Everyday Cryptography Fundamental Principles And Applications

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Cryptography and Secure Communication Elsevier
This reference work looks at modern concepts of computer security. It introduces the basic mathematical background necessary to follow computer security concepts before moving on to modern developments in cryptography. The concepts are presented clearly and illustrated by numerous examples. Subjects covered include: private-key and public-key encryption, hashing, digital signatures, authentication, secret sharing, group-oriented cryptography, and many others. The section on intrusion detection and access control provide examples of security systems implemented as a part of operating system. Database and network security is also discussed. The final chapters introduce modern e- business systems based on digital cash.
Computer Security John Wiley & Sons
We describe, and provide the quantum mechanical explanation of, a number of well-chosen illustrative modern (mostly optical) experiments that highlight the strange world of the quantum.
Everyday Cryptography Pearson Higher Ed
An accessible guide to cybersecurity for the everyday user, covering cryptography and public key infrastructure, malware, blockchain, and other topics. It seems that everything we touch is connected to the internet, from mobile phones and wearable technology to home appliances and cyber assistants. The more connected our computer systems, the more exposed they are to cyber attacks--attempts to steal data, corrupt software, disrupt operations, and even physically damage hardware and network infrastructures. In this volume of the MIT Press Essential Knowledge series, cybersecurity expert Duane Wilson offers an accessible guide to cybersecurity issues for everyday users, describing risks associated with internet use, modern methods of defense against cyber attacks, and general principles for safer internet use. Wilson describes the principles that underlie all cybersecurity defense: confidentiality, integrity, availability, authentication, authorization, and non-repudiation (validating the source of information). He explains that confidentiality is accomplished by cryptography; examines the different layers of defense; analyzes cyber risks, threats, and vulnerabilities; and breaks down the cyber kill chain and the many forms of malware. He reviews some online applications of cybersecurity, including end-to-end security protection, secure ecommerce transactions, smart devices with built-in protections, and blockchain technology. Finally, Wilson considers the future of cybersecurity, discussing the continuing evolution of cyber defenses as well as research that may alter the overall threat landscape.
Java Cryptography Princeton University Press
For the first time, Deviant Ollam, one of the security industry's best-known lockpicking teachers, has assembled an instructional manual geared specifically toward penetration testers. Unlike other texts on the subject (which tend to be either massive volumes detailing every conceivable style of lock or brief "spy manuals" that only skim the surface) this book is for INFOSEC professionals that need essential, core knowledge of lockpicking and seek the ability to open most locks with relative ease. Deviant's material is presented with rich, detailed diagrams and is offered in easy-to-follow lessons which allow even beginners to acquire the knowledge very quickly. Everything from straightforward lockpicking to quick-entry techniques like shimming, bumping, and bypassing is explained and shown.Whether you're being hired to penetrate security or simply trying to harden your own defenses, this book is essential.
Practical Cryptography John Wiley & Sons
Nigel Smartâ¬"s Cryptography provides the rigorous detail required for advanced cryptographic studies, yet approaches the subject matter in an accessible style in order to gently guide new students through difficult mathematical topics.
The Code Book: The Secrets Behind Codebreaking John Wiley & Sons
Presenting invaluable advice from the world?s most famous computer security expert, this intensely readable collection features some of the most insightful and informative coverage of the strengths and weaknesses of computer security and the price people pay -- figuratively and literally -- when security fails. Discussing the issues surrounding things such as airplanes, passports, voting machines, ID cards, cameras, passwords, Internet banking, sporting events, computers, and castles, this book is a must-read for anyone who values security at any level -- business, technical, or personal.
Introduction to Network Security John Wiley & Sons
Anyone with a computer has heard of viruses, had to deal with several, and has been struggling with spam, spyware, and disk crashes. This book is intended as a starting point for those familiar with basic concepts of computers and computations and who would like to extend their knowledge into the realm of computer and network security. Its comprehensive treatment of all the major areas of computer security aims to give readers a complete foundation in the field of Computer Security. Exercises are given throughout the book and are intended to strengthening the reader’s knowledge - answers are also provided. Written in a clear, easy to understand style, aimed towards advanced undergraduates and non-experts who want to know about the security problems confronting them everyday. The technical level of the book is low and requires no mathematics, and only a basic concept of computers and computations. Foundations of Computer Security will be an invaluable tool for students and professionals alike.
Hands-On Cryptography with Python Simon and Schuster
Transformation electromagnetics is a systematic design technique for optical and electromagnetic devices that enables novel wave-material interaction properties. The associated metamaterials technology for designing and realizing optical and electromagnetic devices can control the behavior of light and electromagnetic waves in ways that have not been conventionally possible. The technique is credited with numerous novel device designs, most notably the invisibility cloaks, perfect lenses and a host of other remarkable devices. Transformation Electromagnetics and Metamaterials: Fundamental Principles and Applications presents a comprehensive treatment of the rapidly growing area of transformation electromagnetics and related metamaterial technology with contributions on the subject provided by a collection of leading experts from around the world. On the theoretical side, the following questions will be addressed: “Where does transformation electromagnetics come from?,” “What are the general material properties for different classes of coordinate transformations?,” “What are the limitations and challenges of device realizations?,” and “What theoretical tools are available to make the coordinate transformation-based designs more amenable to fabrication using currently available techniques?” The comprehensive theoretical treatment will be complemented by device designs and/or realizations in various frequency regimes and applications including acoustic, radio frequency, terahertz, infrared, and the visible spectrum. The applications encompass invisibility cloaks, gradient-index lenses in the microwave and optical regimes, negative-index superlenses for sub-wavelength resolution focusing, flat lenses that produce highly collimated beams from an embedded antenna or optical source, beam concentrators, polarization rotators and splitters, perfect electromagnetic absorbers, and many others. This book will serve as the authoritative reference for students and researchers alike to the fast-evolving and exciting research area of transformation electromagnetics/optics, its application to the design of revolutionary new devices, and their associated metamaterial realizations.
Fundamentals of Computer Security MIT Press
Confectionery and chocolate manufacture has been dominated by large-scale industrial processing for several decades. It is often the case though, that a trial and error approach is applied to the development of new products and processes, rather than verified scientific principles. Confectionery and Chocolate Engineering: Principles and Applications, Second edition, adds to information presented in the first edition on essential topics such as food

safety, quality assurance, sweets for special nutritional purposes, artizan chocolate, and confectioneries. In addition, information is provided on the fading memory of viscoelastic fluids, which are briefly discussed in terms of fractional calculus, and gelation as a second order phase transition. Chemical operations such as inversion, caramelization, and the Maillard reaction, as well as the complex operations including conching, drying, frying, baking, and roasting used in confectionery manufacture are also described. This book provides food engineers, scientists, technologists and students in research, industry, and food and chemical engineering-related courses with a scientific, theoretical description and analysis of confectionery manufacturing, opening up new possibilities for process and product improvement, relating to increased efficiency of operations, the use of new materials, and new applications for traditional raw materials.
The Quantum Divide John Wiley & Sons
This fascinating book presents the timeless mathematical theory underpinning cryptosystems both old and new, written specifically with engineers in mind. Ideal for graduate students and researchers in engineering and computer science, and practitioners involved in the design of security systems for communications networks.
Applied Cryptography in .NET and Azure Key Vault Springer Science & Business Media
Cryptography is a vital technology that underpins the security of information in computer networks. This book presents a comprehensive introduction to the role that cryptography plays in providing information security for everyday technologies such as the Internet, mobile phones, Wi-Fi networks, payment cards, Tor, and Bitcoin. This book is intended to be introductory, self-contained, and widely accessible. It is suitable as a first read on cryptography. Almost no prior knowledge of mathematics is required since the book deliberately avoids the details of the mathematics techniques underpinning cryptographic mechanisms. Instead our focus will be on what a normal user or practitioner of information security needs to know about cryptography in order to understand the design and use of everyday cryptographic applications. By focusing on the fundamental principles of modern cryptography rather than the technical details of current cryptographic technology, the main part this book is relatively timeless, and illustrates the application of these principles by considering a number of contemporary applications of cryptography. Following the revelations of former NSA contractor Edward Snowden, the book considers the wider societal impact of use of cryptography and strategies for addressing this. A reader of this book will not only be able to understand the everyday use of cryptography, but also be able to interpret future developments in this fascinating and crucially important area of technology.
Introduction to Cryptography CRC Press
Explore business and technical implications Understand established regulatory standards Deploy and manage digital signatures Enable business with digital signatures Digital documents are increasingly commonplace in today's business world, and forward-thinking organizations are deploying digital signatures as a crucial part of their part of their strategy. Businesses are discovering a genuine market demand for digital signatures in support of organizational goals. This book is your guide to the new business environment. It outlines the benefits of embracing digital signature techniques and demystifies the relevant technologies. Advance your organization's digital strategy Provide strong non-repudiation Offer "what you see is what you sign" Ensure enhanced security Provide user convenience and mobility
History of Cryptography and Cryptanalysis John Wiley & Sons
Cryptography is the most effective way to achieve data securityand is essential to e-commerce activities such as online shopping,stock trading, and banking This invaluable introduction to the basics of encryption coverseverything from the terminology used in the field to specifictechnologies to the pros and cons of different implementations Discusses specific technologies that incorporate cryptographyin their design, such as authentication methods, wirelessencryption, e-commerce, and smart cards Based entirely on real-world issues and situations, thematerial provides instructions for already available technologiesthat readers can put to work immediately Expert author Chey Cobb is retired from the NRO, where she helda Top Secret security clearance, instructed employees of the CIAand NSA on computer security and helped develop the computersecurity policies used by all U.S. intelligence agencies
Algorithms Unlocked Princeton University Press
Make. More. Future. Artificial intelligence, big data, modern science, and the internet are all revealing a fundamental truth: The world is vastly more complex and unpredictable than we've allowed ourselves to see. Now that technology is enabling us to take advantage of all the chaos it's revealing, our understanding of how things happen is changing--and with it our deepest strategies for predicting, preparing for, and managing our world. This affects everything, from how we approach our everyday lives to how we make moral decisions and how we run our businesses. Take machine learning, which makes better predictions about weather, medical diagnoses, and product performance than we do--but often does so at the expense of our understanding of how it arrived at those predictions. While this can be dangerous, accepting it is also liberating, for it enables us to harness the complexity of an immense amount of data around us. We are also turning to strategies that avoid anticipating the future altogether, such as A/B testing, Minimum Viable Products, open platforms, and user-modifiable video games. We even take for granted that a simple hashtag can organize unplanned, leaderless movements such as #MeToo. Through stories from history, business, and technology, philosopher and technologist David Weinberger finds the unifying truths lying below the surface of the tools we take for granted--and a future in which our best strategy often requires holding back from anticipating and instead creating as many possibilities as we can. The book’s imperative for business and beyond is simple: Make. More. Future. The result is a world no longer focused on limitations but optimized for possibilities.
Real-World Cryptography OUP Oxford
Introductory textbook in the important area of network security for undergraduate and graduate students Comprehensively covers fundamental concepts with newer topics such as electronic cash, bit-coin, P2P, SHA-3, E-voting, and Zigbee security Fully updated to reflect new developments in network security Introduces a chapter on Cloud security, a very popular and essential topic Uses everyday examples that most computer users experience to illustrate important principles and mechanisms Features a companion website with Powerpoint slides for lectures and solution manuals to selected exercise problems, available at http://www.cs.uml.edu/~wang/NetSec
Computer Security Literacy MIT Press
Benefit from Microsoft's robust suite of security and cryptography primitives to create a complete, hybrid encryption scheme that will protect your data against breaches. This highly practical book teaches you how to use the .NET encryption APIs and Azure Key Vault, and how they can work together to produce a robust security solution. Applied Cryptography in .NET and Azure Key Vault begins with an introduction to the dangers of data breaches and the basics of cryptography. It then takes you through important cryptographic techniques and practices, from hashing and symmetric/asymmetric encryption, to key storage mechanisms. By the end of the book, you'll know how to combine these cryptographic primitives into a hybrid encryption scheme that you can use in your applications. Author Stephen Haunts brings 25 years of software development and security experience to the table to give you the concrete skills, knowledge, and code you need to implement the latest encryption standards in your own projects. What You'll Learn : Get an introduction to the principles of encryption Understand the main cryptographic protocols in use today, including AES, DES, 3DES, RSA, SHAx hashing, HMACs, and digital signatures Combine cryptographic techniques to create a hybrid cryptographic scheme, with the benefits of confidentiality, integrity, authentication, and non-repudiation Use Microsoft's Azure Key Vault to securely store encryption keys and secrets Build real-world code to use in your own projects This book is for software developers with experience in .NET and C#. No prior knowledge of encryption and cryptographic principles is assumed. Stephen Haunts is a software developer with experience across industry verticals, including game development, financial services, insurance, and healthcare. He specializes in security and cryptography and regularly speaks and presents at conferences and user groups about secure coding in .NET.
Advances in Computer and Information Sciences and Engineering Springer Science & Business Media
For anyone who has ever wondered how computers solve problems, an engagingly written guide for nonexperts to the basics of computer algorithms. Have you ever wondered how your GPS can find the fastest way to your destination, selecting one route from seemingly countless possibilities in mere seconds? How your credit card account number is protected when you make a purchase over the Internet? The answer is algorithms. And how do these mathematical formulations translate themselves into your GPS, your laptop, or your smart phone? This book offers an engagingly written guide to the basics of computer algorithms. In Algorithms Unlocked, Thomas Cormen—coauthor of the leading college textbook on the subject—provides a general explanation, with limited mathematics, of how algorithms enable computers to solve problems. Readers will learn what computer algorithms are, how to describe them, and how to evaluate them. They will discover simple ways to search for information in a computer; methods for rearranging information in a computer into a prescribed order (“sorting”); how to solve basic problems that can be modeled in a computer with a mathematical structure called a “graph” (useful for modeling road networks, dependencies among tasks, and financial relationships); how to solve problems that ask questions about strings of characters such as DNA structures; the basic principles behind cryptography; fundamentals of data compression; and even that there are some problems that no one has figured out how to solve on a computer in a reasonable amount of time.
Understanding Cryptography Springer Science & Business Media
Now the most used texbook for introductory cryptography courses in both mathematics and computer science, the Third Edition builds upon previous editions by offering several new sections, topics, and exercises. The authors present the core principles of modern cryptography, with emphasis on formal definitions, rigorous proofs of security.
Cryptography: A Very Short Introduction Springer Science & Business Media
Cryptography is a vital technology that underpins the security of information in computer networks. This book presents a comprehensive introduction to the role that cryptography plays in providing information security for technologies such as the Internet, mobile phones, payment cards, and wireless local area networks. Focusing on the fundamental principles that ground modern cryptography as they arise in modern applications, it avoids both an over-reliance on transient current technologies and over-whelming theoretical research. Everyday Cryptography is a self-contained and widely accessible introductory text. Almost no prior knowledge of mathematics is required since the book deliberately avoids the details of the mathematical techniques underpinning cryptographic mechanisms, though a short appendix is included for those looking for a deeper appreciation of some of the concepts involved. By the end of this book, the reader will not only be able to understand the practical issues concerned with the deployment of cryptographic mechanisms, including the management of cryptographic keys, but will also be able to interpret future developments in this fascinating and increasingly important area of technology.
The Power of Algorithms Springer Science & Business Media
Due to the rapid growth of digital communication and electronic data exchange, information security has become a crucial issue in industry, business, and administration. Modern cryptography provides essential techniques for securing information and protecting data. In the first part, this book covers the key concepts of cryptography on an undergraduate level, from encryption and digital signatures to cryptographic protocols. Essential techniques are demonstrated in protocols for key exchange, user identification, electronic elections and digital cash. In the second part, more advanced topics are addressed, such as the bit security of one-way functions and computationally perfect pseudorandom bit generators. The security of cryptographic schemes is a central topic. Typical examples of provably secure encryption and signature schemes and their security proofs are given. Though particular attention is given to the mathematical foundations, no special background in mathematics is presumed. The necessary algebra, number theory and probability theory are included in the appendix. Each chapter closes with a collection of exercises. The second edition contains corrections, revisions and new material, including a complete description of the AES, an extended section on cryptographic hash functions, a new section on random oracle proofs, and a new section on public-key encryption schemes that are provably secure against adaptively-chosen-ciphertext attacks.

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