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**Probabilistic Graphical Models** Daphne Koller 2009-07-31 A general framework for constructing and using probabilistic models of complex systems that would enable a computer to use available information for making decisions. Most tasks require a person or an automated system to reason—to reach conclusions based on available information. The framework of probabilistic graphical models, presented in this book, provides a general approach for this task. The approach is model-based, allowing interpretable models to be constructed and then manipulated by reasoning algorithms. These models can also be learned automatically from data, allowing the approach to be used in cases where manually constructing a model is difficult or even impossible. Because uncertainty is an inescapable aspect of most real-world applications, the book focuses on probabilistic models, which make the uncertainty explicit and provide models that are more faithful to reality. Probabilistic Graphical Models discusses a variety of models, spanning Bayesian networks, undirected Markov networks, discrete and continuous models, and extensions to deal with dynamical systems and relational data. For each class of models, the text describes the three fundamental cornerstones: representation, inference, and learning, presenting both basic concepts and advanced techniques. Finally, the book considers the use of the proposed framework for causal reasoning and decision making under uncertainty. The main text in each chapter provides the detailed technical development of the key ideas. Most chapters also include boxes with additional material: skill boxes, which describe techniques; case study boxes, which discuss empirical cases related to the approach described in the text, including applications in computer vision, robotics, natural language understanding, and computational biology; and concept boxes, which present significant concepts drawn from the material in the chapter. Instructors (and readers) can group chapters in various combinations, from core topics to more technically advanced material, to suit their particular needs.

*Optimizing Student Engagement in Online Learning Environments* Kumar, A.V. Senthil 2017-11-30 Digital classrooms have become a common addition to curriculums in higher education; however, such learning systems are only successful if students are properly motivated to learn. Optimizing Student Engagement in Online Learning Environments is a critical scholarly resource that examines the importance of motivation in digital classrooms and outlines methods to reengage learners. Featuring coverage on a broad range of topics such as motivational strategies, learning assessment, and student involvement, this book is geared toward academicians, researchers, and students seeking current research on the importance of maintaining ambition among learners in digital classrooms.

**Principles of Computer System Design** Jerome H. Saltzer 2009-05-21 Principles of Computer System Design is the first textbook to take a principles-based approach to the computer system design. It identifies, examines, and illustrates fundamental concepts in computer system design that are common across operating systems, networks, database systems, distributed systems, programming languages, software engineering, security, fault tolerance, and architecture. Through carefully analyzed case studies from each of these disciplines, it demonstrates how to apply these concepts to tackle practical system design problems. To support the focus on design, the text identifies and explains abstractions that have proven successful in practice such as remote procedure call, client/service organization, file systems, data integrity, consistency, and authenticated messages. Most computer systems are built using a handful of such abstractions. The text describes how these abstractions are implemented, demonstrates how they are used in different systems, and prepares the reader to apply them in future designs. The book is recommended for junior and senior undergraduate students in Operating Systems, Distributed Systems, Distributed Operating Systems and/or Computer Systems Design courses; and professional computer systems designers. Features: Concepts of computer system design guided by fundamental principles. Cross-cutting approach that identifies abstractions common to networking, operating systems, transaction systems, distributed systems, architecture, and software engineering. Case studies that make the abstractions real: naming (DNS and the URL); file systems (the UNIX file system); clients and services (NFS); virtualization (virtual machines); scheduling (disk arms); security (TLS). Numerous pseudocode fragments that provide concrete examples of abstract concepts. Extensive support. The authors and MIT OpenCourseWare provide on-line, free of charge, open educational resources, including additional chapters, course syllabi, board layouts and slides, lecture videos, and an archive of lecture schedules, class assignments, and design projects.

*Signals & Systems* Alan V. Oppenheim 1997 New edition of a text intended primarily for the undergraduate courses on the subject which are frequently found in electrical engineering curricula--but the concepts and techniques it covers are also of fundamental importance in other engineering disciplines. The book is structured to develop in parallel the methods of analysis for continuous-time and discrete-time signals and systems, thus allowing exploration of their similarities and differences. Discussion of applications is emphasized, and numerous worked examples are included. Annotation copyrighted by Book News, Inc., Portland, OR

*Vibrations and Waves* A.P. French 2017-12-21 The M.I.T. Introductory Physics Series is the result of a program of careful study, planning, and development that began in 1960. The Education Research Center at the Massachusetts Institute of Technology (formerly the Science Teaching Center) was established to study the process of instruction, aids thereto, and the learning process itself, with special reference to science teaching at the university level. Generous support from a number of foundations provided the means for assembling and maintaining an experienced staff to co-operate with members of the Institute's Physics Department in the examination, improvement, and development of physics curriculum materials for students planning careers in the sciences. After careful analysis of objectives and the problems involved, preliminary versions of textbooks were prepared, tested through classroom use at M.I.T. and other institutions, re-evaluated, rewritten, and tried again. Only then were the final manuscripts undertaken.

Open and Distance Non-formal Education in Developing Countries Colin Latchem 2018-01-29 This book is the first comprehensive account of developments in open and distance non-formal education in developing countries for over more than 20 years. It includes many instructive and inspiring examples of how international agencies such as UNESCO, FAO, WHO, UNICEF, USAID and the Commonwealth of Learning and national providers are using radio, TV, online and mobile learning, telecentres and other means to achieve the Education for All, Millennium Development and Sustainable Development Goals. It describes the educational needs of the world's most disadvantaged, vulnerable and least formally educated children, youth and adult populations, including the disabled, refugees and prisoners. It also reports on the successes, outcomes, constraints and shortcomings of using open and distance methods and technology to deliver literacy and numeracy programmes, equivalency, 'second chance' or alternative schooling, life skills and rural community development programmes and income generation and vocational training outside the framework of the formal education system. It concludes with suggestions for the extension and improvement of such lifelong learning. Designed to encourage further research and development in these capacity-building practices outside the established formal system, this is a must-read for all policy-makers, managers, educators, students and researchers interested in non-formal education for individuals, families and communities in the developing world.

Mathematical Statistics and Data Analysis John A. Rice 2006-04-28 This is the first text in a generation to re-examine the purpose of the mathematical statistics course. The book's approach interweaves traditional topics with data analysis and reflects the use of the computer with close ties to the practice of statistics. The author stresses analysis of data, examines real problems with real data, and motivates the theory. The book's descriptive statistics, graphical displays and realistic applications stand in strong contrast to traditional texts that are set in abstract settings. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

*Evaluation of Ocean-Energy Conversion Based on Linear Generator Concepts* Michael A. Stelzer Ph. D. 2012-06 It is shown theoretically that the buoy can be designed to have a greater heave response than that of the height of a passing wave resulting in an increase in generated power from the linear generator.

Introduction to Computation and Programming Using Python, second edition John V. Guttag 2016-08-12 The new edition of an introductory text that teaches students the art of computational problem solving, covering topics ranging from simple algorithms to information visualization. This book introduces students

with little or no prior programming experience to the art of computational problem solving using Python and various Python libraries, including PyLab. It provides students with skills that will enable them to make productive use of computational techniques, including some of the tools and techniques of data science for using computation to model and interpret data. The book is based on an MIT course (which became the most popular course offered through MIT's OpenCourseWare) and was developed for use not only in a conventional classroom but in in a massive open online course (MOOC). This new edition has been updated for Python 3, reorganized to make it easier to use for courses that cover only a subset of the material, and offers additional material including five new chapters. Students are introduced to Python and the basics of programming in the context of such computational concepts and techniques as exhaustive enumeration, bisection search, and efficient approximation algorithms. Although it covers such traditional topics as computational complexity and simple algorithms, the book focuses on a wide range of topics not found in most introductory texts, including information visualization, simulations to model randomness, computational techniques to understand data, and statistical techniques that inform (and misinform) as well as two related but relatively advanced topics: optimization problems and dynamic programming. This edition offers expanded material on statistics and machine learning and new chapters on Frequentist and Bayesian statistics.

**Phantasmal Media** D. Fox Harrell 2013-11-08 An argument that great expressive power of computational media arises from the construction of phantasms—blends of cultural ideas and sensory imagination. In Phantasmal Media, D. Fox Harrell considers the expressive power of computational media. He argues, forcefully and persuasively, that the great expressive potential of computational media comes from the ability to construct and reveal phantasms—blends of cultural ideas and sensory imagination. These ubiquitous and often-unseen phantasms—cognitive phenomena that include sense of self, metaphors, social categories, narrative, and poetic thinking—influence almost all our everyday experiences. Harrell offers an approach for understanding and designing computational systems that have the power to evoke these phantasms, paying special attention to the exposure of oppressive phantasms and the creation of empowering ones. He argues for the importance of cultural content, diverse worldviews, and social values in computing. The expressive power of phantasms is not purely aesthetic, he contends; phantasmal media can express and construct the types of meaning central to the human condition. Harrell discusses, among other topics, the phantasm as an orienting perspective for developers; expressive epistemologies, or data structures based on subjective human worldviews; morphic semiotics (building on the computer scientist Joseph Goguen's theory of algebraic semiotics); cultural phantasms that influence consensus and reveal other perspectives; computing systems based on cultural models; interaction and expression; and the ways that real-world information is mapped onto, and instantiated by, computational data structures. The concept of phantasmal media, Harrell argues, offers new possibilities for using the computer to understand and improve the human condition through the human capacity to imagine.

*Real Analysis* N. L. Carothers 2000-08-15 A text for a first graduate course in real analysis for students in pure and applied mathematics, statistics, education, engineering, and economics.

**Japan Prepares for Total War** Michael A. Barnhart 2013-03-22 The roots of Japan's aggressive, expansionist foreign policy have often been traced to its concern over acute economic vulnerability. Historian Michael Barnhart tests this assumption by examining the events leading up to World War II in the context of Japan's quest for economic security. Drawing on a wide array of Japanese and American sources, this is the first English-language book on the war's origins to be based on research in archives on both sides of the Pacific. Barnhart focuses on the critical years from 1938 to 1941 as he investigates the development of Japan's drive for national economic self-sufficiency and independence and the way in which this drive shaped its internal and external policies. He also explores American economic pressure on Tokyo and assesses its impact on Japan's foreign policy and domestic economy. He concludes that Japan's internal political dynamics, especially the bitter rivalry between its army and navy, played a far greater role in propelling the nation into war with the United States than did its economic condition or even pressure from Washington. Japan Prepares for Total War sheds new light on prewar Japan and confirms the opinions of those in Washington who advocated economic pressure against Japan. At a time of growing interest in U.S.-Japanese economic relations, this book will be stimulating and provocative reading for scholars and students of international relations and American and Asian history.

*Training Cognition* Alice F. Healy 2012-08-21 Training is both a teaching and a learning experience, and just about everyone has had that experience. Training involves acquiring knowledge and skills. This newly acquired training information is meant to be applicable to specific activities, tasks, and jobs. In modern times, where jobs are increasingly more complex, training workers to perform successfully is of more importance than ever. The range of contexts in which training is required includes industrial, corporate, military, artistic, and sporting, at all levels from assembly line to executive function. The required training can take place in a variety of ways and settings, including the classroom, the laboratory, the studio, the playing field, and the work environment itself. The general goal of this book is to describe the current state of research on training using cognitive psychology to build a complete empirical and theoretical picture of the training process. The book focuses on training cognition, as opposed to physical or fitness training. It attempts to show how to optimize training efficiency, durability, and generalizability. The book includes a review of relevant cognitive psychological literature, a summary of recent laboratory experiments, a presentation of original theoretical ideas, and a discussion of possible applications to real-world training settings.

*Recent Advances in Computational Sciences* 2008 This book presents state-of-the-art lectures delivered by international academic and industrial experts in the field of computational science and its education, covering a wide spectrum from theory to practice. Topics include new developments in finite element method (FEM), finite volume method and Spline theory, such as Moving Mesh Methods, Galerkin and Discontinuous Galerkin Schemes, Shape Gradient Methods, Mixed FEMs, Superconvergence techniques and Fourier spectral approximations with applications in multidimensional fluid dynamics; Maxwell equations in discrepancy media; and phase-field equations. It also discusses some interesting topics related to Stokes equations, Schrodinger equations, wavelet analysis and approximation theory. Contemporary teaching issues in curriculum reform also form an integral part of the book. This book will therefore be of significant interest and value to all graduates, research scientists and practitioners facing complex computational problems. Administrators and policymakers will find it is an addition to their mathematics curriculum reform libraries.

Linear Algebra and Learning from Data Gilbert Strang 2019-01-31 Linear algebra and the foundations of deep learning, together at last! From Professor Gilbert Strang, acclaimed author of Introduction to Linear Algebra, comes Linear Algebra and Learning from Data, the first textbook that teaches linear algebra together with deep learning and neural nets. This readable yet rigorous textbook contains a complete course in the linear algebra and related mathematics that students need to know to get to grips with learning from data. Included are: the four fundamental subspaces, singular value decompositions, special matrices, large matrix computation techniques, compressed sensing, probability and statistics, optimization, the architecture of neural nets, stochastic gradient descent and backpropagation.

**Principles of Power Electronics** Kassakian John G. 2010-09

*Bitcoin and Cryptocurrency Technologies* Arvind Narayanan 2016-07-19 Bitcoin and Cryptocurrency Technologies provides a comprehensive introduction to the revolutionary yet often misunderstood new technologies of digital currency. Whether you are a student, software developer, tech entrepreneur, or researcher in computer science, this authoritative and self-contained book tells you everything you need to know about the new global money for the Internet age. How do Bitcoin and its block chain actually work? How secure are your bitcoins? How anonymous are their users? Can cryptocurrencies be regulated? These are some of the many questions this book answers. It begins by tracing the history and development of Bitcoin and cryptocurrencies, and then gives the conceptual and practical foundations you need to engineer secure software that interacts with the Bitcoin network as well as to integrate ideas from Bitcoin into your own projects. Topics include decentralization, mining, the politics of Bitcoin, altcoins and the cryptocurrency ecosystem, the future of Bitcoin, and more. An essential introduction to the new

technologies of digital currency Covers the history and mechanics of Bitcoin and the block chain, security, decentralization, anonymity, politics and regulation, altcoins, and much more Features an accompanying website that includes instructional videos for each chapter, homework problems, programming assignments, and lecture slides Also suitable for use with the authors' Coursera online course Electronic solutions manual (available only to professors)

**Shaping Natural History and Settler Society** Tanja Hammel 2019-08-23 This book explores the life and work of Mary Elizabeth Barber, a British-born settler scientist who lived in the Cape during the nineteenth century. It provides a lens into a range of subjects within the history of knowledge and science, gender and social history, postcolonial, critical heritage and archival studies. The book examines the international importance of the life and works of a marginalized scientist, the instrumentalisation of science to settlers' political concerns and reveals the pivotal but largely silenced contribution of indigenous African experts. Including a variety of material, visual and textual sources, this study explores how these artefacts are archived and displayed in museums and critically analyses their content and silences. The book traces Barber's legacy across three continents in collections and archives, offering insights into the politics of memory and history-making. At the same time, it forges a nuanced argument, incorporating study of the North and South, the history of science and social history, and the past and the present.

Code as Creative Medium Golan Levin 2021-02-02 An essential guide for teaching and learning computational art and design: exercises, assignments, interviews, and more than 170 illustrations of creative work. This book is an essential resource for art educators and practitioners who want to explore code as a creative medium, and serves as a guide for computer scientists transitioning from STEM to STEAM in their syllabi or practice. It provides a collection of classic creative coding prompts and assignments, accompanied by annotated examples of both classic and contemporary projects, and more than 170 illustrations of creative work, and features a set of interviews with leading educators. Picking up where standard programming guides leave off, the authors highlight alternative programming pedagogies suitable for the art- and design-oriented classroom, including teaching approaches, resources, and community support structures.

*Design Concepts in Programming Languages* Franklyn Turbak 2008-07-18 1. Introduction 2. Syntax 3. Operational semantics 4. Denotational semantics 5. Fixed points 6. FL: a functional language 7. Naming 8. State 9. Control 10. Data 11. Simple types 12. Polymorphism and higher-order types 13. Type reconstruction 14. Abstract types 15. Modules 16. Effects describe progran behavior 17. Compilation 18. Garbage collection.

How the Mind Works Steven Pinker 2009-06-22 An assessment of human thought and behavior explores conundrums from the mind's ability to perceive three dimensions to the nature of consciousness, in an account that draws on beliefs in cognitive science and evolutionary biology.

Global Business Nader H. Asgary 2021-01-01 The arrival of the COVID-19 pandemic throughout the globe at the end of 2019 turned global business upside down. It forced the closure of many businesses, disrupted global supply chains, reduced travel across borders, and created fear about face-to-face interactions. As the lockdowns in many countries created uncertainty about the future business activities, global business leaders were scrambling to find new strategies to safely re-establish their business relationships with their stakeholders. The existing historical economic, social, and racial injustice in the American society toward Black, Indigenous, and People of Color was compounded by the COVID-19. This led the movements of the Black Lives Matter to reenergize and become a global phenomenon. The horrific and sad death of George Floyd and many others triggered huge global movements to demand respect for human rights and dignity for all. Additionally, climate change and environmental degradation have caused unprecedented forests fires, more frequent and damaging hurricanes, and migration demand a revived global business book. This third edition of Global Business: An Economic, Social, and Environmental Perspective incorporates global business issues related to COVID-19, the economic and social injustice of BIPOC, and environmental degradation where it is appropriate. The reader will understand the impact of these critical global business issues discussed in the book through examples, case studies and thought-provoking discussions. These challenges require businesses, governments, and the active engagement of citizens to succeed. The aim of this book is to bring these issues for discussion and action by these stakeholders. Each chapter includes supplementary PowerPoint slides, Test-Bank, and Teaching notes that are available for instructors only.

**Historical Scientific Instruments in Contemporary Education** 2021-11-15 When science's "black boxes" are pried open, its workings become accessible. Like time-travellers into history but grounded in today's cultures, learners interact directly with authentic instruments and replicas. Chapters describe educational experiences sparked through collaborations interrelating museum, school and university.

*An introduction to the theory of numbers* Ivan Niven 1993

**Interactive Approaches to Video Lecture Assessment** Korbinian Riedhammer 2012-09-30 A growing number of universities and other educational institutions record videos of regularly scheduled classes and lectures to provide students with additional resources for their study. However, the video alone is not necessarily the same than a carefully prepared educational video. The main issue is that they are typically not post-processed in an editorial sense. That is, the videos often contain longer periods of silence or inactivity, unnecessary repetitions, spontaneous interaction with students, or even corrections of prior false statements or mistakes. Furthermore, there is often no summary or table of contents of the video, unlike with educational videos that supplement a certain curriculum and are well scripted and edited. Thus, the plain recording of a lecture is a good start but far from a good e-learning resource. This thesis describes a system that can close the gap between a plain video recording and useful e-learning resource by producing automatic summaries and providing an interactive lecture browser that can visualize automatically extracted key phrases and their importance on an augmented time line. The lecture browser depends on four tasks: automatic speech recognition, automatic extraction and ranking of key phrases, extractive speech summarization, and the visualization of the phrases and their salience. These tasks as well as the contribution to the state of the art are described in detail and evaluated on a newly acquired corpus of academic spoken English, the LMELectures. A first user study shows that students using the lecture browser can solve a topic localization task about 29 % faster than students that are provided with the video only.

*Python for Software Design* Allen B. Downey 2009-03-09 A no-nonsense introduction to software design using the Python programming language. Written for people with no programming experience, this book starts with the most basic concepts and gradually adds new material. Some of the ideas students find most challenging, like recursion and object-oriented programming, are divided into a sequence of smaller steps and introduced over the course of several chapters. The focus is on the programming process, with special emphasis on debugging. The book includes a wide range of exercises, from short examples to substantial projects, so that students have ample opportunity to practise each new concept. Exercise solutions and code examples are available from thinkpython.com, along with Swampy, a suite of Python programs that is used in some of the exercises.

**Languages for Specific Purposes in History** Nolwena Monnier 2018-10-01 This book presents twelve papers on the use of Languages for Specific Purposes (LSPs) throughout history. From Antiquity to the present time, contributors analyse how LSPs emerged both in Europe and in other parts of the world, such as Judea, North America, and China. The historical aspect of LSPs has generally not been studied in depth, despite being part of the global understanding of the phenomenon. All aspects of professional life are tackled in this book, including administration, commerce, diplomacy, medicine, legal studies, geography, sociology, mathematics and history. This volume will naturally appeal to historians but also to linguists, sociologists, and anyone interested in languages used in a professional context. It offers a better understanding of where LSPs come from, how they emerged and how they tend to become real specialties in the teaching of modern languages.

*Engineering a Safer World* Nancy G. Leveson 2012-01-13 A new approach to safety, based on systems thinking, that is more effective, less costly, and easier to use than current techniques. Engineering has experienced a technological revolution, but the basic engineering techniques applied in safety and reliability engineering, created in a simpler, analog world, have changed very little over the years. In this groundbreaking book, Nancy Leveson proposes a new approach to safety—more suited to today's complex, sociotechnical, software-intensive world—based on modern systems thinking and systems theory. Revisiting and updating ideas pioneered by 1950s aerospace engineers in their System Safety concept, and testing her new model extensively on real-world examples, Leveson has created a new approach to safety that is more effective, less expensive, and easier to use than current techniques. Arguing that traditional models of causality are inadequate, Leveson presents a new, extended model of causation (Systems-Theoretic Accident Model and Processes, or STAMP), then shows how the new model can be used to create techniques for system safety engineering, including accident analysis, hazard analysis, system design, safety in operations, and management of safety-critical systems. She applies the new techniques to real-world events including the friendly-fire loss of a U.S. Blackhawk helicopter in the first Gulf War; the Vioxx recall; the U.S. Navy SUBSAFE program; and the bacterial contamination of a public water supply in a

Canadian town. Leveson's approach is relevant even beyond safety engineering, offering techniques for "reengineering" any large sociotechnical system to improve safety and manage risk.

*Global Marketing Management System* Basil Janavaras 2017-04-25 This is the second edition of the Global Marketing Management System (GMMS). The GMMS approach (GMMS book + GMMSO4 software) provides a rigorous theoretical base and a comprehensive, systematic and integrative planning process designed to guide students and managers alike through the decision-making process of a company seeking global market opportunities. The book aims to provide a structure, platform, tools and a systematic step-by-step process designed to support the creation of a strategic and applied oriented methodology to global business planning and strategy formulation. It introduces the GMMS process as a demonstration of a successful application of using web-based tools in teaching international business. The book also facilitates the ability of students to enhance their understanding of decision making in international management and bridge the gap between theory and practice. More about GMMSO GMMSO4 Student User Guide (2 MB) What is GMMS? For Professors (2 MB) What is GMMS? For Consultants and SMEs (2 MB) Contents:The Global Marketing Management System:Introduction:Globalization and the Need for a Global Business EducationProject-based Learning and GMMSOUnderstanding the Firm's Strategic Position:Information ScanningPerforming a Firm Level Strategic AnalysisSummaryThe Search for Global Markets:The Decision Making ProcessPreliminary Screening of MarketsThe Process of Screening Countries Using Three Separate Screening Matrices Performing an in-Depth Market Analysis of the Two Best MarketsMarket and Company Sales PotentialAnalyzing Market/Country Specific Competitive AnalysisIdentification of Country-entry Conditions for the FirmAnalysis of Financial and Market Entry ConditionsCreating an Entry Strategy into a Selected Market:Selecting an Entry Mode into the Target MarketThe Business Environment of the Selected MarketCreating a Marketing Plan with Its Firm Specific Goals and ObjectivesDeveloping a Product StrategyDeveloping a Pricing StrategyCreation of a Promotional StrategyDeveloping of a Distribution StrategyCreation of a Financial StrategyCreating the Organizational Structure for the New MarketUnderstanding Exit Strategy and ScenariosSummaryThe GMMSO4 Software System:GMMSO4:What Is GMMSO?Bridge the GapBenefitsBackground to the Development of the Online Version of the GMMS MethodLearning OutcomesCase Study:Lafkiotis Winery Entry into United States: A Report Created by Using the GMMSO4 SystemLafkiotis Winery's Strategic AnalysisThe Search for Global MarketEntry Strategy into the US Market Readership: Students, instructors, researchers and professionals working in the fields of marketing management, global strategy and international business.

Mining of Massive Datasets Jure Leskovec 2014-11-13 Now in its second edition, this book focuses on practical algorithms for mining data from even the largest datasets.

Foundations of Analog and Digital Electronic Circuits Anant Agarwal 2005-07-01 Unlike books currently on the market, this book attempts to satisfy two goals: combine circuits and electronics into a single, unified treatment, and establish a strong connection with the contemporary world of digital systems. It will introduce a new way of looking not only at the treatment of circuits, but also at the treatment of introductory coursework in engineering in general. Using the concept of ''abstraction,'' the book attempts to form a bridge between the world of physics and the world of large computer systems. In particular, it attempts to unify electrical engineering and computer science as the art of creating and exploiting successive abstractions to manage the complexity of building useful electrical systems. Computer systems are simply one type of electrical systems. +Balances circuits theory with practical digital electronics applications. +Illustrates concepts with real devices. +Supports the popular circuits and electronics course on the MIT OpenCourse Ware from which professionals worldwide study this new approach. +Written by two educators well known for their innovative teaching and research and their collaboration with industry. +Focuses on contemporary MOS technology.

Assessing Student Learning Linda Suskie 2010-07-30 The first edition of Assessing Student Learning has become the standard reference for college faculty and administrators who are charged with the task of assessing student learning within their institutions. The second edition of this landmark book offers the same practical guidance and is designed to meet ever-increasing demands for improvement and accountability. This edition includes expanded coverage of vital assessment topics such as promoting an assessment culture, characteristics of good assessment, audiences for assessment, organizing and coordinating assessment, assessing attitudes and values, setting benchmarks and standards, and using results to inform and improve teaching, learning, planning, and decision making.

**Introduction to Linear Algebra** Gilbert Strang 2016-08-11 Linear algebra is something all mathematics undergraduates and many other students, in subjects ranging from engineering to economics, have to learn. The fifth edition of this hugely successful textbook retains all the qualities of earlier editions while at the same time seeing numerous minor improvements and major additions. The latter include: • A new chapter on singular values and singular vectors, including ways to analyze a matrix of data • A revised chapter on computing in linear algebra, with professional-level algorithms and code that can be downloaded for a variety of languages • A new section on linear algebra and cryptography • A new chapter on linear algebra in probability and statistics. A dedicated and active website also offers solutions to exercises as well as new exercises from many different sources (e.g. practice problems, exams, development of textbook examples), plus codes in MATLAB, Julia, and Python.

**Open Educational Resources (OER) Pedagogy and Practices** Zhou, Molly Y. 2019-11-29 Access to learning materials has been an issue within education that has had a profound impact on student outcomes and equality among students. New strategies for promoting more equal access to these materials began within institutions of higher learning and can be adapted at lower levels to facilitate equity within educational systems. Open Educational Resources (OER) Pedagogy and Practices is a comprehensive research publication that explores open access to educational materials and its impact on educational cost, educational equity, and poverty. Featuring a range of topics such as instructional design, pedagogy, and gamification, this book is essential for teachers, curriculum developers, instructional designers, principals, school boards, educational professionals, academicians, professors, administrators, educational policymakers, researchers, and educational agencies.

*Quantum Mechanics of One- and Two-Electron Atoms* Hans A. Bethe 2013-06-29 Nearly all of this book is taken from an article prepared for a volume of the Encyclopedia of Physics. This article, in turn, is partly based on Dr. Norbert Rosenzweig's translation of an older article on the same subject, written by one of us (H.A.B.) about 25 years ago for the Geiger-Scheel Handbuch der Physik. To the article written last year we have added some Addenda and Errata. These Addenda and Errata refer back to some of the 79 sections of the main text and contain some misprint corrections, additional references and some notes. The aim of this book is two-fold. First, to act as a reference work on calcu lations pertaining to hydrogen-like and helium-like atoms and their comparison with experiments. However, these calculations involve a vast array of approximation methods, mathematical tricks and physical pictures, which are also useful in the application of quantum mechanics to other fields. In many sections we have given more general discussions of the methods and physical ideas than is necessary for the study of the H- and He-atom alone. We hope that this book will thus at least partly fulfill its second aim, namely to be of some use to graduate students who wish to learn "applied quantum mechanics". A basic knowledge of the principles of quantum mechanics, such as given in the early chapters of Schiff's or Bohm's book, is presupposed.

A Primer of Visual Literacy Donis A Dondis 1974-09-15 This primer is designed to teach students the interconnected arts of visual communication. The subject is presented, not as a foreign language, but as a native one that the student "knows" but cannot yet "read." Responding to the need she so clearly perceives, Ms. Dondis, a designer and teacher of broad experience, has provided a beginning text for art and design students and a basic text for all other students; those who do not intend to become artists or designers but who need to acquire the essential skills of understanding visual communication at a time when so much information is being studied and transmitted in non-verbal modes, especially through photography and film. Understanding the visual process only seems to be an obviously intuitive process. Actually, developing the visual sense is something like learning a language, with its own special alphabet, lexicon, and syntax. People find it necessary to be verbally literate whether they are "writers": or not; they should find it equally necessary to be visually literate, "artists" or not. This primer is designed to teach students the interconnected arts of visual communication. The subject is presented, not as a foreign language, but as a native one that the student "knows" but cannot yet "read." The analogy provides a useful teaching method, in part because it is not overworked or too rigorously applied. This method of learning to see and read visual data has already been proved in practice, in settings ranging from Harlem to suburbia. Appropriately, the book makes some of its most telling points through visual means. Numerous illustrated examples are employed to clarify the basic elements of design (teach an alphabet), to show how they are used in simple syntactic combinations ("See Jane run."), and, finally, to present the meaningful synthesis of visual information that is a finished work of art (the apprehension of poetry...).

**Mathematics for Computer Science** Eric Lehman 2017-03-08 This book covers elementary discrete mathematics for computer science and engineering. It emphasizes mathematical definitions and proofs as well as applicable methods. Topics include formal logic notation, proof methods; induction, well-ordering;

sets, relations; elementary graph theory; integer congruences; asymptotic notation and growth of functions; permutations and combinations, counting principles; discrete probability. Further selected topics may also be covered, such as recursive definition and structural induction; state machines and invariants; recurrences; generating functions.

Street-Fighting Mathematics Sanjoy Mahajan 2010-03-05 An antidote to mathematical rigor mortis, teaching how to guess answers without needing a proof or an exact calculation. In problem solving, as in street fighting, rules are for fools: do whatever works—don't just stand there! Yet we often fear an unjustified leap even though it may land us on a correct result. Traditional mathematics teaching is largely about solving exactly stated problems exactly, yet life often hands us partly defined problems needing only moderately accurate solutions. This engaging book is an antidote to the rigor mortis brought on by too much mathematical rigor, teaching us how to guess answers without needing a proof or an exact calculation. In Street-Fighting Mathematics, Sanjoy Mahajan builds, sharpens, and demonstrates tools for educated guessing and down-and-dirty, opportunistic problem solving across diverse fields of knowledge—from mathematics to management. Mahajan describes six tools: dimensional analysis, easy cases, lumping, picture proofs, successive approximation, and reasoning by analogy. Illustrating each tool with numerous examples, he carefully separates the tool—the general principle—from the particular application so that the reader can most easily grasp the tool itself to use on problems of particular interest. Street-Fighting Mathematics grew out of a short course taught by the author at MIT for students ranging from first-year undergraduates to graduate students ready for careers in physics, mathematics, management, electrical engineering, computer science, and biology. They benefited from an approach that avoided rigor and taught them how to use mathematics to solve real problems. Street-Fighting Mathematics will appear in print and online under a Creative Commons Noncommercial Share Alike license.

**Foundations of Applied Mathematics, Volume 2** Jeffrey Humpherys 2020-03-10 In this second book of what will be a four-volume series, the authors present, in a mathematically rigorous way, the essential foundations of both the theory and practice of algorithms, approximation, and optimization—essential topics in modern applied and computational mathematics. This material is the introductory framework upon which algorithm analysis, optimization, probability, statistics, machine learning, and control theory are built. This text gives a unified treatment of several topics that do not usually appear together: the theory and analysis of algorithms for mathematicians and data science students; probability and its applications; the theory and applications of approximation, including Fourier series, wavelets, and polynomial approximation; and the theory and practice of optimization, including dynamic optimization. When used in concert with the free supplemental lab materials, Foundations of Applied Mathematics, Volume 2: Algorithms, Approximation, Optimization teaches not only the theory but also the computational practice of modern mathematical methods. Exercises and examples build upon each other in a way that continually reinforces previous ideas, allowing students to retain learned concepts while achieving a greater depth. The mathematically rigorous lab content guides students to technical proficiency and answers the age-old question "When am I going to use this?" This textbook is geared toward advanced undergraduate and beginning graduate students in mathematics, data science, and machine learning.

Ultralearning Scott Young 2019-08-06 Now a Wall Street Journal bestseller. Learn a new talent, stay relevant, reinvent yourself, and adapt to whatever the workplace throws your way. Ultralearning offers nine principles to master hard skills quickly. This is the essential guide to future-proof your career and maximize your competitive advantage through self-education. In these tumultuous times of economic and technological change, staying ahead depends on continual self-education—a lifelong mastery of fresh ideas, subjects, and skills. If you want to accomplish more and stand apart from everyone else, you need to become an ultralearner. The challenge of learning new skills is that you think you already know how best to learn, as you did as a student, so you rerun old routines and old ways of solving problems. To counter that, Ultralearning offers powerful strategies to break you out of those mental ruts and introduces new training methods to help you push through to higher levels of retention. Scott H. Young incorporates the latest research about the most effective learning methods and the stories of other ultralearners like himself—among them Benjamin Franklin, chess grandmaster Judit Polgár, and Nobel laureate physicist Richard Feynman, as well as a host of others, such as little-known modern polymath Nigel Richards, who won the French World Scrabble Championship—without knowing French. Young documents the methods he and others have used to acquire knowledge and shows that, far from being an obscure skill limited to aggressive autodidacts, ultralearning is a powerful tool anyone can use to improve their career, studies, and life. Ultralearning explores this fascinating subculture, shares a proven framework for a successful ultralearning project, and offers insights into how you can organize and exe - cute a plan to learn anything deeply and quickly, without teachers or budget-busting tuition costs. Whether the goal is to be fluent in a language (or ten languages), earn the equivalent of a college degree in a fraction of the time, or master multiple tools to build a product or business from the ground up, the principles in Ultralearning will guide you to success.