprus
THEODORIDES	George	University of Patras, Greece
TORRES	Lionel	LIRMM, University Montpellier 2, France
VOROS	Nikolaos	Technological Educational Institute of Messolonghi, Greece
WANG	Yu	Tsinghua University, China
XU	Jiang	Hong Kong University of Science and Technology, China
XU	Qiang	Chinese University of Hong Kong, China
YANG	Chia-Lin	National Taiwan University, Taiwan
ZHANG	Tong	Rensselaer Polytechnic Institute, USA
ZHAO	Danella	University of Louisiana, USA

Kefalonia - The hidden treasure of Greece

Kefalonia is a relatively new, economical, important and modern destination. It incorporates considerable cultural resources and its human reserve has special characteristics making the Kefalonians famous in the whole world. Every part of the island breaths with remarkable natural beauty. Beaches with sand, pebbles and light blue sea, easy accessibility and good services recompense the visitors completely.



An overview of the Kefalonia island

Kefalonia caters to everyone. Tranquillity for those who ask for it. Nightlife for the lovers of entertainment. Unknown, secret places for all who yearn exploring. Rich history and significant archaeological sites for those who care for civilization. Abundant customs, legends and traditions for the followers of folklore. And above all, Kefalonia offers to everyone relaxations and gastronomical delight, pure beaches and lush surroundings, plenty of sensational, picturesque and surprising views.

The quality of hospitality provided by the tourist enterprises is high. The shops offer good products and services. The restaurants and the tavernas provide - except the Greek or local music - a great variety of excellent food, local tastes, drinks and sweets. The road network of the island is sufficient, while the public transport is quite frequent and in many places of the island there are offices where one can rent cars and bikes. An international airport is situated near the capital and many harbours serve the needs of the travellers.

The modern tourist face of Kefalonia is created by hospitality, cleanliness and safety and the island combines a rich mixture of culture, a fine combination of unique pure nature, sea and sun, and living conditions of high standard. That is why Kefalonia is the tourist choice of more and more visitors who, leaving the island promise themselves to return.

Lixouri - The city hosting ISVLSI 2010 conference

Lixouri is the second biggest town of Kefalonia. The visitors can easily reach Lixouri (10 minutes journey by car from Kefalonia International Airport to the harbour of Argostoli -the capital of the island- and then a wonderful 20 minute journey by a small boat from Argostoli to Lixouri). Lixouri is a small modern town with cosy, tree-lined streets, a pretty harbour and pleasant squares. You can visit the Iakovateios Library to admire the rare manuscripts, the painted ceiling, the antique furniture and the old books. The building housing, this unique treasure, is a presismic sample of the local bourgeois architectural style (Kefalonia was totally destroyed by an earthquake in 1953 - a relative historical and cultural museum can be found in the Argostoli -the capital of the island). You can also have a look at the Philharmonic School, an historical music centre founded in 1836.



View of Lixouri from Michalitsata

The Petristions Public library "Damodos" is another important building with many rare books. The Vallianios Technical School was in the 20th century famous throughout Greece. Outside Lixouri, in Michalitsata you can enjoy the extraordinary view of the Lixouri golf enjoying the famous Greek coffee.



The harbour of Lixouri

One of the most beautiful places of Lixouri is the Kipouria monastery which was built 100 meters above the sea level. The view is astonishing and the sunset is unbelievable.

Other attractions around the island

There are plenty of places around the island, where one could visit. All of them, are in one hour distance by car from Lixouri. In some of them, local tour operators offer sightseeing tours.

Melissani Cave: Melissani cave is a deep lacustrine cave shaped in B form, a dream of the underground world. The roof on the southern side of the cave has collapsed, leaving an opening 50 meters long and 30 meters wide as result of which, the rays of the midday sun penetrating the aperture and playing with transparent crystal blue waters crate an excellent combination of colors.



Melissani cave

Drogkarati Cave: A cave with exceptional acoustics, full of unique red stalagmites and stalactites.



Drogkarati cave

The town of Fiskardo: The traditional settlement with its cosmopolitan character offers a perfect idyllic sensation. You can try wondering on the peddle-covered step-shaped narrow streets and along the coastal street, admiring the 18th century traditional haouseswith their tiny balconies and their fantastic yards. During the summer the small port of Fiskardo serves many yachts and luxury crafts.



The town of Fiskardo

Endless beaches with crystal clear waters

Kefalonia is famous around the world for its magnificent beaches where the visitors can enjoy swimming in crystal clear waters.



The famous beach of Myrtos



A view Platia Amos (wide sand) beach

Ithaca island

Ithaca is located near Kefalonia and is the homeland of Odysseus, the famous hero of the The Odyssey, which is one of two major ancient Greek epic poems attributed to Homer. The poem was probably written near the end of the eighth century BC, somewhere along the Greek-controlled western Turkey seaside, Ionia. The poem is, in part, a sequel to Homer's Iliad and mainly centers on the Greek hero Odysseus (or Ulysses, as he was known in Roman myths) and his long journey home to Ithaca following the fall of Troy.



A view of Vathi, the capital of Ithaca

July 5-7, 2010 Lixouri, Kefalonia, Greece

Sunday - July 4th 2010

Registration: 18:00 - 20:00

Monday - July 5th 2010

Opening Remark: 8:30 - 08:55

Invited talk: 9:00 - 09:55

Chairman: Prof. Dimitrios Soudris, National Technical University of Athens, Greece

European ICT Research: 2011-2012 Outlook for Components and Systems

Dr Panagiotis Tsarchopoulos, Project Officer, Computing Systems European Commission, DG INFSO/G3, Information and Communication Technologies - Embedded Systems & Control

Session M1A: 10:00 - 11:40

VLSI Design Issues

Chairman: Jiang Xu Hong Kong University of Science and Technology, China

- SUT-RNS Forward and Reverse Converters**
Evangelos Vassalos, Dimitris Bakalis and Haridimos Vergos
- Clock Tree Synthesis with XOR Gates for Polarity Assignment**
Jianchao Lu and Baris Taskin
- A Fast Heuristic for Extending Standard Cell Libraries with Regular Macro Cells**
Christian Pilato, Fabrizio Ferrandi and Davide Pandini
- A BDD-based Design of an Area-Power Efficient Asynchronous Adder**
Gopal Paul, Rohit Reddy, C. R. Mandal and Bhargava B. Bhattacharya
- Efficient hardware looping units for FPGAs**
Nikolaos Kavvadias and Konstantinos Masselos

Session: M1B: 10:00 - 11:40

Embedded System Design

Chairman: Dr Michael Huebner, KIT - Karlsruhe Institute of Technology, Germany

- Input-Output Selection Based Router for Networks-on-Chip**
Masoud Daneshalab, Masoumeh Ebrahimi, Pasi Liljeberg, Juha Plosila, and Hannu Tenhunen
- Automatic Generation of Massively Parallel Hardware from Control-Intensive Sequential Programs**
Michael Dossis
- Efficient High Level Synthesis Exploration Methodology Combining Exhaustive and Gradient-Based Pruned Searching**
Sotirios Xydis, Christos Skouroumounis, Kiamal Pekmezci, Dimitrios Soudris and George Economakos
- Adaptive Task Migration Policies for Thermal control in MPSoCs**
David Cuesta, Jose Luis Ayala, Jse Ignacio Hidalgo, David Aienza, Andrea Acquaviva and Enrico Macii
- A Scalable Bandwidth Aware Architecture for Connected Component Labeling**
Vikram Sampath Kumar, Kevin Irick, Ahmed Al Maashri and Vijaykrishnan Narayanan

Coffee Break: 11:45 - 12:10

Session M1A: 12:15 - 13:35

VLSI Design Issues (continued)

Chairman: Prof. Chrysovalantis Kavousianos, University of Ioannina, Greece

- Exploration of 2D Cellular Automata as Binary Sequence Generators**
Athanasios Kakarountas, Efthymia Arvaniti and Ilias Mavridis
- Fine-grained fault tolerance for process variation-aware caches**
Tayyeb Mahmood and Soontae Kim
- Hierarchical DFT with Combinational Scan Compression, Partition Chain and RPCT**
Prakash Srinivasan and Ronan Farrell
- Master-Slave TMR Inspired Technique for Fault Tolerance of SRAM-based FPGA**
Farid Lahrach, Abderrahim Doumar, Eric Chatelet, Abderrazek Abdaoui

Session: M1B: 12:15 - 13:35

Embedded System Design (continued)

Chairman: Dr Michael Huebner, KIT - Karlsruhe Institute of Technology, Germany

- LE1: A parameterizable, shared-memory VLIW Chip-Multiprocessor with hardware PThreads support**
David Stevens and Vassilios Chouliaras
- A Post-Compiling Approach that Exploits Code Granularity in Scratchpads to Improve Energy Efficiency**
Daniel P. Volpato, Alexandre K. I. Mendonca, Luiz C. V. dos Santos and Jose Luis Guntzel
- Systematic Exploration of Energy-Efficient Application-Specific Network-on-Chip Architectures**
Iasonas Filippopoulos, Iraklis Anagnostopoulos, Alexandros Bartzas, Dimitrios Soudris and George Economakos

On site Lunch break: 13:45 - 14:40

Invited talk: 14:45 - 15:40

Chairman: Prof. Syed Kamrul Islam, University of Tennessee, USA

Challenges and perspectives of computer architecture beyond CMOS

Christian Garmat, CEA List, France

Session M1A: 15:45 - 17:25

VLSI Design Issues (continued)

Chairman: Theocharis Theocharides, University of Cyprus, Cyprus

- 1. Self-Freeze Linear Decompressors for Low Power Testing**
Vasileios Tenentes and Chrysovalantis Kavousianos
- 2. Logical Core Algorithm: Improving Global Placement**
Felipe Pinto, Lucas Cavalheiro, Marcelo Johann and Ricardo Reis
- 3. Safety Aware Place and Route for On-Chip Redundancy in Safety Critical Applications**
Romuald Girardey, Michael Hubner and Jurgen Becker
- 4. Inter-Process Communication using Pipes in FPGA-based Adaptive Computing**
Ming Liu, Zhonghai Lu, Wolfgang Kuehn and Axel Jantsch
- 5. Highly Efficient Transforms Module Solution for a H.264/SVC Encoder**
Ronaldo Husemann, Altamiro Susin, Valter Roesler and Jose Valdeni

Session: M2B: 15:45 - 17:25

Cryptographic Hardware Engineering

Chairman: Prof. Nicolas Sklavos, Technological Educational Institute of Patra, Greece

- 1. BLAKE Hash Functions Family on FPGA: From the Fastest to the Smallest**
Nicolas Sklavos and Paris Kitsos
- 2. Differential Power Analysis of CAST-128**
Kean Hong Boey, Yingxi Lu, Maire O'Neill and Roger Woods
- 3. QCA Systolic Matrix Multiplier**
Liang Lu, Weiqiang Liu, Maire O'Neill and Earl Swartzlander Jr.
- 4. Hardware Module Design for Ensuring Trust**
Apostolos Fournaris

Coffee Break: 17:30 - 17:55

Session: M2A: 18:00 - 20:00

Reconfigurable Systems

Chairman: Vijaykrishnan Narayanan, Pennsylvania State University, USA

- 1. Accelerating Numerical Linear Algebra Kernels on a Scalable Run Time Reconfigurable Platform**
Prasenjit Biswas, Pramod P Udupa, Rajdeep Mondal, Keshavan Varadarajan, Mythri Alle, S. K Nandy and Ranjani Narayan
- 2. Task Dispersal Measurement in Dynamic Reconfigurable NoCs**
Mohammad Hosseinabady and Jose Nunez-Yanez
- 3. Defect and Variation Issues on Design Mapping of Reconfigurable Nanoscale Crossbars**
Behnam Ghavami, Alireza Tajari, Mohsen Raji and Hossein Pedram
- 4. ASIC Design of Adaptive Control Unit for Reconfigurable Analog-to-Digital Converter**
Zulhakimi Razak, Ahmet Erdogan and Tughrul Arslan
- 5. A Calibration Circuit for Reconfigurable Smart ADC for Biomedical Signal Processing**
Salwa Mostafa, Syed Islam, Wenchao Qu and Mohamed Mahfouz
- 6. Fast Sequential FPGA Startup based on partial and dynamic Reconfiguration**
Michael Huebner, Joachim Meyer, Juanjo Noguera, Rodney Steward and Jurgen Becker

Session M3B: 18:00 - 20:00

Physical design

Chairman: Prof. Amar Mukherjee, University of Central Florida, USA

- 1. A Body Biasing Method For Charge Recovery Circuits: Improving The Energy Efficiency and DPA-Immunity**
Mehrdad Khatir and Alireza Ejlali
- 2. Memory-less Pipeline Dynamic Circuit Design Technique**
Themistoklis Haniotakis, Zaher Owda and Yiorgos Tsiatouhas
- 3. A Floating Gate MOSFET Based Current Reference with Subtraction Technique**
V. Sureshbabu, P.S. Haseena and M.R. Baiju
- 4. A low power, high performance threshold logic-based standard cell multiplier in 65 nm CMOS**
Samuel Leshner, Krzysztof Berezowski, Xiaoyin Yao, Gayathri Chalivendra, Saurabh Patel and Sarma Vrudhula
- 5. Pattern-Driven Clock Tree Routing with Via Minimization**
Ali Mohammadi Farhangi and Asim Al-Khalili
- 6. Ultra-Low-Power Sensor Signal Monitoring and Impulse Radio Architecture for Biomedical Applications**
Mohammad Haider, Ashraf Islam and Syed Islam

Opening Ceremony

(Meeting point: Conference Center at 20:45)

Iakovateios Library

- 21:00 - 21:10 **Conference Welcome** *ISVLSI 2010 Organizing Committee*
- 21:10 - 21:20 **Welcome Salutation** *Mr Dionysios Georgatos, Prefect of Kefalonia and Ithaca*
- 21:20 - 21:30 **Welcome Salutation** *Mrs Nopi Alexandropoulou - Charitatos, Mayor of Lixouri*
- 21:30 - 21:45 **Kefalonia - The hidden Treasure of Greece** *Mrs Evi Douka, Prefecture of Kefalonia & Ithaca*
- 21:45 - 22:15 **Traditional Kefalonian Dances & Cocktail** *Dancing Group of Municipality of Paliki*

Tuesday - July 6th 2010

Invited talk: 9:00 - 09:55

Chairman: Prof. Chrysovalantis Kavousianos, University of Ioannina, Greece

Digital Microfluidic Biochips: A Vision for Functional Diversity and More than Moore

Professor Krishnendu Chakrabarty, Department of Electrical and Computer Engineering, Duke University

Session T1: 10:00 - 11:25

Research Project Workshop

Chairmen: Prof. Dimitrios Soudris, National Technical University of Athens, Greece

Prof. Nicolas Sklavos, Technological Educational Institute of Patras, Greece

- MULTICUBE: Multi-Objective Design Space Exploration of Multi-Core Architectures**
Cristina Silvano, William Fornaciari, Gianluca Palermo, Vittorio Zaccaria, Fabrizio Castro, Marcos Martinez, Sara Bocchio, Roberto Zafalon, Prabhat Avastare, Geert Vanmeerbeeck, Chantal Ykman-Couvreur, Maryse Wouters, Carlos Kavka, Luka Onesti, Alessandro Turco, Umberto Bondi, Giovanni Mariani, Hector Posadas, Eugenio Villar, Chris Wu, Fan Dongrui, Zhang Hao, Tang Shibin
- 2PARMA: Parallel Paradigms and Run-time Management Techniques for Many-Core Architectures**
C. Silvano, W. Fornaciari, S. Crespi Reghizzi, G. Agosta, G. Palermo, V. Zaccaria, P. Bellasi, F. Castro, S. Corbetta, A. Di Biagio, E. Speziale, M. Tartara, D. Siorpaes, H. Hübert, B. Stabernack, J. Brandenburg, M. Palkovic, P. Raghavan, C. Ykman-Couvreur, A. Bartzas, S. Xydis, D. Soudris, T. Kempf, G. Ascheid, H. Meyr, J. Ansari, P. Mähönen, B. Vanthournout
- System Level Design for Embedded Reconfigurable Systems using MORPHEUS platform**
Paul Brelet, Arnaud Grasset, Philippe Bonnot, Frank Ieromnimon, Dimitrios Kritharidis and Nikolaos Voros

Coffee Break: 11:30 - 11:55

Invited talk: 12:00 - 12:25

Chairman: Dr Nikolaos Moschopoulos, Sitel Semiconductor Hellas S.A., Greece

Innovating to address market opportunities & technology challenges: HSIA case studies

Dr. George Koutsoyannopoulos, Hellenic Semiconductors Industry Association, CEO of Helic Inc

Session T1: 12:30 - 13:55

Research Project Workshop (continued)

Chairmen: Prof. Dimitrios Soudris, National Technical University of Athens, Greece

Prof. Nicolas Sklavos, Technological Educational Institute of Patras, Greece

- The SATURN Approach to SysML-based HW/SW Codesign**
Wolfgang Mueller, Da He, Fabian Mischkalla, Arthur Wegele, Paul Whiston, Nikolaos Mitas, Dimitrios Kritharidis, Pablo PeÑil, Eugenio Villar, Florent Azcarate, Manuel Carballeda
- Mapping embedded applications on MPSoC - The MNEMEE approach**
Christos Baloukas, Lazaros Papadopoulos, Dimitrios Soudris, Sander Stuijk, Olivera Jovanovic, Florian Schmoll, Daniel Cordes, Robert Pyka, Arindam Mallik, Stylianos Mamagkakis, François Capman, Séverin Collet, Nikolaos Mitas, Dimitrios Kritharidis
- Mapping Optimisation for Scalable multi-core ARchiTecture: The MOSART approach**
Sylvain Aguirre, Michel Sarlotte, Bernard Candaele, Iraklis Anagnostopoulos, Sotirios Xydis, Alexandros Bartzas, Dimitris Bekiaris, Dimitrios Soudris, Zhonghai Lu, Xiaowen Chen, Sandro Penolazzi, Jean-Michel Chabloz, Axel Jantsch, Ahmed Hemani, Geert Vanmeerbeeck, Jari Kreku, Kari Tiensyrj, Nikolaos Mitas, Dimitrios Kritharidis, Andreas Wiefink, Bart Vanthournout, Philippe Martin

On site Lunch break: 14:00 - 14:55

Invited talk: 15:00 - 15:55

Chairman: Dr Michael Huebner, KIT - Karlsruhe Institute of Technology, Germany

Small worlds: the dynamics of NoCs in tomorrow SoC architecture

Marcello Coppola, R&D Director, STMicroelectronics

Session: T2A: 16:30 - 19:30**Poster Session**

Chairman: Dr Michael Huebner, KIT - Karlsruhe Institute of Technology, Germany

1. **P1: A Novel, Variable Resolution Flash ADC with Sub Flash Architecture**
Mahesh Kumar A, Sreehari V, Moorthy Muthukrishnan N and Srinivas M.B
2. **P2: Bitstream Efficiency of Field Programmable One-Hot Arrays**
Mark Arnold, Panagiotis Vouzis and Jung Cho
3. **P3: A Family of Area-Time Efficient Modulo 2^{n+1} Adders**
Haridimos Vergos
4. **P4: A High-Level Mapping Algorithm Targeting 3D NoC Architectures with Multiple Vdd**
Kostas Siozos, Iraklis Anagnostopoulos and Dimitrios Soudris
5. **P5: Towards supporting Fault-Tolerance in FPGAs**
Kostas Siozos, Dimitrios Soudris and Dionisios Pneumatikatos
6. **P6: Combining Unspecified Test Data Bit Filling Methods and Run Length Based Codes to Estimate Compression, Power and Area overhead**
Usha Mehta, Kankar Dasgupta and Niranjan Devashrayee
7. **P7: A Novel On-Chip Interconnection Topology for Mesh-Connected Processor Arrays**
Xiaofang Wang
8. **P8: BBVC-3D-NoC: An Efficient 3D NoC Architecture Using Bidirectional Bistynchronous Vertical Channels**
Amir-Mohammad Rahmani, Pasi Liljeberg, Juha Plosila and Hannu Tenhunen
9. **P9: Generation and Exploration of Layouts for Area-Efficient Barrel Shifters**
Alen Bardzibanyan, Kasyab P. Subramaniyan and Per Larsson-Edefors
10. **P10: A Reverse Converter for the Enhanced Moduli Set $\{2n-1, 2n+1, 22n, 22n+1-1\}$ Using CRT and MRC**
Amir Sabbagh Molahosseini and Keivan Navi
11. **P11: Impact of Process Variations on Flip-Flops Energy and Timing Characteristics**
Marco Lanuzza, Pasquale Corsonello, Fabio Frustaci and Stefania Perri
12. **P12: Side Channel Attacks Cryptanalysis Against Block Ciphers Based on FPGA Devices**
Anestis Bechtsoudis and Nicolas Sklavos
13. **P13: Supporting Efficient Synchronization in Multi-core NoCs Using Dynamic Buffer Allocation Technique**
Xiaowen Chen, Zhonghai Lu, Axel Jantsch and Shuming Chen
14. **P14: Autonomous Design in VLSI: Growing and Learning on Silicon**
Ludovic Krundel, David Mulvaney and Vassilios Chouliaras

Session: T2B: 16:30 - 19:30**PhD Forum**

Chairman: Michael Huebner, KIT -Karlsruhe Institute of Technology, Germany

1. **PF1: High-Performance TSV Architecture for 3-D ICs**
Masoud Daneshtalab, Masoumeh Ebrahimi and Hannu Tenhunen
2. **PF2: Mixed-Signal Diverse Redundant System for Safety Critical Applications in FPGA**
Romuald Girardey, Michael Hübner and Jürgen Becker
3. **PF3: Design Automation and Analysis of Resonant Rotary Clocking Technology in Multi-GHz Range**
Vinayak Honkote
4. **PF4: System Level Design of Complex Hardware Applications using ImpulseC**
Georgia Kalogeridou, Nikolaos S. Voros and Konstantinos Masselos
5. **PF5: Two-dimensional dynamic multigrained reconfigurable hardware**
Lars Braun and Jürgen Becker
6. **PF6: FPGA-based Runtime Adaptive Multiprocessor Approach for Embedded High Performance Computing Applications**
Diana Goehring and Juergen Becker
7. **PF7: Performance Analysis of 3D NoCs Partitioning Methods**
Masoumeh Ebrahimi, Masoud Daneshtalab, Pasi Liljeberg and Hannu Tenhunen
8. **PF8: Autonomous Design in VLSI: an In-House Universal Cellular Neural Platform**
Ludovic Krundel, David Mulvaney and Vassilios Chouliaras
9. **PF9: High-Level Synthesis Methodologies for Delay-Area Optimized Coarse-Grained Reconfigurable Coprocessor Architectures**
Sotirios Xydis, Kiamal Pekmestzi, Dimitrios Soudris and George Economakos

Official Conference Banquet

(Meeting point: Conference Centre at 20:45)

21:30 - 21:40	ISVLSI 2010 Best Paper Award <i>Conference Organizing Committee</i>
21:40 - 21:50	ISVLSI 2010 Best PhD Forum Award <i>Conference Organizing Committee</i>
22:00 -	Dinner with traditional Kefalonian music (Kantades)

Wednesday - July 7th 2010

Invited talk: 09:00 - 09:55

Chairman: Prof. Nicolas Sklavos, Technological Educational Institute of Patra, Greece

Reconfigurable Architectures for Bioinformatics Applications

Professor Apostolos Dollas, Department of Electronic and Computer Engineering, Technical University of Crete

Session W1A: 10:00 - 12:00

Advanced Mixed Signal Design

Chairman: Prof. Syed Kamrul Islam, University of Tennessee, USA

- Simulation Based Feasibility Study of Wireless RF Interconnects for 3D ICs**
Ankit More and Baris Taskin
- Testing Parametric and Catastrophic Faults in Mixed-Signal Integrated Circuits using Wavelets**
Alexios Spyronasios, Michael Dimopoulos, Nikolas Papadopoulos and Alkis Hatzopoulos
- A Receiver Circuit for Low-Swing Interconnect Schemes**
Yannis Moisiadis and Yiorgos Tsiatouhas
- An 8-bit Voltage Mode Analog to Digital Converter Based on Integer Division**
Nikos Petrellis, Michael Birbas, John Kikidis and Alexios Birbas
- DC Offset Modeling and Noise Minimization for Differential Amplifier In Subthreshold Operation**
Kapil Rajput, Anil Saini and SC Bose
- Fast Evaluation of Analog Circuits Using Linear Programming**
Zach Cashero, Allen Chen, Ryan Hoppal and Tom Chen

Session W1B: 10:00 - 12:00

Advanced High-Performance Design Techniques

Chairman: Prof. Cristina Silvano, Politecnico di Milano, Italy

- Low Power Single Electron OR/NOR Gate Operating at 10 GHz**
Thomas Tsiolakis, George Alexiou and Nikos Konofaos
- Performance Optimization of Conventional MOS-like Carbon Nanotube-FETs based on Dual-gate-material**
Hailiang Zhou, Minxuan Zhang, Liang Fang and Yue Hao
- A Mesh-buffer Displacement Optimization Strategy**
Guilherme Flach, Gustavo Wilke, Marcelo Johann and Ricardo Reis
- BLAS Comparison on FPGA, CPU and GPU**
Srinidhi Kestur, John Davis and Oliver Williams
- Novel architecture for highly hardware efficient implementation of real time Matrix Inversion using Gauss Jordan technique**
Chandranath Vipparla and Ramachandra Kuloor

Coffee Break: 12:05 - 12:30

Session W1A: 12:35 - 13:35

Advanced Mixed Signal Design (continued)

*Chairmen: Prof. Vassileios Triantafyllou, Technological Educational Institute of Messolonghi, Greece
Prof. Spyros Louvros, Technological Educational Institute of Messolonghi, Greece*

- FGMOS based built-in current sensor for low supply voltage analog and mixed-signal circuits testing**
Stylianos Siskos
- A Sub-1 μ A Low-Power FSK Modulator for Biomedical Sensor Circuits**
Kai Zhu, Mohammad Haider, Song Yuan and Syed Islam
- Design of a Bandgap Reference Circuit with Trimming for Operation at Multiple Voltages and Tolerant to Radiation in 90nm CMOS Technology**
Eva Vilella and Angel Dieguez

Session W2B: 12:35 - 13:35

Design for Reliability

Chairman: Dr. Nikolaos Moschopoulos, Sitel Semiconductor Hellas S.A., Greece

- Reliability Analysis and Improvement in Nano Scale Design**
Mahtab Niknahad, Michael Huebner and Juergen Becker
- Reliability-Aware Dynamic Voltage and Frequency Scaling**
Farshad Firouzi, mostafa Salehi, Fan Wang and S. M. Fakhraie
- TRB: Tag Replication Buffer for Enhancing the Reliability of the Cache Tag Array**
Shuai Wang, Jie Hu and Sotirios G. Ziavras

On site Lunch break: 13:45 - 14:40

Session: W2A: 14:45 - 16:45

Architecture - Level Design Solutions

Chairman: Marcello Coppola, R&D Director, STMICROELECTRONICS

1. **A Delay Model of Two-Cycle NoC Router in 2D-Mesh Network**
QI Shubo, LI Jinwen, XING Zuocheng, JIA Xiaomin, ZHANG Minxuan
2. **Tree-Based Routing for Faulty On-Chip Networks with Mesh Topology**
Hsin-Chou Chi, Yu-Hong Chang and Wen-Su Chen
3. **A Hierarchical Hybrid Optical-Electronic Network-on-Chip**
Kwai Hung Mo, Yaoyao Ye, Xiaowen Wu, Wei Zhang, Weichen Liu and Jiang Xu
4. **A High Throughput Low Power FIFO used for GALS NoC Buffers**
Mohammad Fattah, Abdurrahman Manian, Abbas Rahimi and Siamak Mohammadi
5. **An Artificial Neural Network-Based Hotspot Prediction Mechanism for NoCs**
Elena Kakoulli, Vassos Soteriou and Theocharis Theocharides
6. **A Homogeneous MPSoC with Dynamic Task Mapping for Software Defined Radio**
Camille Jalier, Didier Lattard, Gilles Sassatelli, Pascal Benoit and Lionel Torres

Session W3B: 14:45 - 16:45

Emerging Devices for Memory Design and Nanocomputing

Chairmen: Prof. Dimitrios Soudris, National Technical University of Athens, Greece
Prof. Spyros Louvros, Technological Educational Institute of Messolonghi, Greece

1. **Recovery Boosting: A Technique to Enhance NBTI Recovery in SRAM Arrays**
Taniya Siddiqua and Sudhanva Gurumurthi
2. **XMSIM: EXtensible Memory SIMulator for Early Memory Hierarchy Evaluation**
Theodoros Lioris, Grigoris Dimitroulakos and Kostas Masselos
3. **Modeling and Simulation of Multi-Operation Microcode-based Built-In Self Test for Memory Fault Detection and Repair**
R.K. Sharma and Aditi Sood
4. **A novel 1.8V, 1066Mbps, DDR2, DFI-compatible, Memory Interface**
Alexis Alexandropoulos, Efthimios Davrazos, Fotis Plessas and Michael Birbas
5. **A New Low-Power Soft-Error Tolerant SRAM Cell**
Nicholas Axelos, Kiamal Pekmestzi and Nikolaos Moschopoulos
6. **The impact of process faults on specific parameters of a 1.9GHz CMOS mixer**
Anastasios Karagounis, Basilis Kotsos, Nikolaos Assimakis, Athanasios Polyzos and Eyrikleia Petropoulou

Coffee Break: 16:50 - 17:15

Session: W2A: 17:20 - 18:40

Architecture-Level Design Solutions (continued)

Chairman: Mutyam Madhu Indian Institute of Technology, Madras, India

1. **Stochastic Automata Network Based Approach for Performance Evaluation of Network-on-Chip Communication Architecture**
Ulhas Deshmukh and Vineet Sahula
2. **Accurate Asynchronous Network-on-Chip Simulation Based on a Delay-Aware Model**
Naoya Onizawa, Tomoyoshi Funazaki, Atsushi Matsumoto and Takahiro Hanyu
3. **An Analytical Framework with Bounded Deflection Adaptive Routing for Networks-on-Chip**
Pavel Ghosh, Arvind Ravi and Arunabha Sen
4. **Hybrid QoS method for Networks-on-Chip**
Shijun Lin, Jianghong Shi and Huihuang Chen

Session W3C: 17:20 - 18:40

Novel System Design Trends with Emerging Technologies

Chairman: Prof. Dimitrios Soudris, National Technical University of Athens, Greece

1. **Improved Yield in Nanotechnology Circuits using Non-square Meshes**
Nikolaos Mavrogiannakis, Costas Argyrides and Dhiraj Pradhan
2. **Dynamic Power Management on LDPC Decoders**
Erick Amador, Raymond Knopp, Vincent Rezard and Renaud Pacalet
3. **Implementation Analysis of a Dynamic Energy Management Approach Inspired by Game-Theory**
Imen mansouri, Camille jalier, Fabien Clermidy, Pascal Benoit and Lionel Torres
4. **Data-flow Driven Equivalence Checking for Verification of Code Motion Techniques**
Chandan Karfa, Dipankar Sarkar and Chittaranjan Mandal

Closing Session: 19:00 - 19:30

Sponsors



TECHNOLOGICAL
EDUCATIONAL
INSTITUTE
OF MESSOLONGHI



Department of Telecommunications
Systems and Networks



GREEK REPUBLIC
Prefecture of Kefalonia
Municipality of Paliki



IEEE Greece GOLD
Affinity Group



University of
PELOPONNESE



G-Systems



INFO ISTOS
ΠΛΗΡΟΦΟΡΙΚΗ