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This book will advance the understanding and application of self-adaptive intelligent systems; therefore it will potentially benefit the long-term goal of replicating certain levels of brain-like intelligence in complex and networked engineering systems. It will provide new approaches for adaptive systems within uncertain environments. This will provide an opportunity to evaluate the strengths and weaknesses of the current state-of-the-art of knowledge, give rise to new research directions, and educate future professionals in this domain. Self-adaptive intelligent systems have wide applications from military security systems to civilian daily life. In this book, different application problems, including pattern recognition, classification, image recovery, and sequence learning, will be presented to show the capability of the proposed systems in learning, memory, and prediction. Therefore, this book will also provide potential new solutions to many real-world applications.

Broderick Crawford Starring In Highway Patrol is the only complete volume on the history of this blockbuster television series. This book contains fascinating interviews with Highway Patrol writers, directors, producers and cast members highlighting many inside, behind-the-scenes stories. With the author's unprecedented rare access to the archives of ZIV Television Productions, Inc., Broderick Crawford Starring In Highway Patrol is profusely illustrated with hundreds of rare, and never before seen photographs

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and documents. It includes a complete episode guide with plot summaries for the entire four seasons of one hundred fifty-six episodes of Highway Patrol, and several original pages reproduced from the script of the series' pilot episode. Highway Patrol was often imitated but never duplicated and this book documents the series' many imitators, parodies, and merchandise.

Invented about 40 years ago and called ubiquitous less than 10 years later, B-tree indexes have been used in a wide variety of computing systems from handheld devices to mainframes and server farms. Over the years, many techniques have been added to the basic design in order to improve efficiency or to add functionality. Examples include separation of updates to structure or contents, utility operations such as non-logged yet transactional index creation, and robust query processing such as graceful degradation during index-to-index navigation. Modern B-Tree Techniques reviews the basics of B-trees and of B-tree indexes in databases, transactional techniques and query processing techniques related to B-trees, B-tree utilities essential for database operations, and many optimizations and improvements. It is intended both as a tutorial and as a reference, enabling researchers to compare index innovations with advanced B-tree techniques and enabling professionals to select features, functions, and tradeoffs most appropriate for their data management challenges.

Mary Roach meets Bill Bryson in this "surefire summer winner" (Janet Maslin, New York Times), an uproarious tour of the basest instincts and biggest mysteries of the

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animal world Humans have gone to the Moon and discovered the Higgs boson, but when it comes to understanding animals, we've still got a long way to go. Whether we're seeing a viral video of romping baby pandas or a picture of penguins "holding hands," it's hard for us not to project our own values--innocence, fidelity, temperance, hard work--onto animals. So you've probably never considered if moose get drunk, penguins cheat on their mates, or worker ants lay about. They do--and that's just for starters. In *The Truth About Animals*, Lucy Cooke takes us on a worldwide journey to meet everyone from a Colombian hippo castrator to a Chinese panda porn peddler, all to lay bare the secret--and often hilarious--habits of the animal kingdom. Charming and at times downright weird, this modern bestiary is perfect for anyone who has ever suspected that virtue might be unnatural.

Almost all homes, apartments, and commercial buildings will experience leaks, flooding, or other forms of excessive indoor dampness at some point. Not only is excessive dampness a health problem by itself, it also contributes to several other potentially problematic types of situations. Molds and other microbial agents favor damp indoor environments, and excess moisture may initiate the release of chemical emissions from damaged building materials and furnishings. This new book from the Institute of Medicine examines the health impact of exposures resulting from damp indoor environments and offers recommendations for public health interventions. *Damp Indoor Spaces and Health* covers a broad range of topics. The book not only examines the

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relationship between damp or moldy indoor environments and adverse health outcomes but also discusses how and where buildings get wet, how dampness influences microbial growth and chemical emissions, ways to prevent and remediate dampness, and elements of a public health response to the issues. A comprehensive literature review finds sufficient evidence of an association between damp indoor environments and some upper respiratory tract symptoms, coughing, wheezing, and asthma symptoms in sensitized persons. This important book will be of interest to a wide-ranging audience of science, health, engineering, and building professionals, government officials, and members of the public.

"This book provides up-to-date knowledge of space debris and valuable insights on how to grapple with this issue from legal, technical, economical and societal aspects. I would strongly recommend that everyone who is working on space development and utilizations and even non-specialists once read this book and think over how human being should be faced with this issue." –Prof. Shinichi Nakasuka, University of Tokyo, Japan
Space Debris Peril: Pathways to Opportunities takes readers through the wide spectrum of problems created by space debris – including technical, political, legal and socio-economical aspects – and suggests ways to mitigate its negative consequences and create new opportunities. With chapter contributions from authors at world-renowned universities, private or public entities, and research institutes active in the field of space debris mitigation, space policy and law, risk and resilience, liability and

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insurance, this book provides a comprehensive introduction to the subject helping the reader to grasp the whole picture of the current space debris remediation challenges. This book will be of interest to the scientific communities, policy makers, business developers, (re)insurers and international standards developers for space operations and orbital debris mitigation. Also, it should appeal to a broader audience among non-specialists in various sectors and the general public. Key features: Brings together interdisciplinary perspectives on the topic in one, cohesive book Chapter contributions from specialists in this interdisciplinary field from around the globe Up-to-date information with the latest developments

This book presents the methodologies and for embedded systems design, using field programmable gate array (FPGA) devices, for the most modern applications. Coverage includes state-of-the-art research from academia and industry on a wide range of topics, including applications, advanced electronic design automation (EDA), novel system architectures, embedded processors, arithmetic, and dynamic reconfiguration. Big Data in Radio Astronomy: Scientific Data Processing for Advanced Radio Telescopes provides the latest research developments in big data methods and techniques for radio astronomy. Providing examples from such projects as the Square Kilometer Array (SKA), the world's largest radio telescope that generates over an Exabyte of data every day, the book offers solutions for coping with the challenges and opportunities presented by the exponential growth of astronomical data. Presenting

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state-of-the-art results and research, this book is a timely reference for both practitioners and researchers working in radio astronomy, as well as students looking for a basic understanding of big data in astronomy. Bridges the gap between radio astronomy and computer science Includes coverage of the observation lifecycle as well as data collection, processing and analysis Presents state-of-the-art research and techniques in big data related to radio astronomy Utilizes real-world examples, such as Square Kilometer Array (SKA) and Five-hundred-meter Aperture Spherical radio Telescope (FAST)

This is an introductory to intermediate level text on the science of image processing, which employs the Matlab programming language to illustrate some of the elementary, key concepts in modern image processing and pattern recognition. The approach taken is essentially practical and the book offers a framework within which the concepts can be understood by a series of well chosen examples, exercises and computer experiments, drawing on specific examples from within science, medicine and engineering. Clearly divided into eleven distinct chapters, the book begins with a fast-start introduction to image processing to enhance the accessibility of later topics. Subsequent chapters offer increasingly advanced discussion of topics involving more challenging concepts, with the final chapter looking at the application of automated image classification (with Matlab examples) . Matlab is frequently used in the book as a tool for demonstrations, conducting experiments and for solving problems, as it is both

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ideally suited to this role and is widely available. Prior experience of Matlab is not required and those without access to Matlab can still benefit from the independent presentation of topics and numerous examples. Features a companion website www.wiley.com/go/solomon/fundamentals containing a Matlab fast-start primer, further exercises, examples, instructor resources and accessibility to all files corresponding to the examples and exercises within the book itself. Includes numerous examples, graded exercises and computer experiments to support both students and instructors alike.

This book covers technologies, applications, tools, languages, procedures, advantages, and disadvantages of reconfigurable supercomputing using Field Programmable Gate Arrays (FPGAs). The target audience is the community of users of High Performance Computers (HPC) who may benefit from porting their applications into a reconfigurable environment. As such, this book is intended to guide the HPC user through the many algorithmic considerations, hardware alternatives, usability issues, programming languages, and design tools that need to be understood before embarking on the creation of reconfigurable parallel codes. We hope to show that FPGA acceleration, based on the exploitation of the data parallelism, pipelining and concurrency remains promising in view of the diminishing improvements in traditional processor and system design. Table of Contents: FPGA Technology / Reconfigurable Supercomputing / Algorithmic Considerations / FPGA Programming Languages / Case Study: Sorting /

Alternative Technologies and Concluding Remarks

This 2 volume-set of IFIP AICT 583 and 584 constitutes the refereed proceedings of the 16th IFIP WG 12.5 International Conference on Artificial Intelligence Applications and Innovations, AIAI 2020, held in Neos Marmaras, Greece, in June 2020.* The 70 full papers and 5 short papers presented were carefully reviewed and selected from 149 submissions. They cover a broad range of topics related to technical, legal, and ethical aspects of artificial intelligence systems and their applications and are organized in the following sections: Part I: classification; clustering - unsupervised learning -analytics; image processing; learning algorithms; neural network modeling; object tracking - object detection systems; ontologies - AI; and sentiment analysis - recommender systems. Part II: AI ethics - law; AI constraints; deep learning - LSTM; fuzzy algebra - fuzzy systems; machine learning; medical - health systems; and natural language. *The conference was held virtually due to the COVID-19 pandemic.

Mammography remains at the backbone of medical tools to examine the human breast. The early detection of breast cancer typically uses adjunct tests to mammogram such as ultrasound, positron emission mammography, electrical impedance, Computer-aided detection systems and others. In the present digital era it is even more important to use the best new techniques and systems available to improve the correct diagnosis and to prevent mortality from breast cancer. The first part of this book deals with the electrical impedance mammographic scheme, ultrasound axillary imaging, position emission

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mammography and digital mammogram enhancement. A detailed consideration of CBR CAD System and the availability of mammographs in Brazil forms the second part of this book. With the up-to-date papers from world experts, this book will be invaluable to anyone who studies the field of mammography.

Essay Collection covering the point where software, law and social justice meet.

This three volume book contains the Proceedings of 5th International Conference on Advanced Computing, Networking and Informatics (ICACNI 2017). The book focuses on the recent advancement of the broad areas of advanced computing, networking and informatics. It also includes novel approaches devised by researchers from across the globe. This book brings together academic scientists, professors, research scholars and students to share and disseminate information on knowledge and scientific research works related to computing, networking, and informatics to discuss the practical challenges encountered and the solutions adopted. The book also promotes translation of basic research into applied investigation and convert applied investigation into practice.

This volume presents the proceedings of Medicon 2016, held in Paphos, Cyprus.

Medicon 2016 is the XIV in the series of regional meetings of the International Federation of Medical and Biological Engineering (IFMBE) in the Mediterranean. The goal of Medicon 2016 is to provide updated information on the state of the art on Medical and Biological Engineering and Computing under the main theme "Systems

Medicine for the Delivery of Better Healthcare Services”. Medical and Biological Engineering and Computing cover complementary disciplines that hold great promise for the advancement of research and development in complex medical and biological systems. Research and development in these areas are impacting the science and technology by advancing fundamental concepts in translational medicine, by helping us understand human physiology and function at multiple levels, by improving tools and techniques for the detection, prevention and treatment of disease. Medicon 2016 provides a common platform for the cross fertilization of ideas, and to help shape knowledge and scientific achievements by bridging complementary disciplines into an interactive and attractive forum under the special theme of the conference that is Systems Medicine for the Delivery of Better Healthcare Services. The programme consists of some 290 invited and submitted papers on new developments around the Conference theme, presented in 3 plenary sessions, 29 parallel scientific sessions and 12 special sessions.

An introduction to computer engineering for babies. Learn basic logic gates with hands on examples of buttons and an output LED.

This book contains the contributions presented at the 6th international KES conference on Smart Education and e-Learning (KES SEEL-2019), which took place at St. Julian's, Malta, June 17–19, 2019. It contains fifty-five high-quality peer-reviewed papers that are grouped into several interconnected parts: Part 1 – Smart Education,

Part 2 – Smart e-Learning, Part 3 – Smart Pedagogy, Part 4 – Smart Education: Systems and Technology, Part 5 – Smart Education: Case Studies and Research, Part 6 – Students with Disabilities and Smart Education/University, and Part 7 – Mathematical Modelling of Smart Education and Economics of Smart University. Smart education and smart e-learning are emerging and rapidly growing areas with the potential to transform existing teaching strategies, learning environments, and educational activities and technology in the classroom. Smart education and smart e-learning focus on enabling instructors to develop new ways of achieving excellence in teaching in highly technological smart classrooms, and providing students with new opportunities to maximize their success and select the best options for their education, location and learning style, as well as the mode of content delivery. This book serves as a useful source of research data and valuable information on current research projects, best practices and case studies for faculty, scholars, Ph.D. students, administrators, and practitioners – all those who are interested in smart education and smart e-learning.

The definitive reference for space engineers on rendezvous and docking/berthing (RVD/B) related issues, this book answers key questions such as: How does the docking vehicle accurately approach the target spacecraft? What technology is needed aboard the spacecraft to perform automatic rendezvous and docking, and what systems are required by ground control to supervise this process? How can the proper

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functioning of all rendezvous-related equipment, systems and operations be verified before launch? The book provides an overview of the major issues governing approach and mating strategies, and system concepts for rendezvous and docking/berthing. These issues are described and explained such that aerospace engineers, students and even newcomers to the field can acquire a basic understanding of RVD/B. The author would like to extend his thanks to Dr Shufan Wu, GNC specialist and translator of the book's Chinese edition, for his help in the compilation of these important errata. Recent advances in sensor design, embedded systems, and communication networks allow us to collect valuable biomedical data effectively. The new biomedical data acquisition systems make significant contributions to life quality as well as support healthcare and diagnostic procedures. This book presents several innovative applications of data acquisition technology for monitoring patient activity, assisted living, diagnosing osteoarthritis, recognizing disorders of the cardiovascular system, and designing prostheses for amputees.

Proceedings of the International Symposium on Supercomputing held in Tokyo, Japan, September 1-3, 1997

Driven by discoveries, and enabled by leaps in technology and imagination, our understanding of the universe has changed dramatically during the course of the last few decades. The fields of astronomy and astrophysics are making new connections to physics, chemistry, biology, and computer science. Based on a broad and

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comprehensive survey of scientific opportunities, infrastructure, and organization in a national and international context, *New Worlds, New Horizons in Astronomy and Astrophysics* outlines a plan for ground- and space- based astronomy and astrophysics for the decade of the 2010's. Realizing these scientific opportunities is contingent upon maintaining and strengthening the foundations of the research enterprise including technological development, theory, computation and data handling, laboratory experiments, and human resources. *New Worlds, New Horizons in Astronomy and Astrophysics* proposes enhancing innovative but moderate-cost programs in space and on the ground that will enable the community to respond rapidly and flexibly to new scientific discoveries. The book recommends beginning construction on survey telescopes in space and on the ground to investigate the nature of dark energy, as well as the next generation of large ground-based giant optical telescopes and a new class of space-based gravitational observatory to observe the merging of distant black holes and precisely test theories of gravity. *New Worlds, New Horizons in Astronomy and Astrophysics* recommends a balanced and executable program that will support research surrounding the most profound questions about the cosmos. The discoveries ahead will facilitate the search for habitable planets, shed light on dark energy and dark matter, and aid our understanding of the history of the universe and how the earliest stars and galaxies formed. The book is a useful resource for agencies supporting the field of astronomy and astrophysics, the Congressional committees with jurisdiction

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over those agencies, the scientific community, and the public.

Interested in developing embedded systems? Since they don't tolerate inefficiency, these systems require a disciplined approach to programming. This easy-to-read guide helps you cultivate a host of good development practices, based on classic software design patterns and new patterns unique to embedded programming. Learn how to build system architecture for processors, not operating systems, and discover specific techniques for dealing with hardware difficulties and manufacturing requirements. Written by an expert who's created embedded systems ranging from urban surveillance and DNA scanners to children's toys, this book is ideal for intermediate and experienced programmers, no matter what platform you use.

Optimize your system to reduce cost and increase performance Develop an architecture that makes your software robust in resource-constrained environments Explore sensors, motors, and other I/O devices Do more with less: reduce RAM consumption, code space, processor cycles, and power consumption Learn how to update embedded code directly in the processor Discover how to implement complex mathematics on small processors Understand what interviewers look for when you apply for an embedded systems job "Making Embedded Systems is the book for a C programmer who wants to enter the fun (and lucrative) world of embedded systems. It's very well written—entertaining, even—and filled with clear illustrations." —Jack Ganssle, author and embedded system expert.

The book covers various aspects of VHDL programming and FPGA interfacing with examples and sample codes giving an overview of VLSI technology, digital circuits design with VHDL, programming, components, functions and procedures, and arithmetic designs followed by coverage of the core of external I/O programming, algorithmic state machine based system

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design, and real-world interfacing examples.

This book features selected research papers presented at the Second International Conference on Computing, Communications, and Cyber-Security (IC4S 2020), organized in Krishna Engineering College (KEC), Ghaziabad, India, along with Academic Associates; Southern Federal University, Russia; IAC Educational, India; and ITS Mohan Nagar, Ghaziabad, India during 3 October 2020. It includes innovative work from researchers, leading innovators, and professionals in the area of communication and network technologies, advanced computing technologies, data analytics and intelligent learning, the latest electrical and electronics trends, and security and privacy issues.

This book gathers high-quality papers presented at the International Conference on Smart Trends for Information Technology and Computer Communications (SmartCom 2020), organized by the Global Knowledge Research Foundation (GR Foundation) from 23 to 24 January 2020. It covers the state-of-the-art and emerging topics in information, computer communications, and effective strategies for their use in engineering and managerial applications. It also explores and discusses the latest technological advances in, and future directions for, information and knowledge computing and its applications.

From cloud computing to data analytics, society stores vast supplies of information through wireless networks and mobile computing. As organizations are becoming increasingly more wireless, ensuring the security and seamless function of electronic gadgets while creating a strong network is imperative. *Advanced Methodologies and Technologies in Network Architecture, Mobile Computing, and Data Analytics* highlights the challenges associated with creating a strong network architecture in a perpetually online society. Readers will learn

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various methods in building a seamless mobile computing option and the most effective means of analyzing big data. This book is an important resource for information technology professionals, software developers, data analysts, graduate-level students, researchers, computer engineers, and IT specialists seeking modern information on emerging methods in data mining, information technology, and wireless networks.

An exploration of embodied intelligence and its implications points toward a theory of intelligence in general; with case studies of intelligent systems in ubiquitous computing, business and management, human memory, and robotics. How could the body influence our thinking when it seems obvious that the brain controls the body? In *How the Body Shapes the Way We Think*, Rolf Pfeifer and Josh Bongard demonstrate that thought is not independent of the body but is tightly constrained, and at the same time enabled, by it. They argue that the kinds of thoughts we are capable of have their foundation in our embodiment—in our morphology and the material properties of our bodies. This crucial notion of embodiment underlies fundamental changes in the field of artificial intelligence over the past two decades, and Pfeifer and Bongard use the basic methodology of artificial intelligence—"understanding by building"—to describe their insights. If we understand how to design and build intelligent systems, they reason, we will better understand intelligence in general. In accessible, nontechnical language, and using many examples, they introduce the basic concepts by building on recent developments in robotics, biology, neuroscience, and psychology to outline a possible theory of intelligence. They illustrate applications of such a theory in ubiquitous computing, business and management, and the psychology of human memory. Embodied intelligence, as described by Pfeifer and Bongard, has important implications for our

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understanding of both natural and artificial intelligence.

Solar Panel Processing discusses solar cell technology including theory of operation, efficiency, materials, research on silicon processing, thin-film processing, polymer processing, nanoparticle processing, and transparent conductors. The hand book presents detailed descriptions of thin film processing of amorphous silicon, CdTe, CIGS, and GaAs panels. The handbook details Key Growth Drivers us solar panel usage, Challenges Facing The Solar Power Industry , Cost Of A Photovoltaic System, and Operating Metrics Of A Photovoltaic Systems Increasing focus on the demand for energy led to conduct this study, which determines the current status of thin films used in various kinds of energy. Our goal was to assess the value of thin films used in the fabrication of six energy technologies for 2007, project 2008 demand, and then forecast thin film demand growth to 2013. This study focuses on the merits of thin films and main key objective was to present a comprehensive analysis of the current market for thin films and its future direction. Global demand for traditional fossil fuels has risen at an unprecedented rate over the lest several years. The economics of supply and demand have driven prices of oil, gas, and coal to record levels. In addition, fossil fuels are considered a source of pollution that aids climate change. Nations have responded by instituting reductions in activities that require the use of fossil fuels and by searching for alternative energy methods. This handbook examines traditional crystalline and thin film photovoltaic fabrication and operation. Thin films are often applied to reduce the cost of product fabrication, improve performance, and provide more flexibility in product design. In addition, they are environmentally benign. The Solar Panel Processing Handbook study of thin films in energy presents current and emerging technologies for various types of solar cells,

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detail the industry structure of each segment, discusses the competitive environment of each type of energy, and reviews current and future applications for thin films. Handbook study will be of interest to those who make solar cells, semiconductors and their manufacturing equipment, thin films, materials, chemicals and gases.

This book provides a thorough overview of cutting-edge research on electronics applications relevant to industry, the environment, and society at large. It covers a broad spectrum of application domains, from automotive to space and from health to security, while devoting special attention to the use of embedded devices and sensors for imaging, communication and control. The book is based on the 2015 ApplePies Conference, held in Rome, which brought together researchers and stakeholders to consider the most significant current trends in the field of applied electronics and to debate visions for the future. Areas addressed by the conference included information communication technology; biotechnology and biomedical imaging; space; secure, clean and efficient energy; the environment; and smart, green and integrated transport. As electronics technology continues to develop apace, constantly meeting previously unthinkable targets, further attention needs to be directed toward the electronics applications and the development of systems that facilitate human activities. This book, written by industrial and academic professionals, represents a valuable contribution in this endeavor.

Artificial Intelligence: A Modern Approach offers the most comprehensive, up-to-date introduction to the theory and practice of artificial intelligence. Number one in its field, this textbook is ideal for one or two-semester, undergraduate or graduate-level courses in Artificial Intelligence.

Research on radiation-tolerant electronics has increased rapidly over the past few years,

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resulting in many interesting approaches to modeling radiation effects and designing radiation-hardened integrated circuits and embedded systems. This research is strongly driven by the growing need for radiation-hardened electronics for space applications, high-energy physics experiments such as those on the Large Hadron Collider at CERN, and many terrestrial nuclear applications including nuclear energy and nuclear safety. With the progressive scaling of integrated circuit technologies and the growing complexity of electronic systems, their susceptibility to ionizing radiation has raised many exciting challenges, which are expected to drive research in the coming decade. In this book we highlight recent breakthroughs in the study of radiation effects in advanced semiconductor devices, as well as in high-performance analog, mixed signal, RF, and digital integrated circuits. We also focus on advances in embedded radiation hardening in both FPGA and microcontroller systems and apply radiation-hardened embedded systems for cryptography and image processing, targeting space applications.

This book covers the latest approaches and results from reconfigurable computing architectures employed in the finance domain. So-called field-programmable gate arrays (FPGAs) have already shown to outperform standard CPU- and GPU-based computing architectures by far, saving up to 99% of energy depending on the compute tasks. Renowned authors from financial mathematics, computer architecture and finance business introduce the readers into today's challenges in finance IT, illustrate the most advanced approaches and use cases and present currently known methodologies for integrating FPGAs in finance systems together with latest results. The complete algorithm-to-hardware flow is covered holistically, so this book serves as a hands-on guide for IT managers, researchers and

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quants/programmers who think about integrating FPGAs into their current IT systems.

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