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### 6FD - LANG LOPEZ

Digital Microfluidic Biochips focuses on the automated design and production of microfluidic-based biochips for large-scale bioassays and safety-critical applications. Bridging areas of electronic design automation with microfluidic biochip research, the authors present a system-level design automation framework that addresses key issues in the design, analysis, and testing of digital microfluidic biochips. The book describes a new generation of microfluidic biochips with more complex designs that offer dynamic reconfigurability, system scalability, system integration, and defect tolerance. Part I describes a unified design methodology that targets design optimization under resource constraints. Part II investigates cost-effective testing techniques for digital microfluidic biochips that include test resource optimization and fault detection while running normal bioassays. Part III focuses on different reconfiguration-based defect tolerance techniques designed to increase the yield and dependability of digital microfluidic biochips. Expanding upon results from ongoing research on CAD for biochips at Duke University, this book presents new design methodologies that address some of the limitations in current full-custom design techniques. Digital Microfluidic Biochips is an essential resource for achieving the integration of microfluidic components in the next generation of system-on-chip and system-in-package designs.

This book is the second edition of Design to Test. The first edition, written by myself and H. Frank Binnendyk and first published in 1982, has undergone several printings and become a standard in many companies, even in some countries. Both Frank and I are very proud of the success that our customers have had in utilizing the information, all of it still applicable to today's electronic designs. But six years is a long time in any technology field. I therefore felt it was time to write a new edition. This new edition, while retaining the basic testability principles first documented six years ago, contains the latest material on state-of-the-art testability techniques for electronic devices, boards, and systems and has been completely rewritten and up dated. Chapter 15 from the first edition has been converted to an appendix. Chapter 6 has been expanded to cover the latest technology devices. Chapter 1 has been revised, and several examples throughout the book have been revised and updated. But some times the more things change, the more they stay the same. All of the guidelines and information presented in this book deal with the three basic testability principles-partitioning, control, and visibility. They have not changed in years. But many people have gotten smarter about how to implement those three basic test ability principles, and it is the aim of this text to enlighten the reader regarding those new (and old) testability implementation techniques.

This book aims to highlight the research activities in the domain of thermal-aware testing. Thermal-aware testing can be employed both at circuit level and at system level. Describes range of algorithms for addressing thermal-aware test issue, presents comparison of temperature reduction with power-aware techniques and include results on benchmark circuits and systems for different techniques. This book will be suitable for researchers working on power- and thermal-aware design and the testing of digital VLSI chips

New manufacturing technologies have made possible the integration of entire systems on a single chip. This new design paradigm, termed system-on-chip (SOC), together with its associated manufacturing problems, represents a real challenge for designers. SOC is also reshaping approaches to test and validation activities. These are beginning to migrate from the traditional register-transfer or gate levels of abstraction to the system level. Until now, test and validation have not been supported by system-level design tools so designers have lacked the infrastructure to exploit all the benefits stemming from the adoption of the system level of abstraction. Research efforts are already addressing this issue. This monograph provides a state-of-the-art overview of the current validation and test techniques by covering all aspects of the subject including: modeling of bugs and defects; stimulus generation for validation and test purposes (including timing errors; design for testability).

3D integration is an emerging technology for the design of many-core microprocessors and memory integration. This book, Advances in 3D Integrated Circuits and Systems, is written to help readers understand 3D integrated circuits in three stages: device basics, system level management, and real designs. Contents presented in this book include fabrication techniques for 3D TSV and 2.5D TSI; device modeling; physical designs; thermal, power and I/O management; and 3D designs of sensors, I/Os, multi-core processors, and memory. Advanced undergraduates, graduate students, researchers and engineers may find this text useful for understanding the many challenges faced in the development and building of 3D integrated circuits and systems.

The first book to harness the power of .NET for system design, System Level Design with .NET Technology constitutes a software-based approach to design modeling verification and simulation. World class developers, who have been at the forefront of system design for decades, explain how to tap into the power of this dynamic programming environment for more effective and efficient management of metadata—and introspection and interoperability between tools. Using readily available technology, the text details how to capture constraints and requirements at high levels and describes how to percolate them during the refinement process. Departing from proprietary environments built around System Verilog and VHDL, this cutting-edge reference includes an open source environment (ESys.NET) that readers can use to experiment with new ideas, algorithms, and design methods; and to expand the capabilities of their current tools. It also covers: Modeling and simulation—including requirements specification, IP reuse, and applications of design patterns to hardware/software systems Simulation and validation—including transaction-based models, accurate simulation at cycle and transaction levels, cosimulation and acceleration technique, as well as timing specification and validation Practical use of the ESys.NET environment Worked examples, end of chapter references, and the ESys.NET implementation test bed make this the ideal resource for system engineers and students looking to maximize their embedded system designs.

This is a study of party development in the post-communist world. Based on extensive fieldwork in Bulgaria and Hungary, as well as aggregate data from twelve post-communist states, this study provides an explanation of the behaviour of parties since 1990, and offer new insights into the party behaviour in the future.

A recent technological advance is the art of designing circuits to test themselves, referred to as a Built-In Self-Test. This book is written from a designer's perspective and describes the major BIST approaches that have been proposed and implemented, along with their advantages and limitations.

This volume constitutes the refereed proceedings of the 24th EuroSPI conference, held in Ostrava, Czech Republic, in September 2017. The 56 revised full papers presented were carefully reviewed and selected from 97 submissions. They are organized in topical sections on SPI and VSEs, SPI and process models, SPI and safety, SPI and project management, SPI and implementation, SPI issues, SPI and automotive, selected key notes and workshop papers, GamifySPI, SPI in Industry 4.0, best practices in implementing traceability, good and bad practices in improvement, safety and security, experiences with agile and lean, standards and assessment models, team skills and diversity strategies.

An effective and cost efficient protection of electronic system against ESD stress pulses specified by IEC 61000-4-2 is paramount for any system design. This pioneering book presents the collective knowledge of system designers and system testing experts and state-of-the-art techniques for achieving efficient system-level ESD protection, with minimum impact on the system performance. All categories of system failures ranging from 'hard' to 'soft' types are considered to review simulation and tool applications that can be used. The principal focus of System Level ESD Co-Design is defining and establishing the importance of co-design efforts from both IC supplier and system builder perspectives. ESD designers often face challenges in meeting customers' system-level ESD requirements and, therefore, a clear understanding of the techniques presented here will facilitate effective simulation approaches leading to better solutions without compromising system performance. With contributions from Robert Ashton, Jeffrey Dunning, Micheal Hopkins, Pratik Maheshwari, David Pomerence, Wolfgang Reinprecht, and Matti Usumaki, readers benefit from hands-on experience and in-depth knowledge in topics ranging from ESD design and the physics of system ESD phenomena to tools and techniques to address soft failures and strategies to design ESD-robust systems that include mobile and automotive applications. The first dedicated resource to system-level ESD co-design, this is an essential reference for industry ESD designers, system builders, IC suppliers and customers and also Original Equipment Manufacturers (OEMs). Key features: Clarifies the concept of system level ESD protection. Introduces a co-design approach for ESD robust systems. Details soft and hard ESD fail mechanisms. Detailed protection strategies for both mobile and automotive applications. Explains simulation tools and methodology for system level ESD co-design and overviews available test methods and standards. Highlights economic benefits of system ESD co-design.

This book addresses system design, providing a framework for assessing and developing system design practices that observe and utilise reuse of system design know-how. The know-how accumulated in the companies represents an intellectual asset, or property ('IP').

This book will introduce design methodologies, known as Built-in-Self-Test (BiST) and Built-in-Self-Calibration (BiSC), which enhance the robustness of radio frequency (RF) and millimeter wave (mmWave) integrated circuits (ICs). These circuits are used in current and emerging communication, computing, multimedia and biomedical products and microchips. The design methodologies presented will result in enhancing the yield (percentage of working chips in a high volume run) of RF and mmWave ICs which will enable successful manufacturing of such microchips in high volume.

The rapidly evolving field of environmental toxicology involves the study of toxic compounds and their effect on living organisms, as well as their fate within the natural environment. Since publication of the first edition, Introduction to Environmental Toxicology has found a secure place among the major texts and references in this field. Introduction to Environmental Toxicology, Third Edition seamlessly covers processes and impacts from the molecular level all the way up to population levels. While retaining the strengths of previous editions, the third edition includes a new chapter on fluoride, an update on endocrine disruption, a discussion of the use of models to reconstruct concentration-response curves, expansion of the metals chapter, and new developments in ecological risk assessment for management decisions at site to regional scales. It is an ideal text for introducing students to the fields of ecotoxicology and risk assessment.

Famed author Jack Ganssle has selected the very best embedded systems design material from the Newnes portfolio. The result is a book covering the gamut of embedded design, from hardware to software to integrated embedded systems, with a strong pragmatic emphasis.

The Pernambuco School on Software Engineering (PSSE) 2007 was the second in a series of events devoted to the study of advanced computer science and to the promotion of international scientific collaboration. The main theme in 2007 was testing. Testing is nowadays a key activity for assuring software quality. The summer school and its proceedings were intended to give a detailed tutorial introduction to the scientific basis of this activity and its state of the art. These proceedings record the contributions from the invited lecturers. Each of the chapters is the result of a thorough revision of the initial notes provided to the participants of the school. The revision was inspired by the synergy generated by the opportunity for the lecturers to present and discuss their work among themselves and with the school's attendees. The editors have tried to produce a coherent view of the topic by harmonizing these contributions, smoothing out differences in notation and approach, and providing links between the lectures. We apologize to the authors for any errors introduced by our extensive editing. Although the chapters are linked in several ways, each one is sufficiently self-contained to be read in isolation. Nevertheless, Chap. 1 should be read first by those interested in an introduction to testing. Chapter 1 introduces the terminology adopted in this book. It also provides an overview of the testing process, and of the types (functional, structural, and so on) and dimensions (unit, integration, and soon) of the testing activity. The main strategies employed in the central activity of test selection are also discussed. Most of the material presented in this introductory chapter is addressed in more depth in the following chapters.

"This is the single best book on software quality engineering and metrics that I've encountered." --- Capers Jones, from the Foreword "Metrics and Models in Software Quality Engineering, Second Edition," is the definitive book on this essential topic of software development. Comprehensive in scope with extensive industry examples, it shows how to measure software quality and use measurements to improve the software development process. Four major categories of quality metrics and models are addressed: quality management, software reliability and projection, complexity, and customer view. In addition, the book discusses the fundamentals of measurement theory, specific quality metrics and tools, and methods for applying metrics to the software development process. New chapters bring coverage of critical topics, including: In-process metrics for software testing Metrics for objec-

t-oriented software development Availability metrics Methods for conducting in-process quality assessments and software project assessments Dos and Don'ts of Software Process Improvement, by Patrick O'Toole Using Function Point Metrics to Measure Software Process Improvement, by Capers Jones In addition to the excellent balance of theory, techniques, and examples, this book is highly instructive and practical, covering one of the most important topics in software development--quality engineering. 0201729156B08282002

Modern embedded systems require high performance, low cost and low power consumption. Such systems typically consist of a heterogeneous collection of processors, specialized memory subsystems, and partially programmable or fixed-function components. This heterogeneity, coupled with issues such as hardware/software partitioning, mapping, scheduling, etc., leads to a large number of design possibilities, making performance debugging and validation of such systems a difficult problem. Embedded systems are used to control safety critical applications such as flight control, automotive electronics and healthcare monitoring. Clearly, developing reliable software/systems for such applications is of utmost importance. This book describes a host of debugging and verification methods which can help to achieve this goal. Covers the major abstraction levels of embedded systems design, starting from software analysis and micro-architectural modeling, to modeling of resource sharing and communication at the system level Integrates formal techniques of validation for hardware/software with debugging and validation of embedded system design flows Includes practical case studies to answer the questions: does a design meet its requirements, if not, then which parts of the system are responsible for the violation, and once they are identified, then how should the design be suitably modified?

System Test and Diagnosis is the first book on test and diagnosis at the system level, defined as any aggregation of related elements that together form an entity of sufficient complexity for which it is impractical to treat all of the elements at the lowest level of detail. The ideas presented emphasize that it is possible to diagnose complex systems efficiently. Since the notion of system is hierarchical, these ideas are applicable to all levels. The philosophy is presented in the context of a model-based approach, using the information flow model, that focuses on the information provided by the tests rather than the functions embedded in the system. Detailed algorithms are offered for evaluating system testability, performing efficient diagnosis, verifying and validating the models, and constructing an architecture for system maintenance. Several advanced algorithms, not commonly available in existing diagnosis tools, are discussed, including reasoning with inexact or uncertain test data, breaking large problems into manageable smaller problems, diagnosing systems with time sensitive information and time dependent tests and learning from experience. The book is divided into three parts. The first part provides motivation for careful development of the subject and the second part provides the tools necessary for analyzing system testability and computing diagnostic strategies. The third part presents advanced topics in diagnosis. Several case studies are provided, including a single detailed case study. Smaller case studies describe experiences from actual applications of the methods discussed. The detailed case study walks the reader through a complete analysis of a system to illustrate the concepts and describe the analyses that are possible. All case studies are based upon real systems that have been modeled for the purposes of diagnosis. System Test and Diagnosis is the culmination of nearly twelve years of research into diagnosis modeling and its applications. It is designed as a primary reference for engineers and practitioners interested in system test and diagnosis.

One of the biggest challenges in chip and system design is determining whether the hardware works correctly. That is the job of functional verification engineers and they are the audience for this comprehensive text from three top industry professionals. As designs increase in complexity, so has the value of verification engineers within the hardware design team. In fact, the need for skilled verification engineers has grown dramatically--functional verification now consumes between 40 and 70% of a project's labor, and about half its cost. Currently there are very few books on verification for engineers, and none that cover the subject as comprehensively as this text. A key strength of this book is that it describes the entire verification cycle and details each stage. The organization of the book follows the cycle, demonstrating how functional verification engages all aspects of the overall design effort and how individual cycle stages relate to the larger design process. Throughout the text, the authors leverage their 35 plus years experience in functional verification, providing examples and case studies, and focusing on the skills, methods, and tools needed to complete each verification task. Comprehensive overview of the complete verification cycle Combines industry experience with a strong emphasis on functional verification fundamentals Includes real-world case studies

"Don's book is a very good addition both to the testing literature and to the literature on quality assurance and software engineering... [It] is likely to become a standard for test training as well as a good reference for professional testers and developers. I would also recommend this book as background material for negotiating outsourced software contracts. I often work as an expert witness in litigation for software with very poor quality, and this book might well reduce or eliminate these lawsuits...." -Capers Jones, VP and CTO, Namcook Analytics LLC Software and system testers repeatedly fall victim to the same pitfalls. Think of them as "anti-patterns": mistakes that make testing far less effective and efficient than it ought to be. In Common System and Software Testing Pitfalls, Donald G. Firesmith catalogs 92 of these pitfalls. Drawing on his 35 years of software and system engineering experience, Firesmith shows testers and technical managers and other stakeholders how to avoid falling into these pitfalls, recognize when they have already fallen in, and escape while minimizing their negative consequences. Firesmith writes for testing professionals and other stakeholders involved in large or medium-sized projects. His anti-patterns and solutions address both "pure software" applications and "software-reliant systems," encompassing heterogeneous subsystems, hardware, software, data, facilities, material, and personnel. For each pitfall, he identifies its applicability, characteristic symptoms, potential negative consequences and causes, and offers specific actionable recommendations for avoiding it or limiting its consequences. This guide will help you Pinpoint testing processes that need improvement--before, during, and after the project Improve shared understanding and collaboration among all project participants Develop, review, and optimize future project testing programs Make your test documentation far more useful Identify testing risks and appropriate risk-mitigation strategies Categorize testing problems for metrics collection, analysis, and reporting Train new testers, QA specialists, and other project stakeholders With 92 common testing pitfalls organized into 14 categories, this taxonomy of testing pitfalls should be relatively complete. However, in spite of its comprehensiveness, it is also quite likely that additional pitfalls and even missing categories of pitfalls will be identified over time as testers read this book and compare it to their personal experiences. As an enhancement to the print edition, the author has provided the following location on the web where readers can find major additions and modifications to this taxonomy of pitfalls: <http://donald.firesmith.net/home/common-testing-pitfalls> Please send any recommended changes and additions to dgf (at) sei (dot) cmu (dot) edu, and the author will consider them for publication both on the website and in future editions of this book.

This book covers state-of-the art techniques for high-level modeling and validation of complex hardware/software systems, including those with multicore architectures. Readers will learn to avoid time-consuming and error-prone validation from the comprehensive coverage of system-level validation, including high-level modeling of designs and faults, automated generation of directed tests,

and efficient validation methodology using directed tests and assertions. The methodologies described in this book will help designers to improve the quality of their validation, performing as much validation as possible in the early stages of the design, while reducing the overall validation effort and cost.

Intelligent/smart systems have become common practice in many engineering applications. On the other hand, current low cost standard CMOS technology (and future foreseeable developments) makes available enormous potentialities. The next breakthrough will be the design and development of "smart adaptive systems on silicon" i.e. very power and highly size efficient complete systems (i.e. sensing, computing and "actuating" actions) with intelligence on board on a single silicon die. Smart adaptive systems on silicon will be able to "adapt" autonomously to the changing environment and will be able to implement "intelligent" behaviour and both perceptual and cognitive tasks. At last, they will communicate through wireless channels, they will be battery supplied or remote powered (via inductive coupling) and they will be ubiquitous in our every day life. Although many books deal with research and engineering topics (i.e. algorithms, technology, implementations, etc.) few of them try to bridge the gap between them and to address the issues related to feasibility, reliability and applications. Smart Adaptive Systems on Silicon, though not exhaustive, tries to fill this gap and to give answers mainly to the feasibility and reliability issues. Smart Adaptive Systems on Silicon mainly focuses on the analog and mixed mode implementation on silicon because this approach is amenable of achieving impressive energy and size efficiency. Moreover, analog systems can be more easily interfaced with sensing and actuating devices.

A guide to applying software design principles and coding practices to VHDL to improve the readability, maintainability, and quality of VHDL code. This book addresses an often-neglected aspect of the creation of VHDL designs. A VHDL description is also source code, and VHDL designers can use the best practices of software development to write high-quality code and to organize it in a design. This book presents this unique set of skills, teaching VHDL designers of all experience levels how to apply the best design principles and coding practices from the software world to the world of hardware. The concepts introduced here will help readers write code that is easier to understand and more likely to be correct, with improved readability, maintainability, and overall quality. After a brief review of VHDL, the book presents fundamental design principles for writing code, discussing such topics as design, quality, architecture, modularity, abstraction, and hierarchy. Building on these concepts, the book then introduces and provides recommendations for each basic element of VHDL code, including statements, design units, types, data objects, and subprograms. The book covers naming data objects and functions, commenting the source code, and visually presenting the code on the screen. All recommendations are supported by detailed rationales. Finally, the book explores two uses of VHDL: synthesis and testbenches. It examines the key characteristics of code intended for synthesis (distinguishing it from code meant for simulation) and then demonstrates the design and implementation of testbenches with a series of examples that verify different kinds of models, including combinational, sequential, and FSM code. Examples from the book are also available on a companion website, enabling the reader to experiment with the complete source code.

Software architecture metrics are key to the maintainability and architectural quality of a software project and they can warn you about dangerous accumulations of architectural and technical debt early in the process. In this practical book, leading hands-on software architects share case studies to introduce metrics that every software architect should know. This isn't a book about theory. It's more about practice and implementation, about what has already been tried and worked. Detecting software architectural issues early is crucial for the success of your software: it helps mitigate the risk of poor performance and lowers the cost of repairing those issues. Written by practitioners for software architects and software developers eager to explore successful case studies, this guide will help you learn more about decision and measurement effectiveness. Through contributions from 10 prominent practitioners, this book shares key software architecture metrics to help you set the right KPIs and measure the results. You'll learn how to: Measure how well your software architecture is meeting your goals Choose the right metrics to track (and skip the ones you don't need) Improve observability, testability, and deployability Prioritize software architecture projects Build insightful and relevant dashboards

The first volume of this six-volume compendium contains guidelines for determining the properties of polymer matrix composite material systems and their constituents, as well as the properties of generic structural elements, including test planning, test matrices, sampling, conditioning, test procedure selection, data reporting, data reduction, statistical analysis, and other related topics. Special attention is given to the statistical treatment and analysis of data. Volume 1 contains guidelines for general development of material characterization data as well as specific requirements for publication of material data in CMH-17. The primary purpose of this volume of the handbook is to document industry best-practices for engineering methodologies related to testing, data reduction, and reporting of property data for current and emerging composite materials. It is used by engineers worldwide in designing and fabricating products made from composite materials. The Composite Materials Handbook, referred to by industry groups as CMH-17, is a six-volume engineering reference tool that contains thousands of records of the latest test data for polymer matrix, metal matrix, ceramic matrix, and structural sandwich composites. CMH-17 provides information and guidance necessary to design, analyze, fabricate, certify and support end items using composite materials. It includes properties of composite materials that meet specific data requirements as well as guidelines for design, analysis, material selection, manufacturing, quality control, and repair.

Stress tests are used in risk management by banks in order to determine how certain crisis scenarios would affect the value of their portfolios, and by public authorities for financial stability purposes. Until the first half of 2007, interest in stress-testing was largely restricted to practitioners. Since then, the global financial system has been hit by deep turbulences, including the fallout from sub-prime mortgage lending. Many observers have pointed out that the severity of the crisis has been largely due to its unexpected nature and have claimed that a more extensive use of stress-testing methodologies would have helped to alleviate the repercussions of the crisis. This book analyses the theoretical underpinnings, as well as the practical aspects, of applying such methodologies. Building on the experience gained by the economists of many national and international financial authorities, it provides an updated toolkit for both practitioners and academics.

A hands-on guide for creating a winning engineering project Engineering Project Management is a practical, step-by-step guide to project management for engineers. The author - a successful, long-time practicing engineering project manager - describes the techniques and strategies for creating a successful engineering project. The book introduces engineering projects and their management, and then proceeds stage-by-stage through the engineering life-cycle project, from requirements, implementation, to phase-out. The book offers information for understanding the needs of the end user of a product and other stakeholders associated with a project, and is full of techniques based on real, hands-on management of engineering projects. The book starts by explaining how we perform the actual engineering on projects; the techniques for project management contained in the rest of the book use those engineering methods to create superior management techniques. Every topic - from developing a work-breakdown structure and an effective project plan, to creating credible predictions for schedules and costs, through monitoring the progress of your engineering project - is infused with actual engineering techniques, thereby vastly increasing the effectivity and credibility of

those management techniques. The book also teaches you how to draw the right conclusions from numeric data and calculations, avoiding the mistakes that often cause managers to make incorrect decisions. The book also provides valuable insight about what the author calls the social aspects of engineering project management: aligning and motivating people, interacting successfully with your stakeholders, and many other important people-oriented topics. The book ends with a section on ethics in engineering. This important book: Offers a hands-on guide for developing and implementing a project management plan Includes background information, strategies, and techniques on project management designed for engineers Takes an easy-to-understand, step-by-step approach to project management Contains ideas for launching a project, managing large amount of software, and tips for ending a project Structured to support both undergraduate and graduate courses in engineering project management, Engineering Project Management is an essential guide for managing a successful project from the idea phase to the completion of the project.

This book introduces the state-of-the-art research progress of system-level EMC, including theories, design technologies, principles and applications in practice. The engineering design, simulation, prediction, analysis, test, stage control as well as effectiveness evaluation are discussed in detail with extensive project experiences, making the book an essential reference for researchers and industrial engineers.

This book provides an in-depth introduction to the newest technologies for designing wireless power transfer systems for medical applications. The authors present a systematic classification of the various types of wireless power transfer, with a focus on inductive power coupling. Readers will learn to overcome many challenges faced in the design a wirelessly powered implant, such as power transfer efficiency, power stability, and the size of power antennas and circuits. This book focuses exclusively on medical applications of the technology and a batteryless capsule endoscopy system and other, real wirelessly powered systems are used as examples of the techniques described.

This book discusses enhancing the overall energy performance of building central air-conditioning systems through fault diagnosis and robust control strategies. Fault diagnosis strategies aim to determine the exact cause of problems and evaluate the energy impact on the system, while robust control strategies aim to manage chilled water systems to avoid the occurrence of low delta-T syndrome and deficit flow problems. Presenting the first academic study of the diagnostic method and control mechanism of "small temperature difference syndrome", the book describes the highly robust and adaptive fault-tolerant control method developed to overcome the influences of external disturbance on the process control in practical applications. The diagnostic technology developed provides a predictive assessment of the energy dissipation effect of the fault. This book is a valuable reference resource for researchers and designers in the areas of building energy management and built environment control, as well as for senior undergraduate and graduate students.

This book will explain how to verify SoC (Systems on Chip) logic designs using "formal and "semiformal verification techniques. The critical issue to be addressed is whether the functionality of the design is the one that the designers intended. Simulation has been used for checking the correctness of SoC designs (as in "functional verification), but many subtle design errors cannot be caught by simulation. Recently, formal verification, giving mathematical proof of the correctness of designs, has been gaining popularity. For higher design productivity, it is essential to debug designs as early as possible, which this book facilitates. This book covers all aspects of high-level formal and semiformal verification techniques for system level designs. • First book that covers all aspects of formal and

semiformal, high-level (higher than RTL) design verification targeting SoC designs. • Formal verification of high-level designs (RTL or higher). • Verification techniques are discussed with associated system-level design methodology.

Modern embedded systems come with contradictory design constraints. On one hand, these systems often target mass production and battery-based devices, and therefore should be cheap and power efficient. On the other hand, they still need to show high (sometimes real-time) performance, and often support multiple applications and standards which requires high programmability. This wide spectrum of design requirements leads to complex heterogeneous System-on-Chip (SoC) architectures -- consisting of several types of processors from fully programmable microprocessors to configurable processing cores and customized hardware components, integrated on a single chip. This study targets such multiprocessor embedded systems and strives to develop algorithms, methods, and tools to deal with a number of fundamental problems which are encountered by the system designers during the early design stages.

Wafer-level testing refers to a critical process of subjecting integrated circuits and semiconductor devices to electrical testing while they are still in wafer form. Burn-in is a temperature/bias reliability stress test used in detecting and screening out potential early life device failures. This hands-on resource provides a comprehensive analysis of these methods, showing how wafer-level testing during burn-in (WLTBI) helps lower product cost in semiconductor manufacturing. Engineers learn how to implement the testing of integrated circuits at the wafer-level under various resource constraints. Moreover, this unique book helps practitioners address the issue of enabling next generation products with previous generation testers. Practitioners also find expert insights on current industry trends in WLTBI test solutions.

This concise text provides an insight into practical aspects of software testing and discusses all the recent technological developments in this field including quality assurance. The book also illustrates the specific kinds of problems that software developers often encounter during development of software. The book first builds up the basic concepts inherent in the software development life cycle (SDLC). It then elaborately discusses the methodologies of both static testing and dynamic testing of the software, covering the concepts of structured group examinations, control flow and data flow, unit testing, integration testing, system testing and acceptance testing. The text also focuses on the importance of the cost-benefit analysis of testing processes. The concepts of test automation, object-oriented applications, client-server and web-based applications have been covered in detail. Finally, the book brings out the underlying concepts of commercial off-the-shelf (COTS) software applications and describes the testing methodologies adopted in them. The book is intended for the undergraduate and postgraduate students of computer science and engineering for a course in software testing. KEY FEATURES : Provides real-life examples, illustrative diagrams and tables to explain the concepts discussed. Gives a number of assignments drawn from practical experience to help the students in assimilating the concepts in a practical way. Includes model questions in addition to a large number of chapter-end review questions to enable the students to hone their skills and enhance their understanding of the subject matter.

This book covers channel coding and modulation technologies in DTTB systems from the general concepts to the detailed analysis and implementation. Covers the Chinese DTTB standard which was announced recently and hasn't been covered in detail Introduces the SFN network using the successful implementation of DTMB in Hong Kong as an example Introduces the latest announced systems including the ATSC M/H and DVB-NGH