

1. Record Nr.	UNINA9910814560603321
Titolo	Customizable embedded processors : design technologies and applications // Paolo lenne and Rainer Leupers [editors]
Pubbl/distr/stampa	San Francisco, : Morgan Kaufmann Oxford, : Elsevier Science [distributor], 2007
ISBN	1-281-00536-3 9786611005368 0-12-374645-0 0-08-049098-0
Edizione	[1st edition]
Descrizione fisica	1 online resource (527 p.)
Collana	The Morgan Kaufmann series in systems on silicon
Altri autori (Persone)	lennePaolo LeupersRainer
Disciplina	621.392
Soggetti	Embedded computer systems Embedded computer systems - Design
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. [465]-484) and index.
Nota di contenuto	Front Cover; Customizable Embedded Processors; Copyright Page; Contents; In Praise of Customizable Embedded Processors; List of Contributors; About the Editors; Part I: Opportunities and Challenges; Chapter 1. From Pret-a-Porter to Tailor-Made; 1.1 The Call for Flexibility; 1.2 Cool Chips for Shallow Pockets; 1.3 A Million Processors for the Price of One?; 1.4 Processors Coming of Age; 1.5 This Book; 1.6 Travel Broadens the Mind; Chapter 2. Opportunities for Application-Specific Processors: The Case of Wireless Communications; 2.1 Future Mobile Communication Systems 2.2 Heterogeneous MPSoC for Digital Receivers 2.3 ASIP Design; Chapter 3. Customizing Processors: Lofty Ambitions, Stark Realities; 3.1 The "CFP" project at HP Labs; 3.2 Searching for the Best Architecture Is Not a Machine-Only Endeavor; 3.3 Designing a CPU Core Still Takes a Very Long Time; 3.4 Don't Underestimate Competitive Technologies; 3.5 Software Developers Don't Always Help You; 3.6 The Embedded World Is Not Immune to Legacy Problems; 3.7 Customization Can Be Trouble; 3.8 Conclusions; Part II: Aspects of Processor Customization; Chapter

4. Architecture Description Languages

4.1 ADLs and other languages 4.2 Survey of Contemporary ADLs; 4.3 Conclusions; Chapter 5. C Compiler Retargeting; 5.1 Compiler Construction Background; 5.2 Approaches to Retargetable Compilation; 5.3 Processor Architecture Exploration; 5.4 C Compiler Retargeting in the LISATek Platform; 5.5 Summary and Outlook; Chapter 6. Automated Processor Configuration and Instruction Extension; 6.1 Automation Is Essential for ASIP Proliferation; 6.2 The Tensilica Xtensa LX Configurable Processor; 6.3 Generating ASIPs Using Xtensa; 6.4 Automatic Generation of ASIP Specifications 6.5 Coding an Application for Automatic ASIP Generation 6.6 XPRES Benchmarking Results; 6.7 Techniques for ASIP Generation; 6.8 Exploring the Design Space; 6.9 Evaluating Xpres Estimation Methods; 6.10 Conclusions and Future of the Technology; Chapter 7. Automatic Instruction-Set Extensions; 7.1 Beyond Traditional Compilers; 7.2 Building Block for Instruction Set Extension; 7.3 Heuristics; 7.4 State-Holding Instruction-Set Extensions; 7.5 Exploiting Pipelining to Relax I/O Constraints; 7.6 Conclusions and Further Challenges; Chapter 8. Challenges to Automatic Customization 8.1 The ARCompact™ Instruction Set Architecture 8.2 Microarchitecture Challenges; 8.3 Case Study-Entropy Decoding; 8.4 Limitations of Automated Extension; 8.5 The Benefits of Architecture Extension; 8.6 Conclusions; Chapter 9. Coprocessor Generation from Executable Code; 9.1 Introduction; 9.2 User Level Flow; 9.3 Integration with Embedded Software; 9.4 Coprocessor Architecture; 9.5 ILP Extraction Challenges; 9.6 Internal Tool Flow; 9.7 Code Mapping Approach; 9.8 Synthesizing Coprocessor Architectures; 9.9 A Real-World Example; 9.10 Summary; Chapter 10. Datapath Synthesis; 10.1 Introduction 10.2 Custom Instruction Selection

Sommario/riassunto

Customizable processors have been described as the next natural step in the evolution of the microprocessor business: a step in the life of a new technology where top performance alone is no longer sufficient to guarantee market success. Other factors become fundamental, such as time to market, convenience, energy efficiency, and ease of customization. This book is the first to explore comprehensively one of the most fundamental trends which emerged in the last decade: to treat processors not as rigid, fixed entities, which designers include "as is" in their products; but rather, to bu
