
Computing Fundamentals The Theory And Practice Of Software Design With Blackbox Component Builder

Fundamentals of Wireless Sensor Networks
 Fundamentals of Computation Theory
 Instructional Computing Fundamentals for IBM Microcomputers
 Fundamentals of Natural Computing
 Fundamentals of Computation Theory
 Parallel Computing
 The Basics of Cloud Computing
 Machine Learning for Decision Makers
 Guide to Computing Fundamentals in Cyber-Physical Systems
 Introduction to the Theory of Programming Languages
 SOFSEM 2007: Theory and Practice of Computer Science
 Computing Fundamentals
 Distributed Computing
 Fundamentals of Computation Theory
 Computability, Complexity, and Languages
 Fundamentals of Computing
 A Geographer's Guide to Computing Fundamentals
 Electromagnetism for Signal Processing, Spectroscopy and Contemporary Computing
 Impossibility Results for Distributed Computing
 Parallel Computing: Fundamentals, Applications and New Directions
 Fundamentals of Discrete Math for Computer Science
 Fundamentals of Computer Science
 Fundamentals of Quantum Computing
 Computing Fundamentals and Programming in C
 Fundamentals of the Theory of Computation: Principles and Practice
 Ubiquitous Computing Fundamentals
 Computer Science - Theory and Applications
 Advanced Information Technology in Education
 Fundamentals of Quantum Programming in IBM's Quantum Computers
 Edge Computing
 Computing Fundamentals
 Fundamentals of the Theory of Computation
 Fundamentals of Computing and Programming in C
 Fundamentals of Grid Computing
 What Can Be Computed?
 Reversible Computing
 Cloud Computing Fundamentals
 An Introduction to Quantum Computing
 Quantum Computing Fundamentals
 Fundamentals of Computing I

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Fundamentals of Wireless Sensor Networks Springer Nature

In this book, the authors describe the fundamental concepts and practical aspects of wireless sensor networks. The book provides a comprehensive view to this rapidly evolving field, including its many novel applications, ranging from protecting civil infrastructure to pervasive health monitoring. Using detailed examples and illustrations, this book provides an inside track on the current state of the technology. The book is divided into three parts. In Part I, several node architectures, applications and operating systems are discussed. In Part II, the basic architectural frameworks, including the key building blocks required for constructing large-scale, energy-efficient sensor networks are presented. In Part III, the challenges and approaches pertaining to local and global management strategies are presented - this includes topics on power management, sensor node localization, time synchronization, and security. At the end of each chapter, the authors provide practical exercises to help students strengthen their grip on the subject. There are more than 200 exercises altogether. Key Features: Offers a comprehensive introduction to the theoretical and practical concepts pertaining to wireless sensor networks Explains the constraints and challenges of wireless sensor network design; and discusses the most

promising solutions Provides an in-depth treatment of the most critical technologies for sensor network communications, power management, security, and programming Reviews the latest research results in sensor network design, and demonstrates how the individual components fit together to build complex sensing systems for a variety of application scenarios Includes an accompanying website containing solutions to exercises (http://www.wiley.com/go/dargie_fundamentals) This book serves as an introductory text to the field of wireless sensor networks at both graduate and advanced undergraduate level, but it will also appeal to researchers and practitioners wishing to learn about sensor network technologies and their application areas, including environmental monitoring, protection of civil infrastructure, health care, precision agriculture, traffic control, and homeland security.

Fundamentals of Computation Theory CRC Press

This second edition is based on the ACM curricula 1991 and is the first in a four-book series of introductory texts in computer science. It focuses on topics such as logic, problem-solving and theory and programs, providing an integrated overview of the major areas of computing while introducing students to the key processes of theory, abstraction and design. Topics covered include: algorithms and data structures, architecture, artificial intelligence and operating systems. The text integrates laboratory experience uniting principles with programming, and introduces the social and professional context of the discipline.

Instructional Computing Fundamentals for IBM Microcomputers Elsevier

This reference text presents the state-of-the-art in edge computing, its primitives, devices and simulators, applications, and healthcare-based case studies. The text provides integration of blockchain with edge computing systems and integration of edge with Internet of Things (IoT) and cloud computing. It will facilitate readers to setup edge-based environment and work with edge analytics. It covers important topics, including cluster computing, fog computing, networking architecture, edge computing simulators, edge analytics, privacy-preserving schemes, edge computing with blockchain, autonomous vehicles, and cross-domain authentication. Aimed at senior undergraduate, graduate students and professionals in the fields of electrical engineering, electronics engineering, computer science, and information technology, this text: Discusses edge data storage security with case studies and blockchain integration with the edge computing system Covers theoretical methods with the help of applications, use cases, case studies, and examples Provides healthcare real-time case studies elaborated by utilizing the virtues of homomorphic encryption Discusses real-time interfaces, devices, and simulators in detail

Fundamentals of Natural Computing Springer

This innovative textbook presents the key foundational concepts for a one-semester undergraduate course in the theory of computation. It offers the most accessible and motivational course material available for undergraduate computer theory classes. Directed at undergraduates who may have difficulty understanding the relevance of the course to their future careers, the text helps make them more comfortable with the techniques required for the deeper study of computer science. The text motivates students by clarifying complex theory with many examples, exercises and detailed proofs. * This book is shorter and more accessible than the books now being used in core computer theory courses. * Theory of computing is a standard, required course in all computer science departments.

Fundamentals of Computation Theory CRC Press

This textbook provides an engaging and motivational introduction to traditional topics in discrete mathematics, in a manner specifically designed to appeal to computer science students. The text empowers students to think critically, to be effective problem solvers, to integrate theory and practice, and to recognize the importance of abstraction. Clearly structured and interactive in nature, the book presents detailed walkthroughs of several algorithms, stimulating a conversation with the reader through informal commentary and provocative questions. Features: no university-level background in mathematics required; ideally structured for classroom-use and self-study, with modular chapters following ACM curriculum recommendations; describes mathematical processes in an algorithmic manner; contains examples and exercises throughout the text, and highlights the most important concepts in each section; selects examples that demonstrate a practical use for the concept in question.

Parallel Computing Elsevier

To understand the power of distributed systems, it is necessary to understand their inherent limitations: what problems cannot be solved in particular systems, or without sufficient resources (such as time or space). This book presents key techniques for proving such impossibility results and applies them to a variety of different problems in a variety of different system models. Insights gained from these results are highlighted, aspects of a problem that make it difficult are isolated, features of an architecture that make it inadequate for solving certain problems efficiently are identified, and different system models are compared. Table of Contents: Acknowledgments / Introduction / Indistinguishability / Shifting and Scaling / Scenario Arguments / Information Theory Arguments / Covering Arguments / Valency Arguments / Combinatorial Arguments / Reductions and Simulations / Bibliography / Authors' Biographies

The Basics of Cloud Computing Princeton University Press

This book presents an in-depth review of the state of the art of cyber-physical systems (CPS) and their applications. Relevant case studies are also provided, to help the reader to master the interdisciplinary material. Features: includes self-test exercises in each chapter, together with a glossary; offers a variety of teaching support materials at an associated website, including a comprehensive set of slides and lecture videos; presents a brief overview of the study of systems, and embedded computing systems, before defining CPS; introduces the concepts of the Internet of Things, and ubiquitous (or pervasive) computing; reviews the design challenges of CPS, and their impact on systems and software engineering; describes the ideas behind Industry 4.0 and the revolutions in digital manufacturing, including smart and agile manufacturing, as well as cybersecurity in manufacturing; considers the social impact of the changes in skills required by the globalized, digital work environment of the future.

Machine Learning for Decision Makers Springer Nature

Computability, Complexity, and Languages is an introductory text that covers the key areas of computer science, including recursive function theory, formal languages, and automata. It assumes a minimal background in formal mathematics. The book is divided into five parts: Computability, Grammars and Automata, Logic, Complexity, and Unsolvability. Computability theory is introduced in a manner that makes maximum use of previous programming experience, including a "universal" program that takes up less than a page. The number of exercises included has more than tripled. Automata theory, computational logic, and complexity theory are presented in a flexible manner, and can be covered in a variety of different arrangements.

Guide to Computing Fundamentals in Cyber-Physical Systems Thomson Brooks/Cole

The complete spectrum of computing fundamentals starting from abc of computer to internet usage has been well covered in simple and readers loving style, The language used in the book is lucid, is easy to understand, and facilities easy grasping of concepts, The chapter have been logically arranged in sequence, The book is written in a reader-friendly manner both the students and the teachers, Most of the contents presented in the book are in the form of bullets, organized sequentially. This form of presentation, rather than in a paragraph form, facilities the reader to view, understand and remember the points better, The explanation is supported by diagrams, pictures and images wherever required, Sufficient exercises have been included for practice in addition to the solved examples in every chapter related to C programming, Concepts of pointers, structures, Union and file management have been extensively detailed to help advance learners, Adequate exercises have been given at the end of the every chapter, Pedagogy followed for sequencing the contents on C programming supported by adequate programming examples is likely to help the reader to become proficient very soon, 200 problems on C programming & their solutions, 250 Additional descriptive questions on C programming.

Introduction to the Theory of Programming Languages Springer

The book *Cloud Computing Fundamentals* is intended for both undergraduate and graduate students who seek a quick overview of cloud computing technologies without the need to go into complex technical details. Each chapter is written to provide enough information for students to have a broad picture of the different concepts underlying cloud computing and its applications in the real world. Students will find that attention has been given to keep notes on each topic discussed as concise and precise as possible to impart the necessary knowledge required for a basic understanding of cloud computing. At the end of each chapter, students will also find a summary and review questions that help focus on key points covered. This book can be used as supplementary material for a course in cloud computing.

SOFSEM 2007: Theory and Practice of Computer Science Apress

Quantum Computing Fundamentals is the first systematic guidebook for the growing number of students who want to master the field's core concepts and practical techniques. Leading security expert, researcher, instructor, and author Chuck Easttom II brings together all the knowledge you need -- including essentials that other books assume you already know, such as basic linear algebra, logic gates, and elementary quantum physics. Easttom's quizzes, hands-on exercises, and review sections help you build true mastery right now. He walks you through building real applications with Q#, Microsoft's powerful new quantum computing programming language, and using Microsoft's simulator so you don't need your own quantum computer.

Computing Fundamentals Springer Science & Business Media

This volume gives an overview of the state-of-the-art with respect to the development of all types of parallel computers and their application to a wide range of problem areas. The international conference on parallel computing ParCo97 (Parallel Computing 97) was held in Bonn, Germany from 19 to 22 September 1997. The first conference in this biannual series was held in 1983 in Berlin. Further conferences were held in Leiden (The Netherlands), London (UK), Grenoble (France) and Gent (Belgium). From the outset the aim with the ParCo (Parallel Computing) conferences was to promote the application of parallel computers to solve real life problems. In the case of ParCo97 a new milestone was reached in that more than half of the papers and posters presented were concerned with application aspects. This fact reflects the coming of age of parallel computing. Some 200 papers were submitted to the Program Committee by authors from all over the world. The final programme consisted of four invited papers, 71 contributed scientific/industrial papers and 45 posters. In addition a panel discussion on Parallel Computing and the Evolution of Cyberspace was held. During and after the conference all final contributions were refereed. Only those papers and posters accepted during this final screening process are included in this volume. The practical emphasis of the conference was accentuated by an industrial exhibition where companies demonstrated the newest developments in parallel processing equipment and software. Speakers from participating companies presented papers in industrial sessions in which new developments in parallel computing were reported.

Distributed Computing Springer Nature

This comprehensive textbook will help readers to acquire a thorough understanding of the fundamentals of electromagnetism and its applications in various areas including spectroscopy, signal processing and contemporary computation. The text introduces the principals and applications of electricity, magnetism and electromagnetic theory which is foundation for communication systems, spectroscopy, and modern computing. It is followed by discussing the digital systems and their importance in computing, difference between digital signal transmission and wireless media, visualization techniques and useful simulation and computational techniques, besides advances in quantum computing. Aimed at senior undergraduate and graduate students in the field of electrical engineering, electronics and communication engineering, this textbook: Provides fundamentals of electromagnetism and its applications in a single volume. Covers recent developments in computing and artificial intelligence. Discussion digital signal processing and wireless communication in depth. Covers advanced applications of electromagnetism in communication, spectroscopy, and computing. Discusses Computer Modelling & Simulation, Artificial Intelligence, and Quantum Computing.

Fundamentals of Computation Theory KHANNA PUBLISHING HOUSE

The volume includes a set of selected papers extended and revised from the 2011 International Conference on Computers and Advanced Technology in Education. With the development of computers and advanced technology, the human social activities are changing basically. Education, especially the education reforms in different countries, has been experiencing the great help from the computers and advanced technology. Generally speaking, education is a field which needs more information, while the computers, advanced technology and internet are a good information provider. Also, with the aid of the computer and advanced technology, persons can make the education an effective combination. Therefore, computers and advanced technology should be regarded as an important media in the modern education. Volume *Advanced Information Technology in Education* is to provide a forum for researchers, educators, engineers, and government officials involved in the general areas of computers and advanced technology in education to disseminate their latest research results and exchange views on the future research directions of these fields.

Computability, Complexity, and Languages Springer Nature

This innovative textbook presents the key foundational concepts that can be covered in a one semester undergraduate course in the theory of computation. It offers the most accessible and motivational course material available for undergraduate computer theory classes and is directed at the typical undergraduate who may have difficulty understanding the relevance of the course to their future careers. The text helps make students more comfortable with techniques required for the deeper study of computer science. This text is a bridge between theory and practice. It shows how theory is motivated by practical problems, and in turn how theory influences the practice of computing. Simple tools like string matchers, complex tools like compilers, and general notions like cryptographic security all lie at the interface between principles and practice. * Contains coverage of contemporary topics: languages and problems, machine models, grammars, reductions, resource consumption, syntax vs. semantics, sequential vs. parallel computation, feasible vs. intractable problems * Motivates students by clarifying complex theory with many examples, exercises, and detailed proofs * Offers an integrated review of discrete math concepts, defining each concept where it is first used * Unifies notation for describing machine models * Emphasizes computational complexity

Fundamentals of Computing Morgan & Claypool Publishers

The book introduces the reader to computer programming, i.e. algorithms and data structures. It covers many new programming concepts that have

emerged in recent years including object-oriented programming and design patterns. The book emphasizes the practical aspects of software construction without neglecting their solid theoretical foundation.

[A Geographer's Guide to Computing Fundamentals](#) Le Printemps Ltee

This millennium will see the increased use of parallel computing technologies at all levels of mainstream computing. Most computer hardware will use these technologies to achieve higher computing speeds, high speed access to very large distributed databases and greater flexibility through heterogeneous computing. These developments can be expected to result in the extended use of all types of parallel computers in virtually all areas of human endeavour. Compute-intensive problems in emerging areas such as financial modelling and multimedia systems, in addition to traditional application areas of parallel computing such as scientific computing and simulation, will stimulate the developments. Parallel computing as a field of scientific research and development will move from a niche concentrating on solving compute-intensive scientific and engineering problems to become one of the fundamental computing technologies. This book gives a retrospective view of what has been achieved in the parallel computing field during the past three decades, as well as a prospective view of expected future developments. Contents: Invited

PapersApplicationsAlgorithmsSystem Software and Hardware ArchitectureIndustrial PerspectiveExtended Abstracts Readership: Researchers in high-speed computing. Keywords:Computing Technologies;Algorithms;System Software;Hardware Architecture;High-Speed Computing

Electromagnetism for Signal Processing, Spectroscopy and Contemporary Computing Addison-Wesley Professional

This upper-undergraduate textbook teaches students programming in GIS using a mix of computer science theory and hands-on activities, with the aim of empowering students to understand fundamentals and apply their knowledge beyond the specific examples in the book. Each of the book's twenty-one chapters integrates instructional material with exercises in ArcGIS Pro. In doing so, this book combines the strengths of workbooks and theoretical textbooks to provide a holistic and comprehensive text. Each chapter concludes with an unguided task that ensures students have learned the broader principles explained therein. In addition to its unique format, the book covers oft-neglected topics such as debugging, creating a program from scratch, and managing metadata. Section I starts with the principles of scripting and programming with Python. Section II introduces the ArcPy module and elements specific to ArcGIS Pro. This section focuses on data structures, and how they are used and implemented within Python. Section III uses the topic of algorithms to guide the student through creating tools to add functionality to ArcGIS Pro. The last section, Section IV, builds upon section III to guide the student to developing and sharing projects and Python packages to include external open-source code and share the Python code as an open-source package. This text will prepare students for a long-term ability to do GIS programming, whether in industry or academic research. This comes from the author's observations of students who have learned GIS programming in one platform, such as VBA in ArcMap, struggle to apply that knowledge to a new platform, such as Python in ArcGIS Pro, because the content was presented too closely with a specific platform. The integration of exercises with conceptual content, along with the choice of chapter content, serves this goal of preparing students for working in a dynamic, rapidly changing technology field.

Impossibility Results for Distributed Computing Springer

Take a deep dive into the concepts of machine learning as they apply to contemporary business and management. You will learn how machine

learning techniques are used to solve fundamental and complex problems in society and industry. Machine Learning for Decision Makers serves as an excellent resource for establishing the relationship of machine learning with IoT, big data, and cognitive and cloud computing to give you an overview of how these modern areas of computing relate to each other. This book introduces a collection of the most important concepts of machine learning and sets them in context with other vital technologies that decision makers need to know about. These concepts span the process from envisioning the problem to applying machine-learning techniques to your particular situation. This discussion also provides an insight to help deploy the results to improve decision-making. The book uses case studies and jargon busting to help you grasp the theory of machine learning quickly. You'll soon gain the big picture of machine learning and how it fits with other cutting-edge IT services. This knowledge will give you confidence in your decisions for the future of your business. What You Will Learn Discover the machine learning, big data, and cloud and cognitive computing technology stack Gain insights into machine learning concepts and practices Understand business and enterprise decision-making using machine learning Absorb machine-learning best practices Who This Book Is For Managers tasked with making key decisions who want to learn how and when machine learning and related technologies can help them.

[Parallel Computing: Fundamentals, Applications and New Directions](#) CRC Press

This textbook introduces major topics that include quantum bits, superposition, entanglement, logic gates, quantum search algorithm, quantum Fourier transform, inverse quantum Fourier transform, Shor's order-finding algorithm and phase estimation. Everyone can write algorithms and programs in the cloud making using IBM's quantum computers that support IBM Q Experience which contains the composer, open quantum assembly language, simulators and real quantum devices. Furthermore, this book teaches you how to use open quantum assembly language to write quantum programs for dealing with complex problems. Through numerous examples and exercises, readers will learn how to write a quantum program with open quantum assembly language for solving any problem from start to complete. This book includes six main chapters: ·Quantum Bits and Quantum Gates—learn what quantum bits are, how to declare and measure them, what quantum gates are and how they work on a simulator or a real device in the cloud. ·Boolean Algebra and its Applications—learn how to decompose CCNOT gate into six CNOT gates and nine gates of one bit and how to use NOT gates, CNOT gates and CCNOT gates to implement logic operations including NOT, OR, AND, NOR, NAND, Exclusive-OR (XOR) and Exclusive-NOR (XNOR). ·Quantum Search Algorithm and its Applications—learn core concepts of quantum search algorithm and how to write quantum programs to implement core concepts of quantum search algorithm for solving two famous NP-complete problems that are the satisfiability problem in n Boolean variables and m clauses and the clique problem in a graph with n vertices and q edges. ·Quantum Fourier Transform and its Applications—learn core concepts of quantum Fourier transform and inverse quantum Fourier transform and how to write quantum programs to implement them for solving two real applications that are to compute the period and the frequency of two given oracular functions. ·Order-Finding and Factoring—learn core concepts of Shor's order-finding algorithm and how to write quantum programs to implement Shor's order-finding algorithm for completing the prime factorization to 15. Phase Estimation and its Applications—learn core concepts of phase estimation and quantum counting and how to write quantum programs to implement them to compute the number of solution(s) in the independent set problem in a graph with two vertices and one edge.