Finite State Machines In Hardware Theory And Design With Vhdl And Systemverilog

Computer Hardware Theory Finite State Machines in Hardware Concurrent Hardware *Mathematical Morphology* **Winning the Hardware-Software Game Computer Systems** *Formal Verification of Floating-Point Hardware Design* Fuzzy Computing **Hardware Design and Petri Nets** Digital Control Systems--theory, Hardware, Software **Evolvable Components** Reconfigurable Computing *Frontiers in Hardware Security and Trust* **Handbook of Research on Computational Science and Engineering: Theory and Practice** *Iron Age and Hardware, Iron and Industrial Reporter* **Design Theory and Computer Science** *Computer Organization and Design Fundamentals* Artificial Life Models in Hardware SOFSEM 2004: Theory and Practice of Computer Science **SOFSEM 2001: Theory and Practice of Informatics** SOFSEM 2011: Theory and Practice of Computer Science *The Theory and Method of Design and Optimization for Railway Intelligent Transportation Systems (RITS) Hardware and Software Architectures for Fault Tolerance* **Many-Core Computing SOFSEM 2013: Theory and Practice of Computer Science Foundations of Digital Signal Processing** *Advances in Automotive Production Technology – Theory and Application* **Computer Science - Theory and Applications** *System-level Test and Validation of Hardware/Software Systems* **Machine Learning on Commodity Tiny Devices** *The Architecture of Computer Hardware, Systems Software, and Networking* COMPUTER INTERFACING AND AUTOMATION **Cyberspace Mimic Defense** *Hardware Design and Petri Nets* Thinking Machines Game Design: Theory and Practice, Second Edition **SOFSEM 2010: Theory and Practice of Computer Science** Theory and Novel Applications of Machine Learning Digital and Microprocessor Fundamentals *Virtual Reality*

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SOFSEM 2001: Theory and Practice of Informatics Mar 18 2021 SOFSEM 2001, the International Conference on Current Trends in Theory and Practice of Informatics, was held on November 24 – December 1, 2001 in the ? well-known spa Pie?stany, Slovak Republic. This was the 28th annual conference in the SOFSEM series organized either in the Slovak or the Czech Republic. SOFSEM has a well-established tradition. Currently it is a broad, multid- ciplinary conference, devoted to the theory and practice of software systems. Its aim is to foster cooperation among professionals from academia and industry working in various areas of informatics. The scienti?c program of SOFSEM consists of invited talks, which determine the topics of the conference, and short contributed talks presenting original - sults. The topics of the invited talks are chosen so as to cover the whole range from theory to practice and to bring interesting research areas to the attention of conference participants. For the year 2001, the following three directions were chosen for presentation by the SOFSEM Steering Committee: – Trends in Informatics – Enabling Technologies for Global Computing – Practical Systems Engineering and Applications The above directions were covered through 12 invited talks presented by pro- nent researchers. There were 18 contributed talks, selected by the international Program Committee from among 46 submitted papers. The conference was also accompanied by workshops on Electronic Commerce Systems (coordinated by H. D. Zimmermann) and Soft Computing (coordinated by P. H ́ajek).

COMPUTER INTERFACING AND AUTOMATION Mar 06 2020

SOFSEM 2011: Theory and Practice of Computer Science Feb 14 2021 This book constitutes the refereed proceedings of the 37th Conference on Current Trends in Theory and Practice of Computer Science, SOFSEM 2011, held in Nový, Smokovec, Slovakia in January 2011. The 41 revised full papers, presented together with 5 invited contributions, were carefully reviewed and selected from 122 submissions. SOFSEM 2011 was organized around the following four tracks: foundations of computer science; software, systems, and services; processing large datasets; and cryptography, security, and trust.

Mathematical Morphology Aug 03 2022 The study of mathematical morphology--an essential component of research in image processing and computer graphics--has seen remarkable advances in the past few years. Copiously illustrated with hundreds of illustrations and computer-generated figures, Mathematical Morphology: Theory and Hardware brings together leading researchers and theorists to explore a range of topics on the cutting edge of the field today. Featuring chapters ranging from hardware design to representational theorems to openings, the book will be much sought after by researchers and advanced students, as well as by engineers involved in the design of high-speed image processing systems.

Game Design: Theory and Practice, Second Edition Nov 01 2019 "Both burgeoning game designers and devoted gamers should consider [Game Design: Theory & Practice] an essential read." — Computer Gaming World "Ultimately, in both theory and practice, Rouse's Game Design bible gets the job done. Let us pray." - Next Generation magazine In the second edition to the acclaimed Game Design: Theory & Practice, designer Richard Rouse III balances a discussion of the essential concepts behind game design with an explanation of how you can implement them in your current project. Detailed analysis of successful games is interwoven with concrete examples from Rouse's own experience. This second edition thoroughly updates the popular original with new chapters and fully revised text.

Concurrent Hardware Sep 04 2022 This book examines the theory and design of self-timed systems. It addresses general issues concerning the very nature of concurrency and demonstrates the particular features of asynchronous design. The book presents formal models of the specification and verification of parallel processes and describes methods for self-timed circuit synthesis and analysis.

Foundations of Digital Signal Processing Sep 11 2020 This book covers the basic theoretical, algorithmic and real-time aspects of digital signal processing (DSP). Detailed information is provided on off-line, real-time and DSP programming and the reader is effortlessly guided through advanced topics such as DSP hardware design, FIR and IIR filter design and difference equation manipulation.

Formal Verification of Floating-Point Hardware Design Apr 30 2022 This is the first book to focus on the problem of ensuring the correctness of floating-point hardware designs through mathematical methods. Formal Verification of Floating-Point Hardware Design, Second Edition advances a verification methodology based on a unified theory of register-transfer logic and floating-point arithmetic that has been developed and applied to the formal verification of commercial floating-point units over the course of more than two decades, during which the author was employed by several major microprocessor design companies. The theory is extended to the analysis of several algorithms and optimization techniques that are commonly used in commercial implementations of elementary arithmetic operations. As a basis for the formal verification of such implementations, high-level specifications of the basic arithmetic instructions of several major industry-standard floating-point architectures are presented, including all details pertaining to the handling of exceptional conditions. The methodology is illustrated in the comprehensive verification of a variety of state-of-the-art commercial floating-point designs developed by Arm Holdings. This revised edition reflects the evolving microarchitectures and increasing sophistication of Arm processors, and the variation in the design goals of execution speed, hardware area requirements, and power consumption. Many new results have been added to Parts I--III (Register-Transfer Logic, Floating-Point Arithmetic, and Implementation of Elementary Operations),

extending the theory and describing new techniques. These were derived as required in the verification of the new RTL designs described in Part V.

SOFSEM 2010: Theory and Practice of Computer Science Oct 01 2019 This book constitutes the refereed proceedings of the 36th Conference on Current Trends in Theory and Practice of Computer Science, SOFSEM 2010, held in Špindleruv Mlýn, Czech Republic, in January 2009. The 53 revised full papers, presented together with 11 invited contributions, were carefully reviewed and selected from 134 submissions. SOFSEM 2010 was organized around the following four tracks: Foundations of computer science, principles of software construction, Data, knowledge, and intelligent systems and Web science.

Cyberspace Mimic Defense Feb 03 2020 This book discusses uncertain threats, which are caused by unknown attacks based on unknown vulnerabilities or backdoors in the information system or control devices and software/hardware. Generalized robustness control architecture and the mimic defense mechanisms are presented in this book, which could change "the easy-to-attack and difficult-to-defend game" in cyberspace. The endogenous uncertain effects from the targets of the software/hardware based on this architecture can produce magic "mimic defense fog", and suppress in a normalized mode random disturbances caused by physical or logic elements, as well as effects of non-probability disturbances brought by uncertain security threats. Although progress has been made in the current security defense theories in cyberspace and various types of security technologies have come into being, the effectiveness of such theories and technologies often depends on the scale of the prior knowledge of the attackers, on the part of the defender and on the acquired real-timing and accuracy regarding the attackers' behavior features and other information. Hence, there lacks an efficient active defense means to deal with uncertain security threats from the unknown. Even if the bottom-line defense technologies such as encrypted verification are adopted, the security of hardware/software products cannot be quantitatively designed, verified or measured. Due to the "loose coupling" relationship and border defense modes between the defender and the protected target, there exist insurmountable theoretical and technological challenges in the protection of the defender and the target against the utilization of internal vulnerabilities or backdoors, as well as in dealing with attack scenarios based on backdoor-activated collaboration from both inside and outside, no matter how augmented or accumulated protective measures are adopted. Therefore, it is urgent to jump out of the stereotyped thinking based on conventional defense theories and technologies, find new theories and methods to effectively reduce the utilization of vulnerabilities and backdoors of the targets without relying on the priori knowledge and feature information, and to develop new technological means to offset uncertain threats based on unknown vulnerabilities and backdoors from an innovative perspective. This book provides a solution both in theory and engineering implementation to the difficult problem of how to avoid the uncontrollability of product security caused by globalized marketing, COTS and non-trustworthy software/hardware sources. It has been proved that this revolutionary enabling technology has endowed software/hardware products in IT/ICT/CPS with endogenous security functions and has overturned the attack theories and methods based on hardware/software design defects or resident malicious codes. This book is designed for educators, theoretical and technological researchers in cyber security and autonomous control and for business technicians who are engaged in the research on developing a new generation of software/hardware products by using endogenous security enabling technologies and for other product users. Postgraduates in IT/ICT/CPS/ICS will discover that (as long as the law of "structure determines the nature and architecture determines the security is properly used), the problem of software/hardware design defects or malicious code embedding will become the swelling of Achilles in the process of informationization and will no longer haunt Pandora's box in cyberspace. Security and opening-up, advanced progressiveness and controllability seem to be contradictory, but there can be theoretically and technologically unified solutions to the problem.

SOFSEM 2004: Theory and Practice of Computer Science Apr 18 2021 This book constitutes the refereed proceedings of the 30th Conference on Current Trends in Theory and Practice of Computer Science, SOFSEM 2004, held in Merín, Czech Republic, in January 2004. The volume presents 10 invited lectures and 22 full papers selected from 136 submissions. Among the topics covered are computer science theory, programming theory, database systems, information systems, cognitive technologies and Web technologies.

Frontiers in Hardware Security and Trust Oct 25 2021 Frontiers in Hardware Security and Trust provides a comprehensive review of emerging security threats and privacy protection issues, and the versatile state-of-the-art hardware-based security countermeasures and applications proposed by the hardware security community.

Advances in Automotive Production Technology – Theory and Application Aug 11 2020 This volume of the series ARENA2036 compiles the outcomes of the first Stuttgart Conference on Automotive Production (SCAP2020). It contains peer-reviewed contributions from a theoretical as well as practical vantage point and is topically structured according to the following four sections: It discusses (I) Novel Approaches for Efficient Production and Assembly Planning, (II) Smart Production Systems and Data Services, (III) Advances in Manufacturing Processes and Materials, and (IV) New Concepts for Autonomous, Collaborative Intralogistics. Given the restrictive circumstances of 2020, the conference was held as a fully digital event divided into two parts. It opened with a pre-week, allowing everyone to peruse the scientific contributions at their own pace, followed by a two-day live event that enabled experts from the sciences and the industry to engage in various discussions. The conference has proven itself as an insightful forum that allowed for an expertly exchange regarding the pivotal Advances in Automotive Production and Technology.

Computer Hardware Theory Nov 06 2022

Virtual Reality Jun 28 2019 Despite widespread interest in virtual reality, research and development efforts in synthetic environments (SE)â€"the field encompassing virtual environments, teleoperation, and hybridsâ€"have remained fragmented. Virtual Reality is the first integrated treatment of the topic, presenting current knowledge along with thought-provoking vignettes about a future where SE is commonplace. This volume discusses all aspects of creating a system that will allow human operators to see, hear, smell, taste, move about, give commands, respond to conditions, and manipulate objects effectively in a real or virtual environment. The committee of computer scientists, engineers, and psychologists on the leading edge of SE development explores the potential applications of SE in the areas of manufacturing, medicine, education, training, scientific visualization, and teleoperation in hazardous environments. The committee also offers recommendations for development of improved SE technology, needed studies of human behavior and evaluation of SE systems, and government policy and infrastructure.

The Architecture of Computer Hardware, Systems Software, and Networking Apr 06 2020 The Architecture of Computer Hardware, Systems Software and Networking is designed help students majoring in information technology (IT) and information systems (IS) understand the structure and operation of computers and computer-based devices. Requiring only basic computer skills, this accessible textbook introduces the basic principles of system architecture and explores current technological practices and trends using clear, easy-to-understand language. Throughout the text, numerous relatable examples, subject-specific illustrations, and in-depth case studies reinforce key learning points and show students how important concepts are applied in the real world. This fully-updated sixth edition features a wealth of new and revised content that reflects today's technological landscape. Organized into five parts, the book first explains the role of the computer in information systems and provides an overview of its components. Subsequent sections discuss the representation of data in the computer, hardware architecture and operational concepts, the basics of computer networking, system software and operating systems, and various interconnected systems and components. Students are introduced to the material using ideas already familiar to them, allowing them to gradually build upon what they have learned without being overwhelmed and develop a deeper knowledge of computer architecture.

Machine Learning on Commodity Tiny Devices May 08 2020 This book aims at the tiny machine learning (TinyML) software and hardware synergy for edge intelligence applications. It presents on-device learning techniques covering model-level neural network design, algorithm-level training optimization, and hardware-level instruction acceleration. Analyzing the limitations of conventional in-cloud computing would reveal that on-device learning is a promising research direction to meet the requirements of edge intelligence applications. As to the cutting-edge research of TinyML, implementing a high-efficiency learning framework and enabling system-level acceleration is one of the most fundamental issues. This book presents a comprehensive discussion of the latest research progress and provides system-level insights on designing TinyML frameworks, including neural network design, training algorithm optimization and domain-specific hardware acceleration. It identifies the main challenges when deploying

TinyML tasks in the real world and guides the researchers to deploy a reliable learning system. This volume will be of interest to students and scholars in the field of edge intelligence, especially to those with sufficient professional Edge AI skills. It will also be an excellent guide for researchers to implement high-performance TinyML systems.

Finite State Machines in Hardware Oct 05 2022 A comprehensive guide to the theory and design of hardware-implemented finite state machines, with design examples developed in both VHDL and SystemVerilog languages. Modern, complex digital systems invariably include hardware-implemented finite state machines. The correct design of such parts is crucial for attaining proper system performance. This book offers detailed, comprehensive coverage of the theory and design for any category of hardware-implemented finite state machines. It describes crucial design problems that lead to incorrect or far from optimal implementation and provides examples of finite state machines developed in both VHDL and SystemVerilog (the successor of Verilog) hardware description languages. Important features include: extensive review of design practices for sequential digital circuits; a new division of all state machines into three hardware-based categories, encompassing all possible situations, with numerous practical examples provided in all three categories; the presentation of complete designs, with detailed VHDL and SystemVerilog codes, comments, and simulation results, all tested in FPGA devices; and exercise examples, all of which can be synthesized, simulated, and physically implemented in FPGA boards. Additional material is available on the book's Website. Designing a state machine in hardware is more complex than designing it in software. Although interest in hardware for finite state machines has grown dramatically in recent years, there is no comprehensive treatment of the subject. This book offers the most detailed coverage of finite state machines available. It will be essential for industrial designers of digital systems and for students of electrical engineering and computer science.

Design Theory and Computer Science Jul 22 2021 The author examines logic and methodology of design from the perspective of computer science. Computers provide the context for this examination both by discussion of the design process for hardware and software systems and by consideration of the role of computers in design in general. The central question posed by the author is whether or not we can construct a theory of design.

System-level Test and Validation of Hardware/Software Systems Jun 08 2020 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.

Computer Science - Theory and Applications Jul 10 2020 The Third International Computer Science Symposium in Russia (CSR-2008) was held during June 7–12, 2008 in Moscow, Russia, hosted by Dorodnicyn Computing Centre of Russian Academy of Sciences, Institute for System P- gramming of Russian Academy of Sciences, Moscow State University, Moscow Institute of Open Education,andInstitute ofNew Technologies.It was the third event in the series of regular international meetings following CSR-2006 in St. Petersburg and CSR-2007 in Ekaterinburg. The symposiumwascomposedof twotracks:Theory andApplications/Te- nology.The opening lecture was given by Avi Wigdersonand eight other invited plenarylectureweregivenby EricAllender,ZurabKhasidashvili,LeonidLevin, Pavel Pudl´ ak, Florin Spanachi, Limsoon Wong, Yuri Zhuravlev and Konstantin Rudakov, and Uri Zwick. This volume contains the accepted papers of both tracks and also some of the abstracts of the invited speakers. The scope of the proposed topics for the symposium was quite broad and covered basically all areas of computer science and its applications. We received 103 papers in total. The Program Committee of the Theory Track selected 27 papers out of 62 submissions. The Program Committee of the Applications/Technology Track selected 6 papers out of 41 submissions.

Iron Age and Hardware, Iron and Industrial Reporter Aug 23 2021

Digital Control Systems--theory, Hardware, Software Jan 28 2022

Many-Core Computing Nov 13 2020 The primary aim of this book is to provide a timely and coherent account of the recent advances in many-core computing research. Starting with programming models, operating systems and their applications; it presents runtime management techniques, followed by system modelling, verification and testing methods, and architectures and systems.

Evolvable Components Dec 27 2021 At the beginning of the 1990s research started in how to combine soft comput ing with reconfigurable hardware in a quite unique way. One of the methods that was developed has been called evolvable hardware. Thanks to evolution ary algorithms researchers have started to evolve electronic circuits routinely. A number of interesting circuits - with features unreachable by means of con ventional techniques - have been developed. Evolvable hardware is quite pop ular right now; more than fifty research groups are spread out over the world. Evolvable hardware has become a part of the curriculum at some universi ties. Evolvable hardware is being commercialized and there are specialized conferences devoted to evolvable hardware. On the other hand, surprisingly, we can feel the lack of a theoretical background and consistent design methodology in the area. Furthermore, it is quite difficult to implement really innovative and practically successful evolvable systems using contemporary digital reconfigurable technology.

Theory and Novel Applications of Machine Learning Aug 30 2019 Even since computers were invented, many researchers have been trying to understand how human beings learn and many interesting paradigms and approaches towards emulating human learning abilities have been proposed. The ability of learning is one of the central features of human intelligence, which makes it an important ingredient in both traditional Artificial Intelligence (AI) and emerging Cognitive Science. Machine Learning (ML) draws upon ideas from a diverse set of disciplines, including AI, Probability and Statistics, Computational Complexity, Information Theory, Psychology and Neurobiology, Control Theory and Philosophy. ML involves broad topics including Fuzzy Logic, Neural Networks (NNs), Evolutionary Algorithms (EAs), Probability and Statistics, Decision Trees, etc. Real-world applications of ML are widespread such as Pattern Recognition, Data Mining, Gaming, Bio-science, Telecommunications, Control and Robotics applications. This books reports the latest developments and futuristic trends in ML.

Hardware Design and Petri Nets Jan 04 2020 Hardware Design and Petri Nets presents a summary of the state of the art in the applications of Petri nets to designing digital systems and circuits. The area of hardware design has traditionally been a fertile field for research in concurrency and Petri nets. Many new ideas about modelling and analysis of concurrent systems, and Petri nets in particular, originated in theory of asynchronous digital circuits. Similarly, the theory and practice of digital circuit design have always recognized Petri nets as a powerful and easy-to-understand modelling tool. The ever-growing demand in the electronic industry for design automation to build various types of computer-based systems creates many opportunities for Petri nets to establish their role of a formal backbone in future tools for constructing systems that are increasingly becoming distributed, concurrent and asynchronous. Petri nets have already proved very effective in supporting algorithms for solving key problems in synthesis of hardware control circuits. However, since the front end to any realistic design flow in the future is likely to rely on more pragmatic Hardware Description Languages (HDLs), such as VHDL and Verilog, it is crucial that Petri nets are well interfaced to such languages. Hardware Design and Petri Nets is divided into five parts, which cover aspects of behavioral modelling, analysis and verification, synthesis from Petri nets and STGs, design environments based on high-level Petri nets and HDLs, and finally performance analysis using Petri nets. Hardware Design and Petri Nets serves as an excellent reference source and may be used as a text for advanced courses on the subject.

Fuzzy Computing Mar 30 2022 The collection of contributions in this volume contains the unconventional mode of computing and presents the new notions and new theories based upon the most natural human reasoning, cognition and perception. Representing the first work in the field, the papers present new hardware and new applications based upon these new notions of fuzzy computing. This unconventional mode of computing is most likely to grow at an exponential rate in the years ahead. As evidenced by the contributions in this volume, many research institutions around the

world are engaged in developing new theories and new hardware for fuzzy computing.

Hardware Design and Petri Nets Feb 26 2022 Hardware Design and Petri Nets presents a summary of the state of the art in the applications of Petri nets to designing digital systems and circuits. The area of hardware design has traditionally been a fertile field for research in concurrency and Petri nets. Many new ideas about modelling and analysis of concurrent systems, and Petri nets in particular, originated in theory of asynchronous digital circuits. Similarly, the theory and practice of digital circuit design have always recognized Petri nets as a powerful and easy-to-understand modelling tool. The ever-growing demand in the electronic industry for design automation to build various types of computer-based systems creates many opportunities for Petri nets to establish their role of a formal backbone in future tools for constructing systems that are increasingly becoming distributed, concurrent and asynchronous. Petri nets have already proved very effective in supporting algorithms for solving key problems in synthesis of hardware control circuits. However, since the front end to any realistic design flow in the future is likely to rely on more pragmatic Hardware Description Languages (HDLs), such as VHDL and Verilog, it is crucial that Petri nets are well interfaced to such languages. Hardware Design and Petri Nets is divided into five parts, which cover aspects of behavioral modelling, analysis and verification, synthesis from Petri nets and STGs, design environments based on high-level Petri nets and HDLs, and finally performance analysis using Petri nets. Hardware Design and Petri Nets serves as an excellent reference source and may be used as a text for advanced courses on the subject.

Computer Organization and Design Fundamentals Jun 20 2021 Computer Organization and Design Fundamentals takes the reader from the basic design principles of the modern digital computer to a top-level examination of its architecture. This book can serve either as a textbook to an introductory course on computer hardware or as the basic text for the aspiring geek who wants to learn about digital design. The material is presented in four parts. The first part describes how computers represent and manipulate numbers. The second part presents the tools used at all levels of binary design. The third part introduces the reader to computer system theory with topics such as memory, caches, hard drives, pipelining, and interrupts. The last part applies these theories through an introduction to the Intel 80x86 architecture and assembly language. The material is presented using practical terms and examples with an aim toward providing anyone who works with computer systems the ability to use them more effectively through a better understanding of their design.

Winning the Hardware-Software Game Jul 02 2022 "Many books discuss high-tech decision making, but this is the only book I know of that provides a systematic approach based on objective analysis." —Matthew Scarpino, author of Programming the Cell Processor "This book offers a unique approach to analyzing business strategy that changes the focus and attitude to a lively and fun exercise of treating business strategy as a game." —Dave Hendricksen, Architect, Thomson-Reuters USE GAME THEORY TO SOLVE THE #1 PROBLEM THAT CAUSES NEW TECHNOLOGIES TO FAIL IN THE MARKETPLACE: LACK OF COORDINATION Too many advanced technologies fail the test of adoption, at immense cost to their creators and investors. Why? Many new technologies are launched into complex ecosystems where hardware, software, and/or connectivity components must work together—for instance, next-generation gaming and video platforms that can only succeed if they offer attractive, compatible content. Often, users aren't ready to give up existing systems, and content or connectivity providers aren't ready to move away from existing markets. In either case, the real issue is a lack of coordination. Fortunately, coordination problems have specific, proven solutions, and Winning the Hardware–Software Game shows you exactly how to find them. Drawing on advanced ideas from game theory, economics, sociology, and business strategy, author Ruth D. Fisher presents a systematic framework for identifying, assessing, and resolving coordination problems among all the participants in a product ecosystem. Writing in plain, nontechnical, nonmathematical English, Dr. Fisher helps you discover specific steps that will prepare your customers and partners for successful adoption. Using these techniques, you can shape strategy, systematically reduce risk, and dramatically increase profitability. Topics covered in this book include: Discovering the forces that drive or delay adoption by users and content providers Understanding networks, network effects, switching costs, technology compatibility, and other crucial issues Speeding the pace of adoption, and getting to the "tipping point" sooner Clarifying and restructuring the incentives that motivate users and software providers Engineering new systems to maximize the likelihood of adoption Creating expectations of adoption and decreasing the relative value of older systems Learning from Apple Newton versus Palm Pilot, HD DVD versus Blu-Ray, and other significant technology battles Leveraging lock-in, path dependence, standardization, and first-mover advantage With so much at stake, Winning the Hardware–Software Game is a required resource for everyone concerned with new technology adoption—executives, strategists, R&D leaders, marketers, product managers, industry analysts, and investors alike.

SOFSEM 2013: Theory and Practice of Computer Science Oct 13 2020 This book constitutes the refereed proceedings of the 39th International Conference on Current Trends in Theory and Practice of Computer Science, SOFSEM 2013, held in Špindlerův Mlýn, Czech Republic, in January 2013. The 37 revised full papers presented in this volume were carefully reviewed and selected from 98 submissions. The book also contains 10 invited talks, 5 of which are in full-paper length. The contributions are organized in topical sections named: foundations of computer science; software and Web engineering; data, information, and knowledge engineering; and social computing and human factors.

Computer Systems Jun 01 2022 Computer Systems: Theory, Technology, and Applications A Tribute to Roger Needham Computer systems form the core of computing, as their combinations of hardware and software components function together to help program developers and end-users achieve goals of managing and accessing information in all its forms. Roger Needham, in a distinguished career at Cambridge University and Microsoft Research, was a pioneer of computer systems research and a noted innovator in the crucial area of system security. Computer Systems: Theory, Technology, and Applications presents a comprehensive edited survey of all aspects of the subject, with original contributions by more than 40 international leaders in the field. The book assembles a collection of short articles showing the state-of-the-art in systems, from formal calculi to mobile devices, from operating systems to distributed computing and security—while also honoring Needham's important contributions. Among the topics addressed: Access control, data integration, and their languages Clumps, clusters, and classification The economics of open systems The Needham – Schroeder authentication protocol Sentient computing A technology transfer retrospective Real time in a real operating system Application-private networks Technologies for portable computing An authorization model for web services Challenges for computing research Protocol analysis, composability, and computation This accessible monograph is an ideal overview of theoretical and empirical evolution in computer systems. It will serve as an invaluable resource for professionals, researchers, libraries, and students who are interested in broadening their knowledge of the entire field.

Thinking Machines Dec 03 2019 Thinking Machines: Machine Learning and Its Hardware Implementation covers the theory and application of machine learning, neuromorphic computing and neural networks. This is the first book that focuses on machine learning accelerators and hardware development for machine learning. It presents not only a summary of the latest trends and examples of machine learning hardware and basic knowledge of machine learning in general, but also the main issues involved in its implementation. Readers will learn what is required for the design of machine learning hardware for neuromorphic computing and/or neural networks. This is a recommended book for those who have basic knowledge of machine learning or those who want to learn more about the current trends of machine learning. Presents a clear understanding of various available machine learning hardware accelerator solutions that can be applied to selected machine learning algorithms Offers key insights into the development of hardware, from algorithms, software, logic circuits, to hardware accelerators Introduces the baseline characteristics of deep neural network models that should be treated by hardware as well Presents readers with a thorough review of past research and products, explaining how to design through ASIC and FPGA approaches for target machine learning models Surveys current trends and models in neuromorphic computing and neural network hardware architectures Outlines the strategy for advanced hardware development through the example of deep learning accelerators

The Theory and Method of Design and Optimization for Railway Intelligent Transportation Systems (RITS) Jan 16 2021 This book explains the theory and methods of system optimization design for railway intelligent transportation systems (RITS), which optimizes RITS total performance by decreasing the difficulty and cost of system development and increasing the system efficiency. Readers will understand key concepts of RITS and the

latest research relevant to China and other countries where RITSs have been developed. The book is suitable for university scholars in the field of railway transportation.

Reconfigurable Computing Nov 25 2021 The main characteristic of Reconfigurable Computing is the presence of hardware that can be reconfigured to implement specific functionality more suitable for specially tailored hardware than on a simple uniprocessor. Reconfigurable computing systems join microprocessors and programmable hardware in order to take advantage of the combined strengths of hardware and software and have been used in applications ranging from embedded systems to high performance computing. Many of the fundamental theories have been identified and used by the Hardware/Software Co-Design research field. Although the same background ideas are shared in both areas, they have different goals and use different approaches.This book is intended as an introduction to the entire range of issues important to reconfigurable computing, using FPGAs as the context, or "computing vehicles? to implement this powerful technology. It will take a reader with a background in the basics of digital design and software programming and provide them with the knowledge needed to be an effective designer or researcher in this rapidly evolving field. • Treatment of FPGAs as computing vehicles rather than glue-logic or ASIC substitutes • Views of FPGA programming beyond Verilog/VHDL • Broad set of case studies demonstrating how to use FPGAs in novel and efficient ways

Artificial Life Models in Hardware May 20 2021 Hopping, climbing and swimming robots, nano-size neural networks, motorless walkers, slime mould and chemical brains - "Artificial Life Models in Hardware" offers unique designs and prototypes of life-like creatures in conventional hardware and hybrid bio-silicon systems. Ideas and implementations of living phenomena in non-living substrates cast a colourful picture of state-of-art advances in hardware models of artificial life.

Handbook of Research on Computational Science and Engineering: Theory and Practice Sep 23 2021 By using computer simulations in research and development, computational science and engineering (CSE) allows empirical inquiry where traditional experimentation and methods of inquiry are difficult, inefficient, or prohibitively expensive. The Handbook of Research on Computational Science and Engineering: Theory and Practice is a reference for interested researchers and decision-makers who want a timely introduction to the possibilities in CSE to advance their ongoing research and applications or to discover new resources and cutting edge developments. Rather than reporting results obtained using CSE models, this comprehensive survey captures the architecture of the cross-disciplinary field, explores the long term implications of technology choices, alerts readers to the hurdles facing CSE, and identifies trends in future development.

Hardware and Software Architectures for Fault Tolerance Dec 15 2020 Fault tolerance has been an active research area for many years. This volume presents papers from a workshop held in 1993 where a small number of key researchers and practitioners in the area met to discuss the experiences of industrial practitioners, to provide a perspective on the state of the art of fault tolerance research, to determine whether the subject is becoming mature, and to learn from the experiences so far in order to identify what might be important research topics for the coming years. The workshop provided a more intimate environment for discussions and presentations than usual at conferences. The papers in the volume were presented at the workshop, then updated and revised to reflect what was learned at the workshop.

Digital and Microprocessor Fundamentals Jul 30 2019 Focusing on the must know essentials, this text is designed for one-semester consolidated courses in digital and microprocessor fundamentals, or one-semester courses in digital fundamentals followed by one-semester courses in microprocessor fundamentals.