

# GLSVLSI'11

Proceedings of the 2011

## Great Lakes Symposium on VLSI

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# 1996 6th Great Lakes Symposium On Vlsi

**Eugenio Villar Bonet**



## **1996 6th Great Lakes Symposium On Vlsi:**

**VLSI Synthesis of DSP Kernels** Mahesh Mehendale, Sunil D. Sherlekar, 2013-04-17 A critical step in the design of a DSP system is to identify for each of its components DSP kernels an implementation architecture that provides the desired degree of flexibility programmability and optimises the area delay power parameters The book covers the entire solution space comprising both hardware multiplier based and multiplex less architectures that offer varying degrees of programmability For each of the implementation styles several algorithmic and architectural transformations are proposed so as to optimally implement weighted sum based DSP kernels over the area display power space VLSI Synthesis of DSP Kernels presents the following Six different target implementation styles Programmable DSP based implementation Programmable processors with no dedicated hardware multiplier Implementation using hardware multiplier s and adder s Distributed Arithmetic DA based implementation Residue Number System RNS based implementation and Multiplier less implementation using adders and shifters for fixed coefficient DSP kernels For each of the implementation styles description and analysis of several algorithmic and architectural transformations aimed at one or more of reduced area higher performance and low power Automated and semi automated techniques for applying each of these transformations and Classification of the transformations based on the properties that they exploit and their encapsulation in a design framework A methodology that uses the framework to systematically explore the application of these transformations depending on the characteristics of the algorithm and the target implementation style VLSI Synthesis of DSP Kernels is essential reading for designers of both hardware and software based DSP systems developers of IP modules for DSP applications EDA tools developers researchers and managers interested in getting a comprehensive overview of current trends and future challenges in optimal implementations of DSP kernels It will also be suitable for graduate students specialising in the area of VLSI Digital Signal Processing

**Design, Automation, and Test in Europe** Rudy Lauwereins, Jan Madsen, 2008-01-08 In 2007 The Design Automation and Test in Europe DATE conference celebrated its tenth anniversary As a tribute to the chip and system level design and design technology community this book presents a compilation of the three most influential papers of each year This provides an excellent historical overview of the evolution of a domain that contributed substantially to the growth and competitiveness of the circuit electronics and systems industry

**On-Chip Communication Architectures** Sudeep Pasricha, Nikil Dutt, 2010-07-28 Over the past decade system on chip SoC designs have evolved to address the ever increasing complexity of applications fueled by the era of digital convergence Improvements in process technology have effectively shrunk board level components so they can be integrated on a single chip New on chip communication architectures have been designed to support all inter component communication in a SoC design These communication architecture fabrics have a critical impact on the power consumption performance cost and design cycle time of modern SoC designs As application complexity strains the communication backbone of SoC designs academic and industrial R D efforts and dollars are

increasingly focused on communication architecture design On Chip Communication Architectures is a comprehensive reference on concepts research and trends in on chip communication architecture design It will provide readers with a comprehensive survey not available elsewhere of all current standards for on chip communication architectures A definitive guide to on chip communication architectures explaining key concepts surveying research efforts and predicting future trends Detailed analysis of all popular standards for on chip communication architectures Comprehensive survey of all research on communication architectures covering a wide range of topics relevant to this area spanning the past several years and up to date with the most current research efforts Future trends that will have a significant impact on research and design of communication architectures over the next several years

**Design and Test Technology for Dependable Systems-on-Chip** Ubar, Raimund, Raik, Jaan, Vierhaus, Heinrich Theodor, 2010-12-31 This book covers aspects of system design and efficient modelling and also introduces various fault models and fault mechanisms associated with digital circuits integrated into System on Chip SoC Multi Processor System on Chip MPSoC or Network on Chip NoC

**Handbook of Algorithms for Physical Design Automation** Charles J. Alpert, Dinesh P. Mehta, Sachin S. Sapatnekar, 2008-11-12 The physical design flow of any project depends upon the size of the design the technology the number of designers the clock frequency and the time to do the design As technology advances and design styles change physical design flows are constantly reinvented as traditional phases are removed and new ones are added to accommodate changes in technology Handbook of Algorithms for Physical Design Automation provides a detailed overview of VLSI physical design automation emphasizing state of the art techniques trends and improvements that have emerged during the previous decade After a brief introduction to the modern physical design problem basic algorithmic techniques and partitioning the book discusses significant advances in floorplanning representations and describes recent formulations of the floorplanning problem The text also addresses issues of placement net layout and optimization routing multiple signal nets manufacturability physical synthesis special nets and designing for specialized technologies It includes a personal perspective from Ralph Otten as he looks back on the major technical milestones in the history of physical design automation Although several books on this topic are currently available most are either too broad or out of date Alternatively proceedings and journal articles are valuable resources for researchers in this area but the material is widely dispersed in the literature This handbook pulls together a broad variety of perspectives on the most challenging problems in the field and focuses on emerging problems and research results

**Index of Conference Proceedings** British Library. Document Supply Centre, 2003

**Proceedings in Print**, 1996

**Real-Time Embedded Systems** Meikang Qiu, Jiayin Li, 2011-06-01 Ubiquitous in today's consumer driven society embedded systems use microprocessors that are hidden in our everyday products and designed to perform specific tasks Effective use of these embedded systems requires engineers to be proficient in all phases of this effort from planning design and analysis to manufacturing and marketing Taking a sys

**VLSI Circuits and Systems**, 2005

**2nd Workshop on Libraries**,

*Component Modeling and Quality Assurance* Eugenio Villar Bonet,1997 Compendio de los trabajos presentados en Toledo durante el 2nd Workshop on Libraries component modeling and quality assurance

*Embedded Systems Handbook* Richard Zurawski,2018-09-03 Considered a standard industry resource the Embedded Systems Handbook provided researchers and technicians with the authoritative information needed to launch a wealth of diverse applications including those in automotive electronics industrial automated systems and building automation and control Now a new resource is required to report on current developments and provide a technical reference for those looking to move the field forward yet again Divided into two volumes to accommodate this growth the Embedded Systems Handbook Second Edition presents a comprehensive view on this area of computer engineering with a currently appropriate emphasis on developments in networking and applications Those experts directly involved in the creation and evolution of the ideas and technologies presented offer tutorials research surveys and technology overviews that explore cutting edge developments and deployments and identify potential trends This first self contained volume of the handbook Embedded Systems Design and Verification is divided into three sections It begins with a brief introduction to embedded systems design and verification It then provides a comprehensive overview of embedded processors and various aspects of system on chip and FPGA as well as solutions to design challenges The final section explores power aware embedded computing design issues specific to secure embedded systems and web services for embedded devices Those interested in taking their work with embedded systems to the network level should complete their study with the second volume Network Embedded Systems

VLSI Design and Test Ambika Prasad Shah,Sudeb Dasgupta,Anand Darji,Jaynarayan Tudu,2022-12-16 This book constitutes the proceedings of the 26th International Symposium on VLSI Design and Test VDAT 2022 which took place in Jammu India in July 2022 The 32 regular papers and 16 short papers presented in this volume were carefully reviewed and selected from 220 submissions They were organized in topical sections as follows Devices and Technology Sensors Analog Mixed Signal Digital Design Emerging Technologies and Memory System Design

Algorithms for VLSI Physical Design Automation Naveed A. Sherwani,2007-05-08 Algorithms for VLSI Physical Design Automation Third Edition covers all aspects of physical design The book is a core reference for graduate students and CAD professionals For students concepts and algorithms are presented in an intuitive manner For CAD professionals the material presents a balance of theory and practice An extensive bibliography is provided which is useful for finding advanced material on a topic At the end of each chapter exercises are provided which range in complexity from simple to research level Algorithms for VLSI Physical Design Automation Third Edition provides a comprehensive background in the principles and algorithms of VLSI physical design The goal of this book is to serve as a basis for the development of introductory level graduate courses in VLSI physical design automation It provides self contained material for teaching and learning algorithms of physical design All algorithms which are considered basic have been included and are presented in an intuitive manner Yet at the same time enough detail is provided so that readers can

actually implement the algorithms given in the text and use them. The first three chapters provide the background material while the focus of each chapter of the rest of the book is on each phase of the physical design cycle. In addition, newer topics such as physical design automation of FPGAs and MCMs have been included. The basic purpose of the third edition is to investigate the new challenges presented by interconnect and process innovations. In 1995, when the second edition of this book was prepared, a six-layer process and 15 million transistor microprocessors were in advanced stages of design. In 1998, a six-metal process and 20 million transistor designs are in production. Two new chapters have been added and new material has been included in almost all other chapters. A new chapter on process innovation and its impact on physical design has been added. Another focus of the third edition is to promote use of the Internet as a resource, so wherever possible, URLs have been provided for further investigation. Algorithms for VLSI Physical Design Automation, Third Edition, is an important core reference work for professionals as well as an advanced level textbook for students.

**A Novel Block-based Motion Estimation Algorithm and Architectures for Inter-frame Video Coding** Han-gu Yö, 1997 **Proceedings, 1997 International Symposium on Low Power Electronics and Design** IEEE Circuits and Systems Society, 1997

Embedded Systems Handbook 2-Volume Set Richard Zurawski, 2018-10-08. During the past few years, there has been a dramatic upsurge in research and development, implementations of new technologies, and deployments of actual solutions and technologies in the diverse application areas of embedded systems. These areas include automotive electronics, industrial automated systems, and building automation and control. Comprising 48 chapters and the contributions of 74 leading experts from industry and academia, the Embedded Systems Handbook, Second Edition, presents a comprehensive view of embedded systems, their design, verification, networking, and applications. The contributors directly involved in the creation and evolution of the ideas and technologies presented offer tutorials, research surveys, and technology overviews, exploring new developments, deployments, and trends. To accommodate the tremendous growth in the field, the handbook is now divided into two volumes. New in This Edition: Processors for embedded systems; Processor-centric architecture; description languages; Networked embedded systems in the automotive and industrial automation fields; Wireless embedded systems; Embedded Systems Design and Verification. Volume I of the handbook is divided into three sections. It begins with a brief introduction to embedded systems design and verification. The book then provides a comprehensive overview of embedded processors and various aspects of system-on-chip and FPGA, as well as solutions to design challenges. The final section explores power-aware embedded computing design issues specific to secure embedded systems and web services for embedded devices. Networked Embedded Systems. Volume II focuses on selected application areas of networked embedded systems. It covers automotive, field industrial automation, building automation, and wireless sensor networks. This volume highlights implementations in fast-evolving areas which have not received proper coverage in other publications. Reflecting the unique functional requirements of different application areas, the contributors discuss inter-node communication aspects in the context of specific

applications of networked embedded systems      **Power-Aware Architecting** Maarten Ditzel, R.H. Otten, Wouter A. Serdijn, 2007-10-11 The complexity of embedded systems on a chip is rapidly growing. Different experts are involved in the design process: application software designers, programmable core architects, on-chip communication engineers, analog and digital designers, deep submicron specialists, and process engineers. In order to arrive at an optimum implementation, compromises are needed across boundaries of the different domains of expertise. Therefore, the authors of this book take the point of view of the system architect who is a generalist rather than an expert. He is responsible for the definition of a high-level architecture which is globally optimal. Finding an optimum requires a proper balance between area performance and last but not least energy consumption. The challenge is not only the size of the design space but also the fact that the most important decisions are taken during the early design phases. The advantage of an early decision is that the impact on area performance and energy consumption is large. But the disadvantage is that the available information is often limited, incomplete, and inaccurate. The task of the system architect is to take the correct early decisions despite the uncertainties      **Index to IEEE Publications** Institute of Electrical and Electronics Engineers, 1996 Issues for 1973 cover the entire IEEE technical literature

*Computational Intelligence. Theory and Applications* Bernd Reusch, 2003-06-30 Ten years of Fuzzy Days in Dortmund. What started as a relatively small workshop in 1991 has now become one of the best-known smaller conferences on Computational Intelligence in the world. In fact, it was to my best knowledge the first conference to use this term in 1994, although I confess that another larger conference was announced first and the trade mark Computational Intelligence was not coined in Dortmund. I believe that the success of this conference is grounded on the quality of its reviewed and invited papers as well as its good organization. From the beginning, we have sent every paper anonymously to referees, and we have always accepted only around 50% of the papers sent in. This year it was a little less than that. I would like to thank everybody who helped us by considering Dortmund's Fuzzy Days as the conference at which to appear. I know that among the abstracts not accepted there were some quite good ones, but we were restricted to a fixed number. I also know that referees do a good job but cannot always judge wisely from abstracts. Hence, my apologies to those who did not make it this year. Please try again. I would like to point out that our conference also has a good regional reputation. I am grateful to the City of Dortmund, its Lord Mayor Dr. Langemeyer, the Dortmund project, the DFG Deutsche Forschungsgemeinschaft, the KVR Kommunalverband Ruhrgebiet, the Martin Schmeier Stiftung, and the C-line AG Quantum GmbH for their valuable support.

**Layout Optimization in VLSI Design** Bing Lu, Ding-Zhu Du, S. Sapatnekar, 2013-06-29 Introduction The exponential scaling of feature sizes in semiconductor technologies has side effects on layout optimization related to effects such as interconnect delay, noise, and crosstalk, signal integrity, parasitic effects, and power dissipation that invalidate the assumptions that form the basis of previous design methodologies and tools. This book is intended to sample the most important contemporary and advanced layout optimization problems emerging with the advent of very deep submicron technologies in

semiconductor processing We hope that it will stimulate more people to perform research that leads to advances in the design and development of more efficient effective and elegant algorithms and design tools Organization of the Book The book is organized as follows A multi stage simulated annealing algorithm that integrates floorplanning and interconnect planning is presented in Chapter 1 To reduce the run time different interconnect planning approaches are applied in different ranges of temperatures Chapter 2 introduces a new design methodology the interconnect centric design methodology and its centerpiece interconnect planning which consists of physical hierarchy generation floorplanning with interconnect planning and interconnect architecture planning Chapter 3 investigates a net cut minimization based placement tool Dragon which integrates the state of the art partitioning and placement techniques



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