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 Fast and Effective Embedded Systems Design
 Distributed and Parallel Embedded Systems
 Model-driven Development for Embedded Software
 From Multicores and GPU's to Petascale
 Issues in Computer Engineering: 2013 Edition
 Model-oriented Approaches for Complex Systems Certification
 June 3-5, 1998, Leuven, Belgium
 Fast and Effective Embedded Systems Design
 IFIP WG10.3/WG10.5 International Workshop on Distributed and Parallel Embedded Systems (DIPES'98) October 5-6, 1998, Schloß Eringerfeld, Germany
 Rapid Prototyping Software for Avionics Systems
 Rapid System Prototyping with FPGAs
 SOPC Edition
 Evolution of a Graphical User Interface for the Rapid Prototyping of Real-Time Embedded Systems
 Fast and Effective Embedded Systems Design
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 Rapid Prototyping of Digital Systems
 Rapid Prototyping of Embedded Video Processing Systems in FPGA Devices
 Rapid Prototyping of Application Specific Signal Processors
 Embedded Systems Design with the Texas Instruments MSP432 32-bit Processor
 Rapid Prototyping Software for Avionics Systems
 Applying the ARM mbed
 1997 Update
 Field-Programmable Logic and Applications: The Roadmap to Reconfigurable Computing
 Winning the SoC Revolution
 Automotive Embedded Systems Handbook

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Towards Useful Services for Elderly and People with Disabilities CRC Press
 The 11th International Workshop on Rapid System Prototyping was held in 2000. These proceedings cover: communication and distributed systems; reconfigurable architectures; partitioning, scheduling and performance analysis; design methodologies; interface technologies; and more.

Rapid BeagleBoard Prototyping with MATLAB and Simulink Springer Science & Business Media

Design of video processing circuits requires a variety of tools and knowledge, and it is difficult to find the right combination of tools for an efficient design process, specifically when considering open tools for evaluation or educational purpose. This chapter presents an overview of video

processing requirements, programmable devices used for embedded video processing and the components of a video processing chain. We propose a novel design flow for generating customizable intellectual property (IP) cores used in streaming video processing applications. This design flow is based on domain-specific modules in Python language. Examples of generated cores are presented.

The Multiactivity Paradigm in Rapid Prototyping of Embedded Systems Springer Science & Business Media

Rapid Prototyping of Embedded Systems 1997 Update Rapid Prototyping of Digital Systems SOPC Edition Springer Science & Business Media

9th International Conference on Smart Homes and Health Telematics, ICOST 2011, Montreal, Canada, June 20-22, 2011, Proceedings Springer

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The Codesign of Embedded Systems: A Unified Hardware/Software Representation CMOS Emerging Technologies

A hands-on introduction to the field of embedded systems; A focus on fast prototyping of embedded systems; All key embedded system concepts covered through simple and effective experimentation; An understanding of ARM technology, one of the world's leaders; A practical introduction to embedded C; Applies possibly the most accessible set of tools available in the

embedded world. This book is an introduction to embedded systems design, using the ARM mbed and C programming language as development tools. The mbed provides a compact, self-contained and low-cost hardware core, and the on-line compiler requires no download or installation, being accessible wherever an internet link exists. The book further combines these with a simple "breadboard" approach, whereby simple circuits are built up around the mbed, with no soldering or pcb assembly required. The book adopts a "learning through doing" approach. Each chapter is based around a major topic in embedded systems. The chapter proceeds as a series of practical experiments; the reader sets up a simple hardware system, develops and downloads a simple program, and immediately observes and tests the outcomes. The book then reflects on the experimental results, evaluating the strengths and weaknesses of the technology or technique introduced, explores how precise the link is between theory and practice, and considers applications and the wider context. The only book that explains how to use ARM's mbed development toolkit to help the speedy and easy development of embedded systems. Teaches embedded systems core principles in the context of developing quick applications, making embedded systems development an easy task for the non specialist who does not have a deep knowledge of electronics or software. All key concepts are covered through simple and effective experimentation.

High Performance Computing and Communications Elsevier

The design, implementation and validation of avionics and aeronautical systems have become extremely complex tasks due to the increase of functionalities that are deployed in current avionics systems and the need to be able to certify them before putting them into production. This book proposes a methodology to enable the rapid prototyping of such a system by considering from the start the certification aspects of the solution produced. This method takes advantage of the model-based design approaches as well as the use of formal methods for the validation of these systems. Furthermore, the use of automatic software code generation tools using models makes it possible to reduce the development phase as well as the final solution testing. This book presents, firstly, an overview of the model-based design approaches such as those used in the field of aeronautical software engineering. Secondly, an original methodology that is perfectly adapted to the field of aeronautical embedded systems is introduced. Finally, the authors illustrate the use of this method using a case study for the design, implementation and testing of a new generation aeronautical router.

Shortening the Path from Specification to Prototype Springer

Embedded systems are becoming one of the major driving forces in computer science. Furthermore, it is the impact of embedded information technology that dictates the pace in most engineering domains. Nearly all technical products above a certain level of complexity are not only controlled but increasingly even dominated by their embedded computer systems. Traditionally, such embedded control systems have been implemented in a monolithic, centralized way. Recently, distributed solutions are gaining increasing importance. In this approach, the control task is carried out by a number of controllers distributed over the entire system and connected by some interconnect network, like fieldbuses. Such a distributed embedded system may consist of a few controllers up to several hundred, as in today's top-range automobiles. Distribution and parallelism in embedded systems design increase the engineering challenges and require new development methods and tools. This book is the result of the International Workshop on Distributed and Parallel Embedded Systems (DIPES'98), organized by the International Federation for Information Processing (IFIP) Working Groups 10.3 (Concurrent Systems) and 10.5 (Design and Engineering of Electronic Systems). The workshop took place in October 1998 in Schloss Eringerfeld, near Paderborn, Germany, and the resulting book reflects the most recent points of view of experts from Brazil, Finland, France, Germany, Italy, Portugal, and the USA. The book is organized in six chapters: 'Formalisms for Embedded System Design': IP-based system design and various approaches to multi-language formalisms. 'Synthesis from Synchronous/Asynchronous Specification': Synthesis techniques based on Message Sequence Charts (MSC), StateCharts, and Predicate/Transition Nets. 'Partitioning and Load-Balancing': Application in simulation models and target systems. 'Verification and Validation': Formal techniques for precise verification and more pragmatic approaches to validation. 'Design Environments' for distributed embedded systems and their impact on the industrial state of the art. 'Object Oriented Approaches': Impact of OO-techniques on distributed embedded systems. £/LIST£ This volume will be essential reading for computer science researchers and application developers.

Rapid Prototyping of Embedded Systems Elsevier

Embedded Systems: A Contemporary Design Tool, Second Edition Embedded systems are one of the foundational elements of today's evolving and growing computer technology. From operating our cars, managing our smart phones, cleaning our homes, or cooking our meals, the special computers we call embedded systems are quietly and unobtrusively making our lives easier, safer, and more connected. While working in increasingly challenging environments, embedded systems give us the ability to put increasing amounts of capability into ever-smaller and more powerful devices. *Embedded Systems: A Contemporary Design Tool, Second Edition* introduces you to the theoretical hardware and software foundations of these systems and expands into the areas of signal integrity, system security, low power, and hardware-software co-design. The text builds upon earlier material to show you how to apply reliable, robust solutions to a wide range of applications operating in today's often challenging environments. Taking the user's problem and needs as your starting point, you will explore each of the key theoretical and practical issues to consider when designing an application in today's world. Author James Peckol walks you through the formal hardware and software development process covering: Breaking the problem down into major functional blocks; Planning the digital and software architecture of the system; Utilizing the hardware and software co-design process; Designing the physical world interface to external analog and digital signals; Addressing security issues as an integral part of the design process; Managing signal integrity problems and reducing power demands in contemporary systems; Debugging and testing throughout the design and development cycle; Improving performance. Stressing the importance of security, safety, and reliability in the design and development of embedded systems and providing a balanced treatment of both the hardware and the software aspects, *Embedded Systems: A Contemporary Design Tool, Second Edition* gives you the tools for creating embedded designs that solve contemporary real-world challenges.

Selected Contributions on Specification, Design, and Verification from FDL'08 Springer Science & Business Media

Rapid Prototyping of Digital Systems: Quartus II Edition provides an exciting and challenging laboratory component for undergraduate digital logic and computer design courses using FPGAs and CAD tools for simulation and hardware implementation. The more advanced topics and exercises also make this text useful for upper level courses in digital logic, programmable logic, and embedded systems. This new version of the widely used *Rapid Prototyping of Digital Systems, Second Edition*, now uses Altera's new Quartus II CAD tool and includes laboratory projects for Altera's UP 2 and the new UP 3 FPGA board. *Rapid Prototyping of Digital Systems: Quartus II Edition* includes four tutorials on the Altera Quartus II and NIOS II tool environment, an overview of programmable logic, and IP cores with several easy-to-use input and output functions. These features were developed to help students get started quickly. Early design examples use schematic capture and IP cores developed for the Altera UP FPGA boards. VHDL is used for more complex designs after a short introduction to VHDL-based synthesis. New to this edition is an overview of System-on-a-Programmable Chip (SOPC) technology and SOPC design examples for the UP3 using Altera's new NIOS II Processor hardware and C software development tools. *10th International Conference, FPL 2000 Villach, Austria, August 27-30, 2000 Proceedings* John Wiley & Sons

As our society experiences faster and faster rates of progress, technology becomes available to solve the most complicated engineering problems. These new technologies allow to build much more complex systems than what current methodologies allow to design in an orderly and structured manner, which is necessary to permit easy system expansions, upgrading and maintenance. This is particularly true in the case of embedded and real-time systems, which have to exhibit correct functional and temporal behaviors. This thesis focuses on a design methodology for embedded systems that is intended to be used by the application specialists, instead of the computer specialists. This avoids the problems generated when interactions are necessary between the two specialists and when the design is done by those who are unfamiliar with the application, lacking detailed knowledge of the system requirements. The methodology is based on the multiactivity paradigm and uses two system prototypes: the Specification Prototype, which is a prototype of the behavioral and functional requirements specifications; and the Design Prototype, which is a prototype of the design specifications and can be used to observe its temporal characteristics, to see whether the system will meet the required timing constraints. Finally, the methodology is exemplified and its feasibility demonstrated through various tests that were run using a simulator.

Application to Communications for Drone Swarm Ed. Universidad de Cantabria

Rapid Prototyping of Application Specific Signal Processors presents leading-edge research that focuses on design methodology, infrastructure support and scalable architectures developed by the 150 million dollar DARPA United States Department of Defense RASSP Program. The contributions to this edited work include an introductory overview chapter that explains the origin, concepts and status of this effort. The RASSP Program is a multi-year DARPA/Tri-Service initiative intended to dramatically improve the process by which complex digital systems, particularly embedded signal processors, are designed, manufactured, upgraded and supported. This program was originally driven by military applications for signal processing. The requirements of military applications for real-time signal processing are typically more demanding than those of commercial applications, but the time gap between technology employed in advanced military prototypes and commercial products is narrowing rapidly. The research on methodologies, infrastructure and architectures presented in this book is applicable to commercial signal processing systems that are in design now, or will be developed before the end of the decade. *Rapid Prototyping of Application Specific Signal Processors* is a valuable reference for developers of embedded digital systems, particularly systems engineers for signal processing systems (such as digital TV, biomedical image processing systems and telecommunications) and for military contractors who are developing signal processing systems. This book will also be of interest to managers who are charged with responsibility for creating and maintaining environments and infrastructures for developing large embedded digital systems. The chief value for managers will be the defining of methods and processes that reduce development time and cost.

Applying the ARM Mbed Springer

Advances in microprocessors, memory, and radio technology have enabled the emergence of embedded systems that rely on communication systems to exchange information and coordinate their activity in spatially distributed applications. Developing embedded communication systems that are efficient and reliable, is a challenge due to the trade-offs imposed by the conflicts between application requirements and hardware constraints. In this thesis, we present RaPTEx, an integrated development environment (IDE) for embedded communication systems. RaPTEx consists of three major subsystems: a graphical module to facilitate component composition, code generation with access to component-level parameters, and a performance evaluation framework for allowing system designers to explore what-if scenarios and clearly expose the trade-offs of their choices. We also present two case studies of developing wireless sensor network applications using RaPTEx.

Rapid Prototyping for Embedded Computer Systems Springer Science & Business Media

This book constitutes the refereed proceedings of the 9th International Conference on Smart Homes and Health Telematics, ICOST 2011, held in Montreal, Canada, in June 2011. The 25 revised full papers presented together with 16 short papers and 8 student papers were carefully reviewed and selected from 94 submissions. The papers are organized in topical sections on smart home and village; health telematics and healthcare technology; wellbeing, ageing friendly and enabling technology; and medical health telematics and healthcare technology.

A Summary of Research 1995 Elsevier

The Software Technology Branch of the Army Research Laboratory has established a testbed to evaluate the usefulness of rapid prototyping technology for developing embedded real-time software for Army systems. It is still early to make conclusions, but preliminary efforts look promising. Current efforts and future proposed efforts are outlined in this presentation.

NASA Tech Briefs Springer Science & Business Media

This book is the proceedings volume of the 10th International Conference on Field Programmable Logic and its Applications (FPL), held August 27-30, 2000 in Villach, Austria, which covered areas like reconfigurable logic (RL), reconfigurable computing (RC), and its applications, and all other aspects. Its subtitle "The Roadmap to Reconfigurable Computing" reminds us, that we are currently witnessing the runaway of a breakthrough. The annual FPL series is the eldest international conference in the world covering configware and all its aspects. It was founded 1991 at Oxford University (UK) and is 2 years older than its two most important competitors usually taking place at Monterey and Napa. FPL has been held at Oxford, Vienna, Prague, Darmstadt, London, Tallinn, and Glasgow (also see: <http://www.fpl.uni-kl.de/FPL/>). The New Case for Reconfigurable Platforms: Converging Media. Indicated by palmtops, smart mobile phones, many other portables, and consumer electronics, media such as voice, sound, video, TV, wireless, cable, telephone, and Internet continue to converge. This creates new opportunities and even necessities for reconfigurable platform usage. The new converged media require high volume, flexible, multi

purpose, multi standard, low power products adaptable to support evolving standards, emerging new standards, field upgrades, bug fixes, and, to meet the needs of a growing number of different kinds of services offered to zillions of individual subscribers preferring different media mixes. [Fast and Effective Embedded Systems Design](#) John Wiley & Sons

For the second time, the European Software Engineering Conference is being held jointly with the ACM SIGSOFT Symposium on the Foundations of Software Engineering (FSE). Although the two conferences have different origins and traditions, there is a significant overlap in intent and subject matter. Holding the conferences jointly when they are held in Europe helps to make these thematic links more explicit, and encourages researchers and practitioners to attend and submit papers to both events. The ESEC proceedings have traditionally been published by Springer-Verlag, as they are again this year, but by special arrangement, the proceedings will be distributed to members of ACM SIGSOFT, as is usually the case for FSE. ESEC/FSE is being held as a single event, rather than as a pair of collocated events. Submitted papers were therefore evaluated by a single program committee. ESEC/FSE represents a broad range of software engineering topics in (mainly) two continents, and consequently the program committee members were selected to represent a spectrum of both traditional and emerging software engineering topics. A total of 141 papers were submitted from around the globe. Of these, nearly half were classified as research papers, a quarter as experience papers, and the rest as both research and experience papers. Twenty-nine papers from five continents were selected for presentation and inclusion in the proceedings. Due to the large number of industrial experience reports submitted, we have also introduced this year two sessions on short case study presentations. [Distributed and Parallel Embedded Systems](#) John Wiley & Sons

The Computer-Aided Prototyping System (CAPS) is an integrated collection of software tools that support the development of software systems utilizing the prototype paradigm. Central to CAPS is the Prototype System Description Language (PSDL). The PSDL Editor supplied in CAPS Release 1 provided a unique combination of a graphical interface for editing PSDL data flow diagrams and an attribute-grammar based text editor to enforce syntactically correct PSDL prototypes. Feedback from CAPS users highlighted on productivity impacts due to the dual user interface as well as the steep learning curve required to become proficient with the attribute-grammar based text editor. This research initiates the development of the next generation of the CAPS PSDL Editor, focusing on the graph editor. Our approach provides a single graphical user interface with pull-down menus for editing both graphical and text information. Automatic syntax generation and validation as well as limited semantic validation is provided by a background syntax/semantics checker. The result of this research is a working graph editor meeting all the new requirements. When integrated with the new syntax/semantics checker, CAPS release 2 will have a PSDL Editor with enhanced capabilities and expected productivity improvements. *Model-driven Development for Embedded Software* IOS Press

Este libro presenta los desafíos planteados por las nuevas y sumamente poderosas tecnologías de integración de sistemas electrónicos, que están en la base de los cambios sociales hacia lo que llaman la Sociedad de la Información; en la que los dispositivos electrónicos se harán una parte incorporada de la vida diaria, encajados en casi cada producto. Es necesario un conocimiento cuidadoso de los desafíos para aprovechar la amplia gama de ocasiones ofrecidas por tales capacidades de integración y las correspondientes posibilidades de diseño de sistemas electrónicos. **From Multicores and GPU's to Petascale** Institute of Electrical & Electronics Engineers (IEEE)

Here is a laboratory workbook filled with interesting and challenging projects for digital logic design and embedded systems classes. The workbook introduces you to fully integrated modern CAD tools, logic simulation, logic synthesis using hardware description languages, design hierarchy, current generation field programmable gate array technology, and SoPC design. Projects cover such areas as serial communications, state machines with video output, video games and graphics, robotics, pipelined RISC processor cores, and designing computer systems using a commercial processor core. *Issues in Computer Engineering: 2013 Edition* Springer Science & Business Media

Parallel computing technologies have brought dramatic changes to mainstream computing; the majority of today's PC's, laptops and even notebooks incorporate multiprocessor chips with up to four processors. Standard components are increasingly combined with GPU's (Graphics Processing Unit), originally designed for high-speed graphics processing, and FPGA's (Free Programmable Gate Array) to build parallel computers with a wide spectrum of high-speed processing functions. The scale of this powerful hardware is limited only by factors such as energy consumption and thermal control. However, in addition to hardware factors, the practical use of petascale and exascale machines is often hampered by the difficulty of developing software which will run effectively and efficiently on such architecture. This book includes selected and refereed papers, presented at the 2009 international Parallel Computing conference (ParCo2009), which set out to address these problems. It provides a snapshot of the state-of-the-art of parallel computing technologies in hardware, application and software development. Areas covered include: numerical algorithms, grid and cloud computing, programming - including GPU and cell programming. The book also includes papers presented at the six mini-symposia held at the conference.