

Lecture 5 Web Mit

This multi-functional reference is a useful tool to find information about history-related organizations and programs and to contact those working in history across the country. He contrasts the commonly-held perception that the pace of technology is accelerating with the historical record. He highlights the people and the organizations which are responsible for America's technological largesse. The book "follows the money" to uncover the underlying trends. The beginning of a decline in technology development is detected using indirect indicators for clues. Impacts on the formation of companies, employment and productivity provide sobering reasons to enlighten others and demand a change in course. After considering the possibilities, the book proposes several constructive actions which avoid the proverbial tendency to "throw more money at the problem." The goal of the book is to provoke discussion and promote action where appropriate. Americans' standard of living is at stake. Tech-savvy readers will want to understand this issue so as to influence others. Long-range thinkers will want to factor these considerations into their prognostications. The titans of the technology-based companies can develop new and improved strategies based on the findings of this book. And, our elected officials may want to act before a catastrophic disaster confronts the nation. This book will strike a chord with everyone who is interested in America's future economic health. Specific audience groups include scientists, engineers,

entrepreneurs, employees in technology based companies, government and corporate policymakers deciding the future of research and development (R&D) programs, government workers involved in the execution of government R&D programs and those thinking about a career in R&D. It is complementary to such works as *Politics and Economics in America: The Way We Came to Be*, by Richard E. Carmichael (Krieger Publishing Company, 1998), which explores political and economic history in order to explain the emergence of the United States' world economic dominance. Carmichael's book makes recommendations on how government could assist America's businesses in maintaining our economic leadership, but it does not address any aspects of technology development and associated issues. *Closing the Innovation Gap* by Judy Estrin (McGraw Hill, 2009), provides business leaders with concepts for leading their organizations so as to close the innovation gap with competitors. It focuses on the innovation environment within the organization, whereas Dr. Gref addresses the complete technology development cycle, its financing, America's rise to global dominance, and the specter of a national decline.

In this work, the authors present a global perspective on the methods available for analysis and design of non-linear control systems and detail specific applications. They provide a tutorial exposition of the major non-linear systems analysis techniques followed by a discussion of available non-linear design methods.

A leading astronomer takes readers behind the scenes of the thrilling science of stellar

archaeology and explains how sections of the night sky are "excavated" in the hunt for extremely rare, 13-billion-year-old relic stars and how this quest reveals tantalizing new details about the origins and evolution of the cosmos.

This edited collection charts the development of, and prospects for, conceiving knowledge as a social phenomenon. The origin, aims and growth of the journal *Social Epistemology*, founded in 1987, serves to anchor each of the book's contributions. Each contribution offers a unique, but related, insight on current issues affecting the organization and production of knowledge. In addition, each contribution proposes necessary questions, practices and frameworks relevant to the rapidly changing landscape of our conceptions of knowledge. The book examines the commercialization of science, the neoliberal university, the status and conduct of philosophy, the cultures of computer software and social networking, the practical, political and anthropological applications of social epistemology, and how we come to define what human beings are and what activities human beings can, and should, sustain. A diverse group of noted, international scholars lends necessary, original and challenging perspectives on our collective approach to knowledge. This book was originally published as a special issue of *Social Epistemology*.

In 2007, the Intergovernmental Panel on Climate Change shared the 2007 Nobel Peace Prize (with former Vice President Al Gore) for its reporting on the human causes of climate change. In 2008, the National Council for Science and the Environment

reported that the acceleration of climate change is already faster than the IPCC projected only a year earlier. How we deal with the rapid environmental changes, and the human forces that are driving these changes, will be among the defining issues of our generation. Climate Solutions Consensus presents an agenda for America. It is the first major consensus statement by the nation's leading scientists, and it provides specific recommendations for federal policies, for state and local governments, for businesses, and for colleges and universities that are preparing future generations who will be dealing with a radically changed climate. The book draws upon the recommendations developed by more than 1200 scientists, educators and decision makers who participated in the National Council for Science and the Environment's 8th National Conference on Science, Policy and the Environment. After presenting a lucid narrative of the science behind climate change and its solutions, Climate Solutions Consensus presents 35 practical, results-oriented approaches for minimizing climate change and its impacts. It clearly spells out options for technological, societal, and policy actions. And it deals head-on with controversial topics, including nuclear energy, ocean fertilization and atmospheric geo-engineering. One of the book's key conclusions is that climate solutions are about much more than energy sources. They involve re-examining everything people do with an eye toward minimizing climate impacts. This includes our eating habits, consumption patterns, transportation, building and housing, forestry, land use, education, and more. According to these scientists, the

time to act is now. With clarity and urgency, they tell us exactly what needs to be done to start reversing the driving factors behind climate change, minimizing their consequences, and adapting to what is beyond our power to stop.

Mathematical programming: an overview; solving linear programs; sensitivity analysis; duality in linear programming; mathematical programming in practice; integration of strategic and tactical planning in the aluminum industry; planning the mission and composition of the U.S. merchant Marine fleet; network models; integer programming; design of a naval tender job shop; dynamic programming; large-scale systems; nonlinear programming; a system for bank portfolio planning; vectors and matrices; linear programming in matrix form; a labeling algorithm for the maximum-flow network problem.

In this classic text, James W. Carey maintains that communication is not merely the transmission of information; reminding the reader of the link between the words "communication" and "community," he broadens his definition to include the drawing-together of a people that is culture. In this context, Carey questions the American tradition of focusing only on mass communication's function as a means of social and political control, and makes a case for examining the content of a communication—the meaning of symbols, not only the motives that originate them or the purposes they serve. He seeks to recast the goal of communication studies, replacing the search for deterministic laws of behavior with a simpler, yet far more challenging mission: "to

enlarge the human conversation by comprehending what others are saying." This new edition includes a new critical foreword by G. Stuart Adam that explains Carey's fundamental role in transforming the study of mass communication to include a cultural perspective and connects his classic essays with contemporary media issues and trends. This edition also adds a new, complete bibliography of all of Carey's writings. This design guide was written to capture the author's practical experience of designing, building and testing multi-rotor drone systems over the past decade. The lack of one single source of useful information meant that the past 10 years has been a steep learning curve, a lot of self-tuition and many trial and error tests. Lessons learnt the hard way are not always the best way to learn. This book will be useful for the amateur drone pilot who wants to build their own system from first principles, as well as the academic researcher investigating novel design concepts and future drone applications.

This is the first volume in a trilogy on modern Signal Processing. The three books provide a concise exposition of signal processing topics, and a guide to support individual practical exploration based on MATLAB programs. This book includes MATLAB codes to illustrate each of the main steps of the theory, offering a self-contained guide suitable for independent study. The code is embedded in the text, helping readers to put into practice the ideas and methods discussed. The book is divided into three parts, the first of which introduces readers to periodic and non-periodic signals. The second part is devoted to filtering, which is an important and commonly used application. The third part addresses more advanced topics, including the analysis of real-world non-stationary signals and data, e.g. structural fatigue, earthquakes,

electro-encephalograms, birdsong, etc. The book's last chapter focuses on modulation, an example of the intentional use of non-stationary signals.

Explore Modern Communications and Understand Principles of Operations, Appropriate Technologies, and Elements of Design of Communication Systems Modern society requires a different set of communication systems than has any previous generation. To maintain and improve the contemporary communication systems that meet ever-changing requirements, engineers need to know how to recognize and solve cardinal problems. In Essentials of Modern Communications, readers will learn how modern communication has expanded and will discover where it is likely to go in the future. By discussing the fundamental principles, methods, and techniques used in various communication systems, this book helps engineers assess, troubleshoot, and fix problems that are likely to occur. In this reference, readers will learn about topics like: How communication systems respond in time and frequency domains Principles of analog and digital modulations Application of spectral analysis to modern communication systems based on the Fourier series and Fourier transform Specific examples and problems, with discussions around their optimal solutions, limitations, and applications Approaches to solving the concrete engineering problems of modern communications based on critical, logical, creative, and out-of-box thinking For readers looking for a resource on the fundamentals of modern communications and the possible issues they face, Essentials of Modern Communications is instrumental in educating on real-life problems that engineering students and professionals are likely to encounter.

Tips and techniques to build interactive learning into lecture classes Have you ever looked out across your students only to find them staring at their computers or smartphones rather than

listening attentively to you? Have you ever wondered what you could do to encourage students to resist distractions and focus on the information you are presenting? Have you ever wished you could help students become active learners as they listen to you lecture? Interactive Lecturing is designed to help faculty members more effectively lecture. This practical resource addresses such pertinent questions as, “How can lecture presentations be more engaging?” “How can we help students learn actively during lecture instead of just sitting and passively listening the entire time?” Renowned authors Elizabeth F. Barkley and Claire H. Major provide practical tips on creating and delivering engaging lectures as well as concrete techniques to help teachers ensure students are active and fully engaged participants in the learning process before, during, and after lecture presentations. Research shows that most college faculty still rely predominantly on traditional lectures as their preferred teaching technique. However, research also underscores the fact that more students fail lecture-based courses than classes with active learning components. Interactive Lecturing combines engaging presentation tips with active learning techniques specifically chosen to help students learn as they listen to a lecture. It is a proven teaching and learning strategy that can be readily incorporated into every teacher’s methods. In addition to providing a synthesis of relevant, contemporary research and theory on lecturing as it relates to teaching and learning, this book features 53 tips on how to deliver engaging presentations and 32 techniques you can assign students to do to support their learning during your lecture. The tips and techniques can be used across instructional methods and academic disciplines both onsite (including small lectures and large lecture halls) as well as in online courses. This book is a focused, up-to-date resource that draws on collective wisdom from scholarship and practice. It will become a well-used and welcome

addition for everyone dedicated to effective teaching in higher education.

This book considers large and challenging multistage decision problems, which can be solved in principle by dynamic programming (DP), but their exact solution is computationally intractable. We discuss solution methods that rely on approximations to produce suboptimal policies with adequate performance. These methods are collectively known by several essentially equivalent names: reinforcement learning, approximate dynamic programming, neuro-dynamic programming. They have been at the forefront of research for the last 25 years, and they underlie, among others, the recent impressive successes of self-learning in the context of games such as chess and Go. Our subject has benefited greatly from the interplay of ideas from optimal control and from artificial intelligence, as it relates to reinforcement learning and simulation-based neural network methods. One of the aims of the book is to explore the common boundary between these two fields and to form a bridge that is accessible by workers with background in either field. Another aim is to organize coherently the broad mosaic of methods that have proved successful in practice while having a solid theoretical and/or logical foundation. This may help researchers and practitioners to find their way through the maze of competing ideas that constitute the current state of the art. This book relates to several of our other books: *Neuro-Dynamic Programming* (Athena Scientific, 1996), *Dynamic Programming and Optimal Control* (4th edition, Athena Scientific, 2017), *Abstract Dynamic Programming* (2nd edition, Athena Scientific, 2018), and *Nonlinear Programming* (Athena Scientific, 2016). However, the mathematical style of this book is somewhat different. While we provide a rigorous, albeit short, mathematical account of the theory of finite and infinite horizon dynamic programming, and some fundamental approximation methods, we rely more on

intuitive explanations and less on proof-based insights. Moreover, our mathematical requirements are quite modest: calculus, a minimal use of matrix-vector algebra, and elementary probability (mathematically complicated arguments involving laws of large numbers and stochastic convergence are bypassed in favor of intuitive explanations). The book illustrates the methodology with many examples and illustrations, and uses a gradual expository approach, which proceeds along four directions: (a) From exact DP to approximate DP: We first discuss exact DP algorithms, explain why they may be difficult to implement, and then use them as the basis for approximations. (b) From finite horizon to infinite horizon problems: We first discuss finite horizon exact and approximate DP methodologies, which are intuitive and mathematically simple, and then progress to infinite horizon problems. (c) From deterministic to stochastic models: We often discuss separately deterministic and stochastic problems, since deterministic problems are simpler and offer special advantages for some of our methods. (d) From model-based to model-free implementations: We first discuss model-based implementations, and then we identify schemes that can be appropriately modified to work with a simulator. The book is related and supplemented by the companion research monograph Rollout, Policy Iteration, and Distributed Reinforcement Learning (Athena Scientific, 2020), which focuses more closely on several topics related to rollout, approximate policy iteration, multiagent problems, discrete and Bayesian optimization, and distributed computation, which are either discussed in less detail or not covered at all in the present book. The author's website contains class notes, and a series of videolectures and slides from a 2021 course at ASU, which address a selection of topics from both books. Elements of Oil and Gas Well Tubular Design offers insight into the complexities of oil well

casing and tubing design. The book's intent is to be sufficiently detailed on the tubular-oriented application of the principles of solid mechanics while at the same time providing readers with key equations pertinent to design. It addresses the fundamentals of tubular design theory, bridging the gap between theory and field operation. Filled with derivations and detailed solutions to well design examples, Elements of Oil and Gas Well Tubular Design provides the well designer with sound engineering principles applicable to today's oil and gas wells.

Understand engineering mechanics for oil well casing and tubing design with emphasis on derivation, limitations, and application of fundamental equations Grasp well tubular design from one unified source with underlying concepts of stress, strain, and material constitution Quantify practice with detailed well design worked examples amenable to quality check with commercial software

INTRODUCTION TO NUCLEAR REACTOR PHYSICS is the most comprehensive, modern and readable textbook for this course/module. It explains reactors, fuel cycles, radioisotopes, radioactive materials, design, and operation. Chain reaction and fission reactor concepts are presented, plus advanced coverage including neutron diffusion theory. The diffusion equation, Fisk's Law, and steady state/time-dependent reactor behavior. Numerical and analytical solutions are also covered. The text has full color illustrations throughout, and a wide range of student learning features.

Perfect for research assignments in psychology, science, and history, this concise study guide is a one-stop source for in-depth coverage of major psychological theories and the people who developed them. Consistently formatted entries typically cover the following: biographical sketch and personal data, theory outline, analysis of psychologist's place in history, summary

of critical response to the theory, the theory in action, and more.

One of the aims of this study is to find weaknesses and strengths of healthcare industry by defining problems, finding solutions and suggesting some models through existing studies and analyzing current healthcare system in Turkey and other developed countries. These critical parts are tried to be modeled in case studies in each chapter such as dialysis analysis, breast cancer, congestion of system, stress, queues etc. Main problems depending on hospital type are defined and some solutions are tried to be developed. Later, the existing systems of the hospitals are generalized. Opportunities and threats of specific and general situations are determined in healthcare by SWOT analysis. Moreover, SWOT method and bench-marking are used to deploy strategies by TOWS matrix. This book can be used in every country to improve their current healthcare system and increase learning and awareness in health.

The author is ready to assert that practically none of the readers of this book will ever happen to deal with large doses of radiation. But the author, without a shadow of a doubt, claims that any readers of this book, regardless of gender, age, financial situation, type of professional activity, and habits, are actually exposed to low doses of radiation throughout their life. This book is devoted to the effect of small doses on the body. To understand the basic effects of radiation

on humans, the book contains the necessary information from an atomic, molecular and nuclear physics, as well as from biochemistry and biology. Special attention is paid to the issues that are either not considered or discussed very briefly in existing literature. Examples include the ionization of inner atomic shells that play an essential role in radiological processes, and the questions of transformation of the energy of ionizing radiation in matter. The benefits of ionizing radiation to mankind is reflected in a wide range of radiation technologies used in science, industry, agriculture, culture, art, forensics, and, what is the most important application, medicine. Radiation: Fundamentals, Applications, Risks and Safety provides information on the use of radiation in modern life, its usefulness and indispensability. Experiments on the effects of small doses on bacteria, fungi, algae, insects, plants and animals are described. Human medical experiments are inhuman and ethically flawed. However, during the familiarity of mankind with ionizing radiation, a large number of population groups were subject to accumulation, exposed to radiation at doses of small but exceeding the natural background radiation. This book analyzes existing, real-life radiation results from survivors of Hiroshima and Nagasaki, Chernobyl and Fukushima, and examines studies of radiation effect on patients, radiologists, crews of long-distant flights and astronauts, on miners of uranium mines, on workers of nuclear

industry and on militaries, exposed to ionizing radiation on a professional basis, and on the population of the various countries receiving environmental exposure. The author hopes that this book can mitigate the impact of radiation phobia, which prevails in the public consciousness over the last half century. Explores the science of radiation and the effects of radiation technologies and biological processes Analyzes the elementary processes of ionization and excitation Summarizes information about inner shells ionization and its impact on matter and biological structures Discusses quantum concepts in biology and clarifies the importance of epigenetics in radiological processes Includes case studies focusing on humans irradiated by low doses of radiation and its effects

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.

This book focuses on the emerging phenomenon of Massive Open Online Courses (MOOCs), which are changing the fundamental underpinning of educational systems worldwide and forcing educators and other stakeholders to re-think the way instruction is currently conducted. It examines the origins of MOOCs within the context of the open education movement, and reviews current policies, guidelines and initiatives to promote the use of ICT in education through the development and use of open educational resources from international practices, including implementation and licensing issues. With a particular focus on new trends in MOOCs, the book explores the potential of this emerging paradigm, its rise and its impact on openness in education. Various new initiatives are also presented, including more global examples and those that are more geared to certain regional contexts. The book is intended as a stepping stone for both researchers and practitioners who are looking to approach MOOCs from a holistic perspective.

This second edition of *Development Economics: Theory and Practice* continues to provide students and practitioners with the perspectives and tools they need to think analytically and critically about the current major economic development issues in the world. Alain de Janvry and Elisabeth Sadoulet identify seven key dimensions of development—growth, poverty, vulnerability, inequality, basic

needs, sustainability, and quality of life—and use them to structure the contents of the text. The book gives a historical perspective on the evolution of thought in development. It uses theory and empirical analysis to present readers with a full picture of how development works, how its successes and failures can be assessed, and how alternatives can be introduced. The authors demonstrate how diagnostics, design of programs and policies, and impact evaluation can be used to seek new solutions to the suffering and violence caused by development failures. In the second edition, more attention has been given to ongoing developments, such as: pursuit of the Sustainable Development Goals continuously rising global and national inequality health as a domestic and international public good cash transfers for social protection carbon trading for sustainability This text is fully engaged with the most cutting-edge research in the field and equips readers with analytical tools for impact evaluation of development programs and policies, illustrated with numerous examples. It is underpinned throughout by a wealth of student-friendly features, including case studies, quantitative problem sets, end-of-chapter questions, and extensive references. The companion website contains Excel and Stata exercises for students alongside materials for instructors. This unique text is ideal for those taking courses in development economics, economic growth, and development

policy, and will provide an excellent foundation for those wishing to pursue careers in development.

Describes the LISP programming language, and covers basic procedures, data, and modularity.

Electric motors are the largest consumer of electric energy and they play a critical role in the growing market for electrification. Due to their simple construction, switched reluctance motors (SRMs) are exceptionally attractive for the industry to respond to the increasing demand for high-efficiency, high-performance, and low-cost electric motors with a more secure supply chain. *Switched Reluctance Motor Drives: Fundamentals to Applications* is a comprehensive textbook covering the major aspects of switched reluctance motor drives. It provides an overview of the use of electric motors in the industrial, residential, commercial, and transportation sectors. It explains the theory behind the operation of switched reluctance motors and provides models to analyze them. The book extensively concentrates on the fundamentals and applications of SRM design and covers various design details, such as materials, mechanical construction, and controls. Acoustic noise and vibration is the most well-known issue in switched reluctance motors, but this can be reduced significantly through a multidisciplinary approach. These methodologies are explained in two chapters of the book. The first covers the

fundamentals of acoustic noise and vibration so readers have the necessary tools to analyze the problems and explains the surface waves, spring-mass models, forcing harmonics, and mode shapes that are utilized in modeling and analyzing acoustic noise and vibration. The second applies these fundamentals to switched reluctance motors and provides examples for determining the sources of any acoustic noise in switched reluctance motors. In the final chapter two SRM designs are presented and proposed as replacements for permanent magnet machines in a residential HVAC application and a hybrid-electric propulsion application. It also shows a high-power and compact converter design for SRM drives. Features: Comprehensive coverage of switched reluctance motor drives from fundamental principles to design, operation, and applications A specific chapter on electric motor usage in industrial, residential, commercial, and transportation applications to address the benefits of switched reluctance machines Two chapters address acoustic noise and vibration in detail Numerous illustrations and practical examples on the design, modeling, and analysis of switched reluctance motor drives Examples of switched reluctance motor and drive design

An introduction to a broad range of topics in deep learning, covering mathematical and conceptual background, deep learning techniques used in

industry, and research perspectives. “Written by three experts in the field, Deep Learning is the only comprehensive book on the subject.” —Elon Musk, cochair of OpenAI; cofounder and CEO of Tesla and SpaceX Deep learning is a form of machine learning that enables computers to learn from experience and understand the world in terms of a hierarchy of concepts. Because the computer gathers knowledge from experience, there is no need for a human computer operator to formally specify all the knowledge that the computer needs. The hierarchy of concepts allows the computer to learn complicated concepts by building them out of simpler ones; a graph of these hierarchies would be many layers deep. This book introduces a broad range of topics in deep learning. The text offers mathematical and conceptual background, covering relevant concepts in linear algebra, probability theory and information theory, numerical computation, and machine learning. It describes deep learning techniques used by practitioners in industry, including deep feedforward networks, regularization, optimization algorithms, convolutional networks, sequence modeling, and practical methodology; and it surveys such applications as natural language processing, speech recognition, computer vision, online recommendation systems, bioinformatics, and videogames. Finally, the book offers research perspectives, covering such theoretical topics as linear factor models,

autoencoders, representation learning, structured probabilistic models, Monte Carlo methods, the partition function, approximate inference, and deep generative models. Deep Learning can be used by undergraduate or graduate students planning careers in either industry or research, and by software engineers who want to begin using deep learning in their products or platforms. A website offers supplementary material for both readers and instructors.

A substantial update of this award-winning and highly regarded cosmology textbook, for advanced undergraduates in physics and astronomy.

This book constitutes the refereed proceedings of the 48th Annual Conference of the Southern African Computer Lecturers' Association on ICT Education, SACLA 2019, held in Northern Drakensberg, South Africa, in July 2019. The 16 revised full papers presented were carefully reviewed and selected from 57 submissions. The papers are organized in following topical sections: computer programming education; system security education; software engineering education; education of post-graduate research-students; our students, our profession.

The objective of this book is to provide you the reader a complete systems engineering treatment of GNSS. I am an expert with practical experience in GPS/GNSS design and similar areas that are addressed within the book. I provide a thorough, in-depth treatment of each topic. In this book, updated information on GPS and GLONASS is presented. In particular, descriptions of new satellites, such as GPS III and GLONASS

K2 and their respective signal sets (e.g., GPS III L1C and GLONASS L3OC), are included. In this combined volume I provide in-depth technical descriptions of each emerging satellite navigation system: BeiDou, Galileo, QZSS, and NavIC. Dedicated chapters cover each system's constellation configuration, satellites, ground control system and user equipment. Detailed satellite signal characteristics are also provided. Recently, I've heard from many engineers that they learned how GPS receivers work from this title. In this title, the design is included, and treatment of receivers is updated and expanded in several important ways. New material has been added on important receiver components, such as antennas and front-end electronics. The increased complexity of multiconstellation, multifrequency receivers, which are rapidly becoming the norm today, is addressed in detail. Other added features of this title are the clear step-by-step design process and associated trades required to develop a GNSS receiver, depending on the specific receiver application. This subject will be of great value to those readers who need to understand these concepts, either for their own design tasks or to aid their satellite navigation system engineering knowledge. To round out the discussion of receivers, updated treatments of interference, ionospheric scintillation, and multipath are provided along with new material on blockage from foliage, terrain, and man-made structures. Now there has been major developments in GNSS augmentations, including differential GNSS (DGNSS) systems, Precise Point Positioning (PPP) techniques, and the use of external sensors/networks. The numerous

deployed or planned satellite-based augmentation system (SBAS) networks are detailed, including WAAS, EGNOS, MSAS, GAGAN, and SDCM, as are groundbased differential systems used for various applications. The use of PPP techniques has greatly increased in recent years, and the treatment in this title has been expanded accordingly. Material addressing integration of GNSS with other sensors has been thoroughly revamped, as has the treatment of network assistance as needed to reflect the evolution from 2G/3G to 4G cellular systems that now rely on multiconstellation GNSS receiver engines. While this title has generally been written for the engineering/scientific community, one of the series is devoted to GNSS markets and applications. Marketing projections (and the challenge thereof) are enumerated and discussion of the major applications is provided. As in all the series, this book is structured such that a reader with a general science background can learn the basics of GNSS. The reader with a stronger engineering/scientific background will be able to delve deeper and benefit from the more in-depth technical material. It is this ramp-up of mathematical/technical complexity along with the treatment of key topics that enables this publication to serve as a student text as well as a reference source.

This book presents a compilation of current trends, technologies, and challenges in connection with Big Data. Many fields of science and engineering are data-driven, or generate huge amounts of data that are ripe for the picking. There are now more sources of data than ever before, and more means of capturing data. At the same time,

the sheer volume and complexity of the data have sparked new developments, where many Big Data problems require new solutions. Given its scope, the book offers a valuable reference guide for all graduate students, researchers, and scientists interested in exploring the potential of Big Data applications.

An effective and cost efficient protection of electronic system against ESD stress pulses specified by IEC 61000-4-2 is paramount for any system design. This pioneering book presents the collective knowledge of system designers and system testing experts and state-of-the-art techniques for achieving efficient system-level ESD protection, with minimum impact on the system performance. All categories of system failures ranging from 'hard' to 'soft' types are considered to review simulation and tool applications that can be used. The principal focus of System Level ESD Co-Design is defining and establishing the importance of co-design efforts from both IC supplier and system builder perspectives. ESD designers often face challenges in meeting customers' system-level ESD requirements and, therefore, a clear understanding of the techniques presented here will facilitate effective simulation approaches leading to better solutions without compromising system performance. With contributions from Robert Ashton, Jeffrey Dunnihoo, Micheal Hopkins, Pratik Maheshwari, David Pomerence, Wolfgang Reinprecht, and Matti Usumaki, readers benefit from hands-on experience and in-depth knowledge in topics ranging from ESD design and the physics of system ESD phenomena to tools and techniques to address soft failures and strategies to design

ESD-robust systems that include mobile and automotive applications. The first dedicated resource to system-level ESD co-design, this is an essential reference for industry ESD designers, system builders, IC suppliers and customers and also Original Equipment Manufacturers (OEMs). Key features: Clarifies the concept of system level ESD protection. Introduces a co-design approach for ESD robust systems. Details soft and hard ESD fail mechanisms. Detailed protection strategies for both mobile and automotive applications. Explains simulation tools and methodology for system level ESD co-design and overviews available test methods and standards. Highlights economic benefits of system ESD co-design.

This set of two volumes comprises the collection of the papers presented at the 5th International Conference on Maritime Technology and Engineering (MARTECH 2020) that was held in Lisbon, Portugal, from 16 to 19 November 2020. The Conference has evolved from the series of biennial national conferences in Portugal, which have become an international event, and which reflect the internationalization of the maritime sector and its activities. MARTECH 2020 is the fifth of this new series of biennial conferences. The set comprises 180 contributions that were reviewed by an International Scientific Committee. Volume 2 is dedicated to ship performance and hydrodynamics, including CFD, maneuvering, seakeeping, moorings and resistance. In addition, it includes sections on ship machinery, renewable energy, fishing and aquaculture, coastal structures, and waves and currents.

The romantic idea of the writer as an isolated genius has been discredited, but there are few empirical studies documenting the role of "gatekeeping" in the literary process. How do friends, agents, editors, translators, small publishers, and reviewers-not to mention the changes in technology and the publishing industry-shape the literary process? This matrix is further complicated when books cross cultural and language barriers, that is, when they become part of world literature. Gatekeepers builds on the work of Pierre Bourdieu, Randall Collins, James English, and Mark McGurl, describing the multi-layered gatekeeping process in the context of World Literature after the 1960s. It focuses on four case studies: Gabriel García Márquez, Charles Bukowski, Paul Auster and Haruki Murakami. The two American authors achieved remarkable success overseas owing to canny gatekeepers; the two international authors benefited tremendously from well-curated translation into English. Rich in archival materials (correspondence between authors, editors, and translators, and publishing industry analyses), interviews with publishers and translators, and close readings of translations, this study shows how the process and production of literature depends on the larger social forces of a given historical moment. William Marling also documents the ever-increasing Anglo-centric dictate on the gatekeeping process. World literature, the book argues, is not so much a "republic of letters" as a field of chance on which the conversation is partly bracketed by historic events and technological opportunities. The purpose of this book is to develop in greater depth some of the methods from the

author's Reinforcement Learning and Optimal Control recently published textbook (Athena Scientific, 2019). In particular, we present new research, relating to systems involving multiple agents, partitioned architectures, and distributed asynchronous computation. We pay special attention to the contexts of dynamic programming/policy iteration and control theory/model predictive control. We also discuss in some detail the application of the methodology to challenging discrete/combinatorial optimization problems, such as routing, scheduling, assignment, and mixed integer programming, including the use of neural network approximations within these contexts. The book focuses on the fundamental idea of policy iteration, i.e., start from some policy, and successively generate one or more improved policies. If just one improved policy is generated, this is called rollout, which, based on broad and consistent computational experience, appears to be one of the most versatile and reliable of all reinforcement learning methods. In this book, rollout algorithms are developed for both discrete deterministic and stochastic DP problems, and the development of distributed implementations in both multiagent and multiprocessor settings, aiming to take advantage of parallelism. Approximate policy iteration is more ambitious than rollout, but it is a strictly off-line method, and it is generally far more computationally intensive. This motivates the use of parallel and distributed computation. One of the purposes of the monograph is to discuss distributed (possibly asynchronous) methods that relate to rollout and policy iteration, both in the context of an exact and an approximate

implementation involving neural networks or other approximation architectures. Much of the new research is inspired by the remarkable AlphaZero chess program, where policy iteration, value and policy networks, approximate lookahead minimization, and parallel computation all play an important role.

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 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.

Since it was first published in 1995, *Photonic Crystals* has remained the definitive text for both undergraduates and researchers on photonic band-gap materials and their use in controlling the propagation of light. This newly expanded and revised edition covers the latest developments in the field, providing the most up-to-date, concise, and comprehensive book available on these novel materials and their applications. Starting from Maxwell's equations and Fourier analysis, the authors develop the theoretical tools of photonics using principles of linear algebra and symmetry, emphasizing analogies with traditional solid-state physics and quantum theory. They then investigate the unique phenomena that take place within photonic crystals at defect sites and surfaces, from one to three dimensions. This new edition includes entirely new chapters describing important hybrid structures that use band gaps or periodicity only in some directions: periodic waveguides, photonic-crystal slabs, and photonic-crystal fibers. The authors demonstrate how the capabilities of photonic crystals to localize light can be put to work in devices such as filters and splitters. A new appendix provides an overview of

computational methods for electromagnetism. Existing chapters have been considerably updated and expanded to include many new three-dimensional photonic crystals, an extensive tutorial on device design using temporal coupled-mode theory, discussions of diffraction and refraction at crystal interfaces, and more. Richly illustrated and accessibly written, Photonic Crystals is an indispensable resource for students and researchers. Extensively revised and expanded Features improved graphics throughout Includes new chapters on photonic-crystal fibers and combined index-and band-gap-guiding Provides an introduction to coupled-mode theory as a powerful tool for device design Covers many new topics, including omnidirectional reflection, anomalous refraction and diffraction, computational photonics, and much more.

?A research monograph providing a synthesis of old research on the foundations of dynamic programming, with the modern theory of approximate dynamic programming and new research on semicontractive models. It aims at a unified and economical development of the core theory and algorithms of total cost sequential decision problems, based on the strong connections of the subject with fixed point theory. The analysis focuses on the abstract mapping that underlies dynamic programming and defines the mathematical character of the associated problem. The discussion centers on two fundamental properties that this mapping may have: monotonicity and (weighted sup-norm) contraction. It turns out that the nature of the analytical and algorithmic DP theory is determined primarily by the presence or absence of these two properties, and

the rest of the problem's structure is largely inconsequential. New research is focused on two areas: 1) The ramifications of these properties in the context of algorithms for approximate dynamic programming, and 2) The new class of semicontractive models, exemplified by stochastic shortest path problems, where some but not all policies are contractive. The 2nd edition aims primarily to amplify the presentation of the semicontractive models of Chapter 3 and Chapter 4 of the first (2013) edition, and to supplement it with a broad spectrum of research results that I obtained and published in journals and reports since the first edition was written (see below). As a result, the size of this material more than doubled, and the size of the book increased by nearly 40%. The book is an excellent supplement to several of our books: Dynamic Programming and Optimal Control (Athena Scientific, 2017), and Neuro-Dynamic Programming (Athena Scientific, 1996).

Addresses the need for peer-to-peer computing and grid paradigms in delivering efficient service-oriented computing.

[Copyright: 8050e087d6e0c2d92c07bfd8bb57dc8a](https://doi.org/10.1007/978-1-4939-9832-7)