

Vittorio Zaccaria

CURRICULUM UPDATE - 2013 / 2018

Since 2013, I have expanded my interests to functional programming and domain specific languages with a focus on hardware synthesis. Recently (2017 and 2018) I have helped introduce some novel theoretical results in the field of cryptographic circuits which have been published on IEEE Transactions on Computers. In 2015 and 2017 I have been awarded with two grants from industrial partners for devising a reliable design methodology for cryptographic circuits protected against correlation power attacks.

GRANTS AS A PRINCIPAL INVESTIGATOR

- From 2017 to 2018 grant for **Metodologia e Strumenti per la Valutazione di Circuiti Crittografici** from STMicroelectronics, grant type: Grant from industrial partner,
- From 2015 to 2016 grant for **Strumenti di Progettazione e Verifica per Circuiti Crittografici** from STMicroelectronics, grant type: Grant from industrial partner

RESEARCH

Important publications from 2013

Spectral features of higher-order side-channel countermeasures. V. Zaccaria, F. Melzani, G. Bertoni. IEEE Transactions on Computers - 2018 - [\[Link\]](#)

Symbolic analysis of higher-order side channel countermeasures. E. Bisi, F. Melzani, V. Zaccaria. IEEE Transactions on Computers - 2017 - [\[Link\]](#)

SPIRIT: Spectral-Aware Pareto Iterative Refinement Optimization for Supervised High-Level Synthesis. S. Xydis, G. Palermo, V. Zaccaria, C. Silvano. IEEE Transactions on Computer Aided Design of Integrated Circuits - 2015 - [\[Link\]](#)

Design Space Exploration and Run-time Resource Management for Multi-cores. G. Mariani, G. Palermo, V. Zaccaria, C. Silvano. ACM Transactions on Embedded Computing Systems (TECS) - 2013 - [\[Link\]](#)

Other publications from 2013

On the Role of Context in the Design of Mobile Mashups. V. Cassani, S. Gianelli, M. Matera, R. Medana, E. Quintarelli, L. Tanca, V. Zaccaria. Rapid Mashup Development Tools: Second International Rapid Mashup Challenge, RMC 2016, Lugano, Switzerland, June 6, 2016, Revised Selected Papers - 2017 - [\[Link\]](#)

Combining application adaptivity and system-wide Resource Management on multi-core platforms. G. Massari, E. Paone, P. Bellasi, G. Palermo, V. Zaccaria, W. Fornaciari, C. Silvano. Proceedings of SAMOS 2014: XIVth International Conference on Embedded Computer Systems: Architectures, Modeling, and Simulation - 2014 - [\[Link\]](#)

OpenCL Application Auto-tuning and Run-Time Resource Management for Multi-core Platforms. D. Gadioli, S. Libutti, G. Massari, E. Paone, M. Scandale, P. Bellasi, G. Palermo, V. Zaccaria, G. Agosta, W. Fornaciari, C. Silvano. Proceedings of ISPA 2014: IEEE International Symposium on Parallel and Distributed Processing with Applications - 2014 - [\[Link\]](#)

Evaluating orthogonality between application auto-tuning and run-time resource management for adaptive OpenCL applications. E. Paone, D. Gadioli, G. Palermo, V. Zaccaria, C. Silvano. Proceedings of ASAP 2014: IEEE 25th International Conference on Application-Specific Systems, Architectures and Processors - 2014 - [\[Link\]](#)

Data Parallel Application Adaptivity and System-Wide Resource Management in Many-Core Architectures. G. Massari, E. Paone, M. Scandale, P. Bellasi, G. Palermo, V. Zaccaria, G. Agosta, W. Fornaciari, C. Silvano. Proceedings of ARC 2014: Reconfigurable Computing: Architectures, Tools, and Applications - 10th International Symposium - 2014 - [\[Link\]](#)

Run-time Optimization of a Dynamically Reconfigurable Embedded System Through Performance Prediction. G. Mariani, V. Sima, G. Palermo, V. Zaccaria, G. Marchiri, C. Silvano, K. Bertels. Proceedings of FPL 2013: International Conference on Field Programmable Logic and Applications - 2013 - [\[Link\]](#)

DeSpErate: Speeding-up Design Space Exploration by using Predictive Simulation Scheduling. G. Mariani, G. Palermo, V. Zaccaria, C. Silvano. Proceedings of DATE 2014: International Conference on Design, Automation and Test in Europe - 2014 - [\[Link\]](#)

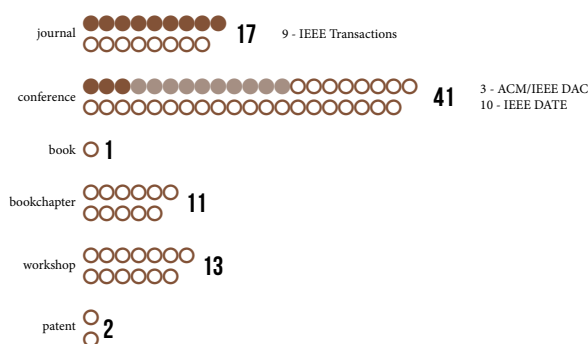
A Framework for Compiler Level Statistical Analysis over Customized VLIW Architecture. A. Ashouri, V. Zaccaria, S. Xydis, G. Palermo, C. Silvano. Proceedings of VLSI-SoC 2013: International Conference on Very Large Scale Integration and System-on-Chip - 2013 - [\[Link\]](#)

ARTE: An Application-specific Run-Time management framework for multi-cores based on queuing models. G. Mariani, G. Palermo, V. Zaccaria, C. Silvano. Parallel Computing - 2013 - [\[Link\]](#)

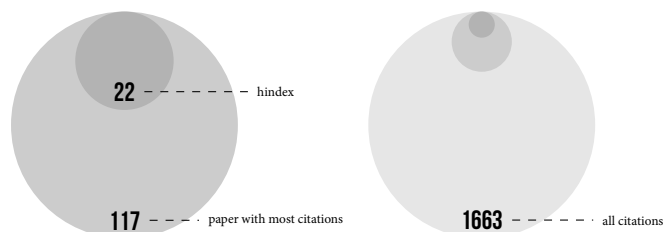
Improving Simulation Speed and Accuracy for Many-Core Embedded Platforms with Ensemble Models. E. Paone, N. Vahabi, V. Zaccaria, C. Silvano, D. Melpignano, G. Haugou, T. Lepley. Proceedings of DATE 2013: International Conference on Design, Automation and Test in Europe - 2013 - [\[Link\]](#)

A Meta-Model Assisted Coprocessor Synthesis Framework for Compiler/Architecture Parameters Customization. S. Xydis, G. Palermo, V. Zaccaria, C. Silvano. Proceedings of DATE 2013: International Conference on Design, Automation and Test in Europe - 2013 - [\[Link\]](#)

Publication statistics



Bibliometric indexes



From Google Scholar profile - February 22, 2018

TEACHING

Titolare

- **Informatica B** at Politecnico di Milano - titolare: Vittorio Zaccaria ('17/18, '16/17, '15/16, '14/15, '13/14, '12/13 - crediti totali: 42)

Teaching assistant (Esercitatore)

- **Informatica B** at Politecnico di Milano - titolare: Vittorio Zaccaria ('17/18, '16/17, '14/15) - ore totali: 74 ,
- **Hypermedia Applications (Web and multimedia)** at Politecnico di Milano - titolare: Franca Garzotto ('16/17) - ore totali: 20 ,
- **Architettura dei Calcolatori e Sistemi Operativi** at Politecnico di Milano - titolare: Roberto Negrini ('14/15, '13/14) - ore totali: 21

VITTORIO ZACCARIA

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Education

- June 1998: MASTER in COMPUTER ENGINEERING at Politecnico di Milano, Italy. Thesis topic: Java agents for a distributed file system.
- November 2002: PH.D in COMPUTER ENGINEERING at Politecnico di Milano, Italy. Thesis topic: "Power consumption estimation and optimization of VLIW processors. Sponsored by STMicroelectronics."

Current position

Assistant Professor at Politecnico di Milano - Milan, Italy.

Areas of specialization

Computer aided design of digital circuits. Multi-processor design space exploration. Low-power and high-performance design. Parallel processor architectures. Advanced parallel programming paradigms. Compilation and simulation methodologies for multi-processor-based systems.

Appointments held

2009 — : Assistant Professor, Politecnico di Milano - Milan, Italy

- Appointed as Principal Investigator for an industrial collaboration grant from STMicroelectronics related to the design cryptographic hardware using functional programming languages.
- Specified and developed the ReSPIR optimization algorithm for processor/SoC optimization. It enables efficient IP reuse in the context of virtual platforms (10x reduction in time, less than 1 percent error w.r.t. ideal).
- Successfully brought a team of 5 people to prototype a new type of video-surveillance system in the context of the 2PARMA FP7 European Project.
- Led a team of 3 engineers to prototype a research software tool for processor customization. Prototypes were delivered on-time and within budget of several european FP7 projects.

2004 — 2007 : R&D Engineer, STMicroelectronics - Lugano, Switzerland

- Specified, prototyped and validated several ST200 processor architectural extensions. Vertical validation of the extensions from the ISA up to the application-layer/OS.
- Enabled secure co-hosting of more operating systems by means of secure storage extensions of the ST200 architecture.
- Collaborated to the specification, validation (by means of functional and timing simulation) and architectural exploration for symmetric multi-processing based on ST200.
- Architectural specification and design of multi-threaded architectures based on stream-programming paradigms.

2003 — 2004 : Research Consultant, STMicroelectronics - Milan, Italy

- Pioneered the field of Power Modeling of VLIW Cores (10 percent error RTL vs Gate-level).
- Introduced an effective methodology to minimize the effort of design of experiments for NoC power models (10x reduction in characterization time, 33 percent error).

2007 — 2009 : Research Associate, Politecnico di Milano - Milan, Italy

- Introduced advanced techniques for managing design of experiments and response surface methods in automatic design space exploration for multi-processors.
- Extended classical design space exploration to tackle the problem of process-variability-aware design of multi-processors.

Grants and funding

- 2017 - 2018: Grant from industrial partner from STMicroelectronics for the project *Metodologia e Strumenti per la Valutazione di Circuiti Crittografici*. Role: *Principal investigator*. Amount: 30000 EUR.
- 2015 - 2016: Grant from industrial partner from STMicroelectronics for the project *Strumenti di Progettazione e Verifica per Circuiti Crittografici*. Role: *Principal investigator*. Amount: 30000 EUR.
- 2001 - 2003: Post-Doc Grant from Politecnico di Milano for the project *Power estimation and exploration of the architectural space at the system level for systems-on-chip*. Role: *Post Doc*.
- 2007 - 2009: Research Grant from Politecnico di Milano for the project *Multi-Objective Design Space Exploration of Multi-Processor SOC Architectures for Embedded Multimedia Applications*.
- 1999 - 2001: Ph.D. Fellowship from STMicroelectronics for the project *Methodologies for Power Estimation for VLIW Machines*.

Teaching activity

He has been in full charge (*Titolare*) of the following courses

- AY 2010/2011 – Course: Informatica B - Credits: 7 - Laurea di primo livello in Ingegneria Meccanica ed Energetica, Politecnico di Milano.
- AY 2011/2012 – Course: Informatica B - Credits: 7 - Laurea di primo livello in Ingegneria Meccanica ed Energetica, Politecnico di Milano.
- AY 2012/2013 – Course: Informatica B - Credits: 7 - Laurea di primo livello in Ingegneria Meccanica ed Energetica, Politecnico di Milano.
- AY 2013/2014 – Course: Informatica B - Credits: 7 - Laurea di primo livello in Ingegneria Meccanica ed Energetica, Politecnico di Milano.
- AY 2014/2015 – Course: Informatica B - Credits: 7 - Laurea di primo livello in Ingegneria Meccanica ed Energetica, Politecnico di Milano.
- AY 2015/2016 – Course: Informatica B - Credits: 7 - Laurea di primo livello in Ingegneria Meccanica ed Energetica, Politecnico di Milano.
- AY 2016/2017 – Course: Informatica B - Credits: 7 - Laurea di primo livello in Ingegneria Meccanica ed Energetica, Politecnico di Milano.
- AY 2017/2018 – Course: Informatica B - Credits: 7 - Laurea di primo livello in Ingegneria Meccanica ed Energetica, Politecnico di Milano.

Seminars (*seminari didattici*):

- AY 1999/2000 – Course: Advanced Computer Architectures – Held by: Donatella Sciuto - Master of Science in Electrical Engineering, University of Illinois at Chicago and Politecnico di Milano for 20 hours.
- AY 2000/2001 – Course: Sistemi Operativi 1 – Held by: William Fornaciari - Laurea quinquennale in Ingegneria Informatica, Politecnico di Milano for 15 hours.
- AY 2000/2001 – Course: Advanced Computer Architectures – Held by: Donatella Sciuto - Master of Science in Electrical Engineering, University of Illinois at Chicago and Politecnico di Milano for 20 hours.
- AY 2001/2002 – Course: Advanced Computer Architectures – Held by: Donatella Sciuto - Master of Science in Electrical Engineering, University of Illinois at Chicago and Politecnico di Milano for 20 hours.
- AY 2001/2002 – Course: Calcolatori Elettronici – Held by: Mariagiovanna Sami - Laurea quinquennale in Ingegneria Informatica, Politecnico di Milano for 20 hours.
- AY 2003/2003 – Course: Calcolatori Elettronici – Held by: Anna Antola - Laurea quinquennale in Ingegneria Informatica, Politecnico di Milano for 20 hours.

- AY 2008/2009 – Course: Informatica B – Held by: Danilo Ardagna - Laurea di primo livello in Ingegneria Elettrica, Politecnico di Milano for 15 hours.
- AY 2009/2010 – Course: Informatica ed Elementi di Informatica Medica – Held by: Gianluca Palermo. - Laurea di primo livello in Ingegneria Biomedica, Politecnico di Milano for 17 hours.
- AY 2009/2010 – Course: Architectures for Multimedia Systems – Held by: Cristina Silvano - Laurea specialistica in Ingegneria Informatica, Politecnico di Milano for 20 hours.
- AY 2009/2010 – Course: Informatica B – Held by: Danilo Ardagna - Laurea di primo livello in Ingegneria Elettrica, Politecnico di Milano for 11 hours.
- AY 2009/2010 – Course: Architettura dei Calcolatori e Sistemi Operativi – Held by: Cristina Silvano - Laurea di primo livello in Ingegneria Informatica, Politecnico di Milano for 38 hours.
- AY 2010/2011 – Course: Informatica ed Elementi di Informatica Medica – Held by: Gianluca Palermo. - Laurea di primo livello in Ingegneria Biomedica, Politecnico di Milano for 24 hours.
- AY 2013/2014 – Course: Architettura dei Calcolatori e Sistemi Operativi – Held by: Roberto Negrini - Laurea di primo livello in Ingegneria Informatica, Politecnico di Milano for 11 hours.
- AY 2014/2015 – Course: Informatica B – Held by: Vittorio Zaccaria - Laurea di primo livello in Ingegneria Meccanica ed Energetica, Politecnico di Milano for 18 hours.
- AY 2014/2015 – Course: Architettura dei Calcolatori e Sistemi Operativi – Held by: Roberto Negrini - Laurea di primo livello in Ingegneria Informatica, Politecnico di Milano for 10 hours.
- AY 2016/2017 – Course: Informatica B – Held by: Vittorio Zaccaria - Laurea di primo livello in Ingegneria Meccanica ed Energetica, Politecnico di Milano for 28 hours.
- AY 2016/2017 – Course: Hypermedia Applications (Web and multimedia) – Held by: Franca Garzotto - Laurea magistrale in Ingegneria Informatica, Politecnico di Milano for 20 hours.
- AY 2017/2018 – Course: Informatica B – Held by: Vittorio Zaccaria - Laurea di primo livello in Ingegneria Meccanica ed Energetica, Politecnico di Milano for 28 hours.

Award, prizes academic honors

- 2002 - Dimitris N. Chorafas Award, for the exceptional contribution to the state of the art of research in processor architecture.
- 2010 - HiPEAC Award, as a co-author of 'A Correlation-Based Design Space Exploration Methodology for Multiprocessor Systems-on-Chip' published at DAC 2010.
- 2012 - Idea2Product, 2nd r. up, for creating a valuable opportunity for product commercialization of research results.

Graduate students co-advised

Since 2001, he co-advised the following students in their Master-equivalent theses:

1. 2016 — Stefano Gianelli and Valerio Cassani, Thesis title: *Progettazione di mashup per dispositivi mobili un metodo basato sulla modellazione di contesto.*
2. 2017 — Stefano Lucchi and Davide Fava, Thesis title: *Mash-up based service and data integration in the CAMUS framework.*
3. 2017 — Lorenzo Delledonne, Thesis title: *A methodology based on functional languages for the design of hardware cryptographic primitives resistant to side-channel attacks.*
4. Simone Borgio and Davide Bosisio, Thesis title: *OpenStreamC - a development framework for streaming applications.*
5. Zhong Yi Hu, Thesis title: *Power modeling of Networks-on-chip.*
6. Fabrizio Lucini, Thesis title: *Specification and design of a prefetch unit for translating code at run-time.*
7. Simone Valsecchi, Thesis title: *An algorithm for the efficient exploration of the architectural design space for microprocessor-based systems.*
8. Gianluca Palermo, Thesis title: *A methodology for architectural exploration and information encoding for low-power digital systems.*
9. Alessandro Molgora and Claudio Lozza, Thesis title: *Low-power state encoding techniques for finite state machines.*
10. Marco Gavazzi, Thesis title: *Low-power VLIW re-scheduling algorithms.*
11. Lorenzo Salvemini, Thesis title: *An architectural exploration methodology for low-power digital systems.*
12. Andrea Bona, Thesis title: *A design of experiments methodology in a power estimation flow for VLIW processors.*

He has overseen part of the work of the following Ph. D. students:

- Edoardo Paone, Politecnico di Milano
- Giovanni Mariani, ALaRI - University of Lugano
- Fabrizio Castro, Politecnico di Milano.

Research interests and historical achievements

Countermeasures against side-channel attacks.

This project started from an actual industrial need, i.e., providing the designer of cryptographic algorithms with guidelines and tools that make it possible to implement and validate the primitive while assessing the desired level of protection.

The problems with existing methods and tools that brought us to seek new approaches are just a few; first, high level specification/prototyping of the algorithm is decoupled from low level implementation. This brings a host of issues, among which the fact that manual translation can introduce subtle bugs

and unanticipated behavior. Besides this, the specification is usually done in weakly typed languages, bringing additional source of unexpected behavior, test and refactoring complexity.

My main goal is to investigate how a strongly typed functional programming language could be used to build a DSLs to synthesize these kind of algorithms in hardware, by bridging the gap between spec and implementation with automatic tools.

Techniques to support teaching to a massive amount of students.

In 2014 I realized that my computer science class was undergoing a major challenge. The number of students was becoming huge and resource assignment from my university (in terms of teaching assistants funded by the university) was on a decreasing trend. In fact, the ratio between qualified teaching assistants (those who have a degree in computer engineering) and students had fallen below 1/100, making it hard to bring students to complete even the simplest hands-on lab. I always had the ambition to not leave anyone behind so I gradually started to study the current MOOC technologies to see whether they could be used to keep the students on track.

Currently, I am creating the first online course that is meant to complement the face to face lectures that I give. The course can be edited collaboratively by teachers (on Github) through a YAML based format that I designed; it can then be imported into an EDX server to be used by the students who can submit their homework to an automatic grader that I wrote using containerization technology.

Achievements:

- Developed a YAML-based format to author course contents.
- Used containerization technology to build an automatic graders.

Front-end development and mobile apps.

I have been always interested in ways to model complex program behavior such as parallel and asynchronous programming. It turns out that web and mobile application present a lot of challenges from this point of view being inherently asynchronous.

In this area I have collaborated with some researchers on the implementation of context-based applications for the customization of the user experience on mobile devices. This kind of application is characterized a query engine that fetches and mashes up data from different kind of services into a unified view on a native application. We decided to simplify the construction of the mobile application by shifting all the burden of service querying into the server. The mobile app uses then a flexible querying interface towards the server that minimizes data transferred across the network.

Power estimation and optimization of processor-based systems.

Since 1999, I have been interested into estimating and optimizing the power consumption of microprocessors and microprocessor-based systems.

Achievements:

- Developed an analytical model that takes into account software-level parameters (instruction ordering, pipeline stall probability and instruction cache miss probability) and micro-architectural-level ones (pipeline stage power per instruction).

- Validated the model on an industrial VLIW processor jointly designed by HPLabs and STMicro-electronics.
- Defined a register file write inhibition scheme that exploits the forwarding paths in VLIW processors.
- Designed a dynamic power management policy for general purpose operating systems.
- Designed a method for the exploration of the architectural parameters of the memory sub-systems, from the energy-delay joint perspective.
- Developed Multicube Explorer, a tool for experimenting with multi-objective exploration.
- Developed accurate performance and power modeling characterization of applications with emphasis on parallel processors architectures and network-on-chips.
- Developed optimal tuning of the memory hierarchy, processor parallelism (intra and inter-task) and processor interconnection network.
- Developed optimal software task mapping and scheduling onto the target processor units and optimal communication scheduling.
- Designed run-time design space exploration for trading-off quality-of-service with actual power constraints.
- Robust optimization with respect to several levels of uncertainties such as workload variability, model estimation accuracy and manufacturing process variability.
- Specified and implemented power characterization and high-level power estimation work-flows for the STBus Network on Chip. The STBus is a high-performance, low-latency on chip parameterizable network supported by production grade specification and synthesis tools.

Task Level Parallelism.

During my 4 years stint in the industry, I have worked on a variety of projects related to exploiting task level parallelism. I have had the opportunity to work within an international team on the entire stack of hardware and software design tools for an embedded processor.

Achievements:

- Specified and validated embedded shared-memory multi-processor systems.
- Designed run-time and operating system components including embedded co-hosting technology for the ST230 microprocessor.
- Studied and created a parallel programming framework for industrial multi-processor architectures.
- Specified secure storage extensions for embedded processors.
- Developed secure co-hosting solutions for industrial applications.
- Involved in the study and implementation of novel cryptographic power attack techniques based on cache-miss induction.

Current teaching goals

Troughout the years, I discovered that I love teaching by making students passionate about computer engineering. I like matching conventional methods for teaching with novel technology such as MOOCs. In particular, I am running a teaching experiment, called [Polimi at Home](<http://www.pah.polimi.it>), where regular students can follow on-line tutorials (based on EDX technology) and be automatically graded.

Professional activities

National and international research projects

He has been actively involved in the following european projects:

- 2010 - 2012, PARallel PARadigms and Run-time MAnagement techniques for Many-core Architectures
- 2008 - 2010, Multi-objective design space exploration of multi-processor SoC architectures for embedded multimedia applications

Program committee membership and referee services

- 2001 — DATE , role: reviewer
- 2007 — IC-SAMOS , role: reviewer
- 2007 — SASP , role: reviewer
- 2008 — Micro (Como - Italy) , role: Local Committee
- 2008 — NoCArch , role: TPC member
- 2008 — DATE - Track A8 (Multi-Core Platforms) , role: TPC member
- 2009 — 2PARMA Workshop (co-located with ARCS 2010) , role: TPC member
- 2009 — NoCArch , role: TPC member
- 2009 — Journal of Low Power Electronics - JOLPE , role: reviewer
- 2009 — DATE (Nice - France) , role: Session Chair
- 2009 — DATE - Track A8 (Multi-Core Platforms) , role: TPC member
- 2010 — NoCArch , role: TPC member
- 2010 — DATE (Dresden - Germany) , role: Session Chair
- 2011 — 2PARMA Workshop (co-located with ARCS 2011) (Como - Italy) , role: TPC member
- 2012 — ESTIMEDA (Tampere - Finland) , role: Keynote Speaker
- 2012 — 2PARMA Workshop (co-located with ARCS 2012) (Munich - Germany) , role: Program Co-Chair
- 2012 — NoCArch , role: TPC member
- 2014 — ADAPT (co-located with HIPEAC 2014) , role: TPC member

- 2016 — ADAPT (co-located with HIPEAC 2016) , role: reviewer
- IEEE Transactions on Computer Aided Design of Integrated Circuits , role: reviewer
- IEEE Transactions on Very Large Scale of Integration Circuits , role: reviewer
- IEEE Transactions on Computers , role: reviewer

Innovation, technology transfer patents

He produced significant public-domain and industrial technology transfer by developing the following projects:

- Multicube Explorer — an architectural exploration framework retargetable to different processor-based architectures and exploration algorithms. The tool contains also advanced algorithms for DoE generation and response surface modeling. It is scheduled to go open-source in January 2009 — open-source.
- xStreamC compiler and nStream simulator — a development toolchain for applications based on the stream oriented programming model. The toolchain has been released open-source in October 2008 — open-source.
- ST200-ISS — a production-grade instruction set simulator for the ST200 VLIW processor family (functional and timing behavior models). Kernel, device components, cache-coherency, secure-storage, co-hosting — proprietary.
- Tools for run-time power estimation of STBus proprietary bus technology (C/SystemC). These tools are currently part of the internal STBus product work-flow — proprietary.

Known languages

- Italian: Native
- English: Fluent

Como — March 12, 2018

Vittorio Zaccaria

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Pubblicazioni

1. V. Zaccaria, F. Melzani, G. Bertoni. *Spectral features of higher-order side-channel countermeasures*, IEEE Transactions on Computers, pp. 596 to 603. IEEE - Piscataway, NJ - USA. April 2018.
2. E. Bisi, F. Melzani, V. Zaccaria. *Symbolic analysis of higher-order side channel countermeasures*, IEEE Transactions on Computers, pp. 1099 to 1105. IEEE - Piscataway, NJ - USA. June 2017.
3. S. Xydis, G. Palermo, V. Zaccaria, C. Silvano. *SPIRIT: Spectral-Aware Pareto Iterative Refinement Optimization for Supervised High-Level Synthesis*, IEEE Transactions on Computer Aided Design of Integrated Circuits, pp. 155 to 159. IEEE - Piscataway, NJ - USA. January 2015.
4. G. Mariani, G. Palermo, V. Zaccaria, C. Silvano. *ARTE: An Application-specific Run-Time management framework for multi-cores based on queuing models*, Parallel Computing, pp. 504 to 519. Elsevier - The Netherlands. September 2013.
5. G. Mariani, G. Palermo, V. Zaccaria, C. Silvano. *Design Space Exploration and Run-time Resource Management for Multi-cores*, ACM Transactions on Embedded Computing Systems (TECS), pp. 20:1 to 20:27. ACM New York, NY - USA. September 2013.
6. S. Marceglia, S. Bonacina, V. Zaccaria, C. Pagliari, F. Pinciroli. *How might the iPad change healthcare?*, Journal of the Royal Society of Medicine, pp. 233 to 241. SAGE Publications. June 2012.
7. M. Sami, D. Sciuto, C. Silvano, V. Zaccaria. *An Instruction-Level Energy Model for Embedded VLIW Architectures*, IEEE Transactions on Computer Aided Design of Integrated Circuits, pp. 998 to 1010. IEEE - Piscataway, NJ - USA. September 2002.
8. C. Ykman-couvreur, P. Avasare, G. Mariani, G. Palermo, C. Silvano, V. Zaccaria. *Linking run-time resource management of embedded multi-core platforms with automated design-time exploration*, Computers Digital Techniques, IET, pp. 123 to 135. IET. March 2011.
9. G. Palermo, C. Silvano, V. Zaccaria. *A Variability-Aware Robust Design Space Exploration Methodology for on-Chip Multiprocessors Subject to Application Specific Constraints*, ACM Transactions in Embedded Computing Systems, pp. 29:1 to 29:28. ACM New York, NY - USA. July 2012.
10. G. Palermo, C. Silvano, V. Zaccaria. *ReSPIR: A Response Surface-based Pareto Iterative Refinement for Application-Specific Design Space Exploration*, IEEE Transactions on Computer Aided Design of Integrated Circuits, pp. 1816 to 1829. IEEE - Piscataway, NJ - USA. December 2009.
11. A. Bona, M. Sami, D. Sciuto, C. Silvano, V. Zaccaria, R. Zafalon. *Reducing the Complexity of Instruction-Level Power Models for VLIW Processors*, Design Automation for Embedded Systems, pp. 49 to 67. Springer - The Netherlands. July 2006.

12. G. Palermo, C. Silvano, V. Zaccaria. *Multi-Objective Design Space Exploration of Embedded Systems*, Journal of Embedded Computing, pp. 305 to 316. IOS Press - The Netherlands. 2005.
13. C. Silvano, M. Monchiero, G. Palermo, M. Sami, V. Zaccaria, R. Zafalon. *Low-Power Branch Prediction Techniques for VLIW Architectures: A Compiler-Hints Based Approach*, Integration, The VLSI Journal, pp. 515 to 524. Elsevier - The Netherlands. January 2005.
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