

Data Center Fundamentals

The reader-friendly explanation of how the IP address space works and how it is used A reader-friendly introduction to the complex and confusing topic of IP addressing Thorough and understandable explanations of the binary mathematics behind IP addressing Complete coverage of the IPv4 address space without distractions of routing or transport protocols Detailed explanations of subnetting and supernetting, Variable Length Subnet Masks (VLSMs), CIDR, NAT, portable address spaces, and IPv6 Strategies for managing an address space for enterprise WANs, data centers, and ISPs Numerous examples and an easy-to-read style of writing that imparts a profound understanding of IP addressing The Internet Protocol (IP) is the native protocol suite of the Internet and has become predominant in virtually all networks and internetworks. Managing an IP address space requires a solid command of binary mathematics, particularly as it is applied within the IP addressing architecture. The mathematics of the IP address space, however, are not intuitive and can be very difficult to grasp. Consequently, learning about IP addressing can be a lot like trying to piece together a jigsaw puzzle but without knowing what the puzzle is supposed to look like. IP Addressing Fundamentals explains simply and clearly how the IP address space works and how it is used. This is a reader-friendly book that details the fundamentals of the IP address space from the ground up. IP Addressing Fundamentals unravels the mysteries of subnetting, supernetting, and CIDR; thoroughly explains the binary mathematics of IPv4's addressing space; and demonstrates how an IP address becomes an active component in both networks and internetworks. Author Mark Sportack prepares you for real-world success by walking you through some of the issues and traps that lie in wait for anyone who needs to plan or manage the use of an IP address space. Most importantly, this book doesn't presume you already know what the entire IP addressing puzzle looks like. IP Addressing Fundamentals imparts a profound command of IP addressing through a clear and concise writing style. Basics are reinforced with detailed information and numerous examples of how the concepts work. This book builds upon concepts presented in earlier chapters and concludes with fairly advanced topics that will become increasingly useful to midlevel network engineers. After reading IP Addressing Fundamentals, you'll finally understand IP addressing and appreciate both its mechanics and relevance, and you'll know how to efficiently apply your new knowledge.

And server load balancing fundamentals are covered in detail, including session persistence and cookies, server health, modes and predictors, and multitier architectures. Putting it all together are chapters on Data Center design that also advise you on integrating security into your design and understanding performance metrics of Data Center devices. An in-depth analysis of the Data Center technology coupled with real-life scenarios make Data Center Fundamentals an ideal reference for understanding, planning, and designing scalable, highly available, and secure server farms applicable to web-hosting and e-commerce environments amongst others. Book jacket.

This unique text merges a comprehensive and systematic introduction to the theory and practice of mobile data networks. Covering basic design principles as well as analytical tools for network performance evaluation, and with a focus on system-level resource management, you will learn how state-of-the-art network design can enable you flexibly and efficiently to manage and trade-off various resources such as spectrum, energy, and infrastructure investments. Topics covered range from traditional elements such as medium access, cell deployment, capacity, handover, and interference management, to more recent cutting-edge topics such as heterogeneous networks, energy and cost-efficient network design, and a detailed introduction to LTE (4G). Numerous worked examples and exercises illustrate the key theoretical concepts and help you put your knowledge into practice, making this an essential resource whether you are a student, researcher, or practicing engineer.

"This text should be required reading for everyone in contemporary business." -Peter Woodhull, CEO, Modus21 "The one book that clearly describes and links Big Data concepts to business utility." -Dr. Christopher Starr, PhD "Simply, this is the best Big Data book on the market!" -Sam Rostam, Cascadian IT Group "...one of the most contemporary approaches I've seen to Big Data fundamentals..." -Joshua M. Davis, PhD The Definitive Plain-English Guide to Big Data for Business and Technology Professionals Big Data Fundamentals provides a pragmatic, no-nonsense introduction to Big Data. Best-selling IT author Thomas Erl and his team clearly explain key Big Data concepts, theory and terminology, as well as fundamental technologies and techniques. All coverage is supported with case study examples and numerous simple diagrams. The authors begin by explaining how Big Data can propel an organization forward by solving a spectrum of previously intractable business problems. Next, they demystify key analysis techniques and technologies and show how a Big Data solution environment can be built and integrated to offer competitive advantages. Discovering Big Data's fundamental concepts and what makes it different from previous forms of data analysis and data science Understanding the business motivations and drivers behind Big Data adoption from operational improvements through innovation Planning strategic, business-driven Big Data initiatives Addressing considerations such as data management, governance, and security Recognizing the 5 "V" characteristics of datasets in Big Data environments: volume, velocity, variety, veracity, and value Clarifying Big Data's relationships with OLTP, OLAP, ETL, data warehouses, and data marts Working with Big Data in structured, unstructured, semi-structured, and metadata formats Increasing value by integrating Big Data resources with corporate performance monitoring Understanding how Big Data leverages distributed and parallel processing Using NoSQL and other technologies to meet Big Data's distinct data processing requirements Leveraging statistical approaches of quantitative and qualitative analysis Applying computational analysis methods, including machine learning

Delivering Research Data Management Services
Cloud Data Centers and Cost Modeling
Big Data Fundamentals
Building Secure Systems in Untrusted Networks
Data Center Virtualization Fundamentals
Radiology Fundamentals

Today, billions of devices are Internet-connected, IoT standards and protocols are stabilizing, and technical professionals must increasingly solve real problems with IoT technologies. Now, five leading Cisco IoT experts present the first comprehensive, practical reference for making IoT work. IoT Fundamentals brings together knowledge previously available only in white papers, standards documents, and other hard-to-find sources—or nowhere at all. The authors begin with a high-level overview of IoT and introduce key solutions. Next, they walk through each key technology, protocol, and technical building block that combine into complete IoT solutions. Building on these essentials, they present several detailed use cases, including manufacturing, energy, utilities, smart-connected cities, transportation, mining, and public safety. Whatever your role or existing infrastructure, you'll gain deep insight what IoT applications can do, and what it takes to deliver them. Fully covers the principles and components of next-generation wireless networks 802.11 (Wi-Fi), IEEE 802.15.4-2015 (Mesh), and LoRaWAN Brings together real-world tips, insights, and best practices for designing and implementing next-generation wireless networks Presents start-to-finish configuration examples for common deployment scenarios Reflects the extensive first-hand experience of Cisco experts

The perimeter defenses guarding your network perhaps are not as secure as you think. Hosts behind the firewall have no defenses of their own, so when a host in the "trusted" zone is breached, access to your data center is not far behind. That's an all-too-familiar scenario today. With this practical book, you'll learn the principles behind zero trust architecture, along with details necessary to implement it. The Zero Trust Model treats all hosts as if they're internet-facing, and considers the entire network to be compromised. It focuses on building strong authentication, authorization, and encryption throughout, while providing compartmentalized access and better operational agility. Understanding how perimeter-based defenses have evolved to become the broken model we use today Explores two case studies of zero trust in production networks on the client side (Google) and on the server side (PagerDuty) Get example configuration for open source tools that you can use to build a zero trust network Learn how to migrate from a perimeter-based focus on building strong authentication, authorization, and encryption throughout, while providing compartmentalized access and better operational agility.

Effective visualization is the best way to communicate information from the increasingly large and complex datasets in the natural and social sciences. But with the increasing power of visualization software today, scientists, engineers, and business analysts often have to navigate a bewildering array of visualization choices and options. This practical book takes you through many commonly encountered visualization problems, and it provides guidelines on how to turn large datasets into clear and compelling figures. It tells you how to make informative figures that are visually pleasing? Author Claus O. Wilke teaches you the elements most critical to successful data visualization. Explore the basic concepts of color as a tool to highlight, distinguish, or represent a value Understand the importance of redundant coding to ensure you provide key information in multiple ways Use the book's visualizations directory, a graphical guide to commonly used types of data visualizations Get extensive examples of good and bad figures Learn how to employ them effectively to tell a compelling story

Step-by-step guidance to setting up and running effective institutional research data management services to support researchers and networks. The research landscape is changing, with key global research funders now requiring institutions to demonstrate how they will preserve and share research data. However, the practice of structured research data management is very new, and the construction of services remains experimental and in need of models and standards of approach. This groundbreaking guide will walk through the processes needed to set up and run effective institutional research data management services. This how to guide provides a step-by-step explanation of the components for an institutional service. Case studies from the newly emerging service infrastructures in the UK, USA and Australia draw out the lessons learnt. Different approaches are highlighted and compared: for example, a researcher-focused strategy from Australia is contrasted with a national, top-down approach, and a national research data alternative to institutional services. Key topics covered: • Research data provision • Options and approaches to research data management service provision • A pathway to sustainable research data services: from scoping to sustainability • The range and components of RDM infrastructure and services Case studies: • Johns Hopkins University • University of Southampton • Monash University • The UK Data Service • Jisc Managing Research Data programmes. Read guide to those entering a new and untried enterprise. It will be particularly relevant to heads of libraries, information technology managers, research support office staff and research directors planning for these types of services. It will also be of interest to researchers, funders and policy makers as a reference tool for understanding how shifts in policy will have a range of ramifications within institutions. Library and information science students will find it an informative window on an emerging area of practice.

Introduction to Imaging & Technology
Confident Data Skills

A Primer on Making Informative and Compelling Figures
Fundamentals of Computer Programming with C#
Data Hiding Fundamentals and Applications

Fundamentals of Data Science
This open access book comprehensively covers the fundamentals of clinical data science, focusing on data collection, modelling and clinical applications. Topics covered in the first section on data collection include: data sources, data at scale (big data), data stewardship (FAIR data) and related privacy concerns. Aspects of predictive modelling using techniques such as classification, regression or clustering, and prediction model validation will be covered in the second section. The third section covers aspects of (mobile) clinical decision support systems, operational excellence and value-based healthcare. Fundamentals of Clinical Data Science is an essential resource for healthcare professionals and IT consultants intending to develop and refine their skills in personalized medicine, using solutions based on large datasets from electronic health records or telemonitoring programmes. The book's promise is "no math, no code" and will explain the topics in a style that is optimized for a healthcare audience.

Build the foundational data science skills necessary to work with and better understand complex data science algorithms. This example-driven book provides complete Python coding examples to complement and clarify data science concepts, and enrich the learning experience. Coding examples include visualizations whenever appropriate. The book is self-contained. All of the math, statistics, stochastic, and programming skills required to master the content are covered. In-depth knowledge of object-oriented programming isn't required because complete examples are provided and explained. Data Science Fundamentals with Python and MongoDB is an excellent starting point for those interested in pursuing a career in data science. Like any science, the fundamentals of data science are a prerequisite to competency. Without proficiency in mathematics, statistics, data manipulation, and coding, the path to success is "rocky" at best. The coding examples in this book are concise, accurate, complete, and perfectly complement the data science concepts introduced. What You'll Learn Prepare for a career in data science Work with complex data structures in Python Simulate with Monte Carlo and Stochastic algorithms Apply linear algebra using vectors and matrices Utilize complex algorithms such as gradient descent and principal component analysis Wrangle, cleanse, visualize, and problem solve with data Use MongoDB and JSON to work with data Who This Book Is For The novice yearning to break into the data science world, and the enthusiast looking to enrich, deepen, and develop data science skills through mastering the underlying fundamentals that are sometimes skipped over in the rush to be productive. Some knowledge of object-oriented programming will make learning easier.

Data science is no easy term to define. While there are many definitions available that point out its statistical or logical aspects, others focus on its machine learning impacts. Today only, get this Amazon book for just \$19.99 for a limited time. Regularly priced at \$35.99. The truth is, data science is a process that requires an understanding of multiple fields, methods, techniques, and more. Data science cannot be easily labeled because, when applied, it looks different to each person, business, or organization utilizing it. While the term may not be easy to define, what it is used for, can be used for, and approaches to it can be more easily understood. And that is precisely what this book aims to do. Scroll Up & Click to Buy Now! Here Is A Review Of What You'll Discover...In this step-by-step book: This book will not only thoroughly go over all the skills, people, and steps involved in data science, it will also look closely at: ? What big data is and how data science came from it. ? How data has evolved, resulting in new methods for understanding it. ? How data science influenced artificial intelligence. ? How data science is used in machine learning and deep learning. ? How data science revolutionizes the way we train machines and set up neural networks. Data science, big data, machine learning, and deep learning tend to intimidate people. My belief is it is too complicated or technology-centered for them to break into these fields. This book is designed to simplify these complex areas in a way that anyone can understand the fundamentals. Whether you are just hearing about data science, are a student studying it in college, or looking to expand your career, this book has something to offer every type of data enthusiast. Order your copy today! Take action right away by purchase this book "The Fundamentals of Data Science: Big Data, Deep Learning, and Machine Learning: What you need to know about data science and why it matters.", for a limited time discount of only \$19.99! Hurry Up!! Tags: ? data science quick ? data science strategy ? data science trading ? data science journal ? insight data science ? data science salary ? data science jobs ? data science espanol ? data science case study ? data science beginner guide

Fundamentals of Spatial Data Analysis
Fundamentals of Data Science
Fundamentals of Clinical Data Science
Learn Wireshark
A Comprehensive Guide for IT Professionals
Fundamentals of Mobile Data Networks

Cloud Data Centers and Cost Modeling To get into the all-important field of data warehousing, this book explores all topics needed by those who design and implement data warehouses. Readers will learn about planning requirements, architecture, infrastructure, data preparation, information delivery, implementation, and maintenance.They'll also find a wealth of industry examples garnered from the author's 25 years of experience in designing and implementing databases and data warehouse applications for major corporations. M Cloud Data Centers and Cost Modeling establishes a framework for strategic decision-makers to facilitate the development of cloud data centers. Just as building a house requires a clear understanding of the blueprints, architecture, and costs of the project, building a cloud-based data center requires similar knowledge. The authors take a theoretical and practical approach, starting with the key questions to help uncover needs and clarify project scope. They then demonstrate probability tools to test and support data definitions, the book addresses data center creation, infrastructure development, cost modeling, and simulations in decision-making, each part building on the previous. In this way the authors bridge technology, management, and infrastructure as a service. In one complete guide to data centers that facilitates educated decision making. Explains how to balance cloud computing functionality with data center efficiency Covers key requirements for power management, cooling, server planning, virtualization, and storage Theory and Monte Carlo Simulations Blends theoretical and practical discussions with insights for developers, consultants, and analysts considering data center development Microsoft Azure Essentials from Microsoft Press is a series of free ebooks designed to help you advance your technical skills with Microsoft Azure. The first ebook in the series, Microsoft Azure Essentials: Fundamentals of Azure, introduces developers and IT professionals to the wide range of capabilities in Azure. The authors - both Microsoft MVPs in Azure - present both conceptual and how-to content for key areas, including: Azure Websites and Azure Cloud Services Azure Virtual Machines Azure Storage Azure Virtu

Press's blog and Twitter (@MicrosoftPress) to learn about other free ebooks in the 'Microsoft Azure Essentials' series. This book presents the first comparative review of the state of the art and the best current practices of data warehouses. It covers source and data integration, multidimensional aggregation, query optimization, metadata management, quality assessment, and design optimization. A conceptual framework is presented by which the architecture and quality of a data warehouse can be assessed and improved using enriched metadata management combined with advanced techniques from databases, business modeling, and Data Center Fundamentals

Zero Trust Networks
Data Science Fundamentals for Python and MongoDB
Concepts, Drivers & Techniques
Data Center Handbook
Networking Technologies, Protocols, and Use Cases for the Internet of Things

Fundamentals of Data Science is designed for students, academicians and practitioners with a complete walkthrough right from the foundational groundwork required to outlining all the concepts, techniques and tools required to understand Data Science. This book is an umbrella term for the non-traditional techniques and technologies that are required to collect, aggregate, process, and gain insights from massive datasets. This book offers all the processes, methodologies, various steps like data acquisition, pre-process, mining, prediction, and visualization tools for extracting insights from vast amounts of data by the use of various scientific methods, algorithms, and processes Readers will learn the steps necessary to create the application with SQL, NoSQL, Python, R, Matlab, Octave and Tableau. This book provides a stepwise approach to building solutions to data science applications right from understanding the fundamentals, performing data analytics to writing source code. All the concepts are discussed in simple English to help the community to become Data Scientist without much pre-requisite knowledge. Features : Simple strategies for developing statistical models that analyze data and detect patterns, trends, and relationships in data sets. Complete roadmap to Data Science approach with dedicated sections which includes Fundamentals, Methodology and Tools. Focussed approach for learning and practice various Data Science Toolswith Sample code and examples for practice. Information is presented in an accessible way for students, researchers and academicians and professionals.

Energy Efficient Thermal Management of Data Centers examines energy flow in today's data centers. Particular focus is given to the state-of-the-art thermal management and thermal design approaches now being implemented across the multiple length scales involved. The impact of future trends in information technology hardware, and emerging software paradigms such as cloud computing and virtualization, on thermal management are also addressed. The book explores computational and experimental characterization approaches for determining temperature and air flow patterns within data centers. Thermodynamic models, visualization insights and presenting data through film making and dynamic simulations. In-depth international case studies from a wide range of organizations, including Netflix, LinkedIn, Goodreads, Deep Blue, Alpha Go and Mike's Hard Lemonade Co. show successful data techniques in practice and inspire you to turn knowledge into innovation. Cutting-Edge Data Skills also provides insightful guidance on how you can use data skills to enhance your employability and improve how your industry or company works through your data skills. Expert author and instructor, Kirill Ereemko, is committed to making the complex simple and inspiring you to have the confidence to develop an understanding, adeptness and love of data.

Don't simply show your data—tell a story with it! Storytelling with Data teaches you the fundamentals of data visualization and how to communicate effectively with data. You'll discover the power of storytelling and the way to make data a pivotal point in your story. The lessons in this illuminative text are grounded in theory, but made accessible through numerous real-world examples—ready for immediate application to your next graph or presentation. Storytelling is not an inherent skill, especially when it comes to data visualization, and the tools at our disposal don't make it any easier. This book demonstrates how to go beyond conventional tools to reach the root of your data, and how to use your data to create an engaging, informative, compelling story. Specifically, you'll learn how to: Understand the importance of context and audience Determine the appropriate type of graph for your situation Recognize and eliminate the clutter clouding your information Direct your audience's attention to the most important parts of your data Think like a designer and utilize concepts of design in data visualization Leverage the power of storytelling to help your message resonate with your audience Together, the lessons in this book will help you turn your data into high impact visual stories that stick with your audience. Rid your world of ineffective graphs. one exploring 3D pie chart at a time. There is a story in your data—Storytelling with Data will give you the skills and power to tell it!

This book provides you with an accessible overview of network management covering management not just of networks themselves but also of services running over those networks. It also explains the different technologies that are used in network management and how they relate to each other...[book cover].

Confidently navigate the Wireshark interface and solve real-world networking problems
Master the Fundamentals of Working with Data and Supercharge Your Career
A Data Visualization Guide for Business Professionals

Fundamentals of Web Development
Storytelling with Data
Content Security in Digital Multimedia
Data science is the most exciting skill you can master. Data has dramatically changed how our world works. From entertainment to politics, from technology to advertising and from science to the business world, data is integral and its only limit is our imagination. If you want to have a vibrant and valuable professional life, being skilled with data is the key to a cutting-edge career. Learning how to work with data may seem intimidating or difficult but with Confident Data Skills you will be able to master the fundamentals and supercharge your professional abilities. This essential book covers data mining, preparing data, financial modeling, visualizing insights and presenting data through film making and dynamic simulations. In-depth international case studies from a wide range of organizations, including Netflix, LinkedIn, Goodreads, Deep Blue, Alpha Go and Mike's Hard Lemonade Co. show successful data techniques in practice and inspire you to turn knowledge into innovation. Cutting-Edge Data Skills also provides insightful guidance on how you can use data skills to enhance your employability and improve how your industry or company works through your data skills. Expert author and instructor, Kirill Ereemko, is committed to making the complex simple and inspiring you to have the confidence to develop an understanding, adeptness and love of data.

The free book "Fundamentals of Computer Programming with C#" is a comprehensive computer programming tutorial that teaches programming, logical thinking, data structures and algorithms, problem solving and high quality code with lots of examples in C#. It starts with the first steps in programming and software development like variables, data types, conditional statements, loops and arrays and continues with other basic topics like methods, numeral systems, strings and string processing, exceptions, classes and objects. After the basics this fundamental programming book enters into more advanced programming topics like recursion, data structures (lists, trees, hash-tables and graphs), high-quality code, unit testing and refactoring, object-oriented principles (inheritance, abstraction, encapsulation and polymorphism) and their implementation the C# language. It also covers fundamental topics that each good developer should know like algorithm design, complexity of algorithms and problem solving. The book uses C# language and Visual Studio to illustrate the programming concepts and explains some C#/.NET specific technologies like lambda expressions, extension methods and LINQ. The book is written by a team of developers led by Svetlin Nakov who has 20+ years practical software development experience. It teaches the major programming concepts and way of thinking needed to become a good software engineer and the C# language in the meantime. It is a great start for anyone who wants to become a skillful software engineer. The books do not teach technologies like databases, mobile and web development, but shows the true way to master the basics of programming regardless of the languages, technologies and tools. It is good for beginners and intermediate developers who want to put a solid base in the software engineering industry. The book is accompanied by free video lessons, presentation slides and mind maps, as well as hundreds of exercises and live examples. Download the free C# programming book, videos, presentations and other resources from <http://introprogramming.info>. Title: Fundamentals of Computer Programming with C# (The Bulgarian C# Programming Book) ISBN: 9789544007737 ISBN-10: 954-400-773-7 (9544007737) Author: Svetlin Nakov & Co. Pages: 1132 Language: English Published: Sofia, 2013 Publisher: Faber Publishing, Bulgaria Web site: <http://www.introprogramming.info> License: CC-Attribution-Share-Alike Tags: free, programming, book, computer programming, programming fundamentals, ebook, book programming, C#, CSharp, C#

Today's networks are required to support an increasing array of real-time communication methods. Video chat, real-time messaging, and always-connected resources put demands on networks that were previously unimaginable. The Second Edition of Fundamentals of Communications and Networking helps readers better understand today's networks and the way they support the evolving requirements of different types of organizations. It discusses the critical issues of designing a network that will meet an organization's performance needs and discusses how businesses use networks to solve business problems. Using numerous examples and exercises, this text incorporates hands-on activities to prepare readers to fully understand and design modern networks and their requirements. Key Features of the Second Edition: - Introduces network basics by describing how networks work - Discusses how networks support the increasing demands of advanced communications - Illustrates how to map the right technology to an organization's needs and business goals - Outlines how businesses use networks to solve business problems, both technically and operationally.

Data Center Virtualization Fundamentals For many IT organizations, today's greatest challenge is to drive more value, efficiency, and utilization from data centers. Virtualization is the best way to meet this challenge. Data Center Virtualization Fundamentals brings together the comprehensive knowledge Cisco professionals need to apply virtualization throughout their data center environments. Leading data center expert Gustavo A. A. Santana thoroughly explores all components of an end-to-end data center virtualization solution, including networking, storage, servers, operating systems, application optimization, and security. Rather than focusing on a single product or technology, he explores product capabilities as interoperable design tools that can be combined and integrated with other solutions, including VMware vSphere. With the author's guidance, you'll learn how to define and implement highly-optimized networks for new, expanded, or rearchitected data center projects. By doing so, you can deliver agile application provisioning without purchasing unnecessary infrastructure, and establish a strong foundation for new cloud computing and IT-as-a-service initiatives. Throughout, Santana illuminates key theoretical concepts through realistic use cases, real-world designs, illustrative configuration examples, and verification outputs. Appendices provide available reference information, including relevant Cisco data center products and CLI principles for IOS and NX-OS. With this approach, Data Center Virtualization Fundamentals will be an indispensable resource for anyone preparing for the CCNA Data Center, CCNP Data Center, or CCIE Data Center certification exams. Learn how virtualization can transform and improve traditional data center network topologies Understand the key characteristics and value of each data center virtualization technology Walk through key decisions, and transform choices into architecture Smoothly migrate existing data centers toward greater virtualization Burst silos that have traditionally made data centers inefficient Master foundational technologies such as VLANs, VRF, and virtual contexts Use virtual PortChannel and FabricPath to overcome the limits of STP Optimize cabling and network management with fabric extender (FEX) virtualized chassis Extend Layer 2 domains to distant data center sites using MPLS and Overlay Transport Virtualization (OTV) Use VSANs to overcome Fibre Channel fabric challenges Improve SAN data protection, environment isolation, and scalability Consolidate I/O through Data Center Bridging and FCoE Use virtualization to radically simplify server environments Create server profiles that streamline "bare metal" server provisioning "Transcend the rack" through virtualized networking based on Nexus 1000V and VM-FEX Leverage opportunities to deploy virtual network services more efficiently Evolve data center virtualization toward full-fledged private clouds

The second edition of a comprehensive introduction to machine learning approaches used in predictive data analytics, covering both theory and practice. Machine learning is often used to build predictive models by extracting patterns from large datasets. These models are used in predictive data analytics applications including price prediction, risk assessment, predicting customer behavior, and document classification. This introductory textbook offers a clear and focused treatment of the most important machine learning approaches used in predictive data analytics, covering both theoretical concepts and practical applications. Technical and mathematical material is augmented with explanatory worked examples, and case studies illustrate the application of these models in the broader business context. This second edition covers recent developments in machine learning, especially in a new chapter on deep learning, and two new chapters that go beyond predictive analytics to cover unsupervised learning and reinforcement learning.

Data Warehousing Fundamentals
Foundations of Data Science
The Datacenter as a Computer
Storage Area Network Fundamentals
Understanding Techniques and Designs for Highly Efficient Data Centers with Cisco Nexus, UCS, MDS, and Beyond
Fundamentals of Capturing and Processing Drone Imagery and Data

Unmanned aircraft systems (UAS) are rapidly emerging as flexible platforms for capturing imagery and other data across the sciences. Many colleges and universities are developing courses on UAS-based data acquisition. Fundamentals of Capturing and Processing Drone Imagery and Data is a comprehensive, introductory text on how to use unmanned aircraft systems for data capture and analysis. It provides best practices for planning data capture missions and hands-on learning modules geared toward UAS data collection, processing, and applications. FEATURES Lays out a step-by-step approach to identify relevant tools and methods for UAS data/image acquisition and processing Provides practical hands-on knowledge with visual interpretation, well-organized and designed for a typical 16-week UAS course offered on college and university campuses Suitable for all levels of readers and does not require prior knowledge of UAS, remote sensing, digital image processing, or geospatial analytics Includes real-world environmental applications along with data interpretations and software used, often nonproprietary Combines the expertise of a wide range of UAS researchers and practitioners across the geospatial sciences This book provides a general introduction to drones along with a series of hands-on exercises that students and researchers can engage with to learn to integrate drone data into real-world applications. No prior background in remote sensing, GIS, or drone knowledge is needed to use this book. Readers will learn to process different types of UAS imagery for applications (such as precision agriculture, forestry, urban landscapes) and apply this knowledge in environmental monitoring and land-use studies.

This book provides an introduction to the mathematical and algorithmic foundations of data science, including machine learning, high-dimensional geometry, and analysis of large networks. Topics include the counterintuitive nature of data in high dimensions, important linear algebraic techniques such as singular value decomposition, the theory of random walks and Markov chains, the fundamentals of and important algorithms for machine learning, algorithms and analysis for clustering, probabilistic models for large networks, representation learning including topic modelling and non-negative matrix factorization, wavelets and compressed sensing. Important probabilistic techniques are developed including the law of large numbers, tail inequalities, analysis of random projections, generalization guarantees in machine learning, and moment methods for analysis of phase transitions in large random graphs. Additionally, important structural and complexity measures are discussed such as matrix norms and VC-dimension. This book is suitable for both undergraduate and graduate courses in the design and analysis of algorithms for data.

This book explains the concept of spatial data quality, a key theory for minimizing the risks of data misuse in a specific decision-making context. Drawing together chapters written by authors who are specialists in their particular field, it provides both the data producer and the data user perspectives on how to evaluate the quality of vector or raster data which are both produced and used. It also covers the key concepts in this field, such as: how to describe the quality of vector or raster data; how to enhance this quality; how to evaluate and document it, using methods such as metadata; how to communicate it to users; and how to relate it with the decision-making process. Also included is a Foreword written by Professor Michael F. Goodchild.

Master the basics of data centers to build server farms that enhance your Web site performance Learn design guidelines that show how to deploy server farms in highly available and scalable environments Plan site performance capacity with discussions of server farm architectures and their real-life applications to determine your system needs Today's market demands that businesses have an Internet presence through which they can perform e-commerce and customer support, and establish a presence that can attract and increase their customer base. Underestimated hit ratios, compromised credit card records, perceived slow Web site access, or the infamous "Object Not Found" alerts make the difference between a successful online presence and one that is bound to fail. These challenges can be solved in part with the use of data center technology. Data centers switch traffic based on information at the Network, Transport, or Application layers. Content switches perform the "best server" selection process to direct users' requests for a specific service to a server in a server farm. The best server selection process takes into account both server load and availability, and the existence and consistency of the requested content. Data Center Fundamentals helps you understand the basic concepts behind the design and scaling of server farms using data center and content switching technologies. It addresses the principles and concepts needed to take on the most common challenges encountered during planning, implementing, and managing Internet and intranet IP-based server farms. An in-depth analysis of the data center technology with real-life scenarios make Data Center Fundamentals an ideal reference for understanding, planning, and designing Web hosting and e-commerce environments.

IoT Fundamentals

Designing Warehouse-Scale Machines, Third Edition
Energy Efficient Thermal Management of Data Centers
Understand Data Center Network Design and Infrastructure Architecture, Including Load Balancing, SSL, and Security
Handbook of Fiber Optic Data Communication
Network Management Fundamentals

Multimedia technologies are becoming more sophisticated, enabling the Internet to accommodate a rapidly growing audience with a full range of services and efficient delivery methods. Although the Internet now puts communication, education, commerce and socialization at our finger tips, its rapid growth has raised some weighty security concerns with respect to multimedia content. The owners of this content face enormous challenges in safeguarding their intellectual property, while still exploiting the Internet as an important resource for commerce. Data Hiding Fundamentals and Applications focuses on the theory and state-of-the-art applications of content security and data hiding in digital multimedia. One of the pillars of content security solutions is the imperceptible insertion of information into multimedia data for security purposes; the idea is that this inserted information will allow detection of unauthorized usage. Provides a theoretical framework for data hiding, in a signal processing context Realistic applications in secure, multimedia delivery Compression robust data hiding Data hiding for proof of ownership--WATERMARKING Data hiding algorithms for image and video watermarking

This book describes warehouse-scale computers (WSCs), the computing platforms that power cloud computing and all the great web services we use every day. It discusses how these new systems treat the datacenter itself as one massive computer designed at warehouse scale, with hardware and software working in concert to deliver good levels of internet service performance. The book details the architecture of WSCs and covers the main factors influencing their design, operation, and cost structure, and the characteristics of their software base. Each chapter contains multiple real-world examples, including detailed case studies and previously unpublished details of the infrastructure used to power Google's online services. Targeted at the architects and programmers of today's WSCs, this book provides a great foundation for those looking to innovate in this fascinating and important area, but the material will also be broadly interesting to those who just want to understand the infrastructure powering the internet. The third edition reflects four years of advancements since the previous edition and nearly doubles the number of pictures and figures. New topics range from additional workloads like video streaming, machine learning, and public cloud to specialized silicon accelerators, storage and network building blocks, and a revised discussion of data center power and cooling, and uptime. Further discussions of emerging trends and opportunities ensure that this revised edition will remain an essential resource for educators and professionals working on the next generation of WSCs.

Grasp the basics of packet capture and analyze common protocols.Key Features:Troubleshoot basic to advanced network problems using packet analysisAnalyze common protocols and identify latency issues with WiresharkExplore ways to examine captures to recognize unusual traffic and possible network attacksBook Description Wireshark is a popular and powerful packet analysis tool that helps network administrators investigate latency issues and identify potential attacks. Learn Wireshark provides a solid overview of basic protocol analysis and helps you to navigate the Wireshark interface, so you can confidently examine common protocols such as TCP, IP, and ICMP. The book starts by outlining the benefits of traffic analysis, takes you through the evolution of Wireshark, and then covers the phases of packet analysis. We'll review some of the command line tools and outline how to download and install Wireshark on either a PC or MAC. You'll gain a better understanding of what happens when you tap into the data stream, and learn how to personalize the Wireshark interface. This Wireshark book compares the display and capture filters and summarizes the OSI model and data encapsulation. You'll gain insights into the protocols that move data in the TCP/IP suite, and dissect the TCP handshake and teardown process. As you advance, you'll explore ways to troubleshoot network latency issues, and discover how to save and export files. Finally, you'll see how you can share captures with your colleagues using Cloudshark. By the end of this book, you'll have a solid understanding of how to monitor and secure your network with the most updated version of Wireshark. What you will learnBecome familiar with the Wireshark interfaceNavigate commonly accessed menu options such as edit, view, and fileUse display and capture filters to examine trafficUnderstand the Open Systems Interconnection (OSI) modelCarry out deep packet analysis of the Internet suite: IP, TCP, UDP, ARP, and ICMPExplore ways to troubleshoot network latency issuesSubset traffic, insert comments, save, export, and share packet capturesWho this book is for This book is for network administrators, security analysts, students, teachers, and anyone interested in learning about packet analysis using Wireshark. Basic knowledge of network fundamentals, devices, and protocols along with an understanding of different topologies will be beneficial.

The Handbook includes chapters on all the major industry standards, quick reference tables, helpful appendices, plus a new glossary and list of acronyms. This practical handbook can stand alone or as a companion volume to DeCusatis: Fiber Optic Data Communication: Technological Advances and Trends (February 2002, ISBN: 0-12-207892-6), which was developed in tandem with this book. * Includes emerging technologies such as Infiniband, 10 Gigabit Ethernet, and MPLS Optical Switching * Describes leading edge commercial products, including LEAF and MetroCore fibers, dense wavelength multiplexing, and Small Form Factor transceiver packages * Covers all major industry standards, often written by the same people who designed the standards themselves * Includes an expanded listing of references on the World Wide Web, plus hard-to-find references for international, homologation, and type approval requirements * Convenient tables of key optical datacom parameters and glossary with hundreds of definitions and acronyms * Industry buzzwords explained, including SAN, NAS, and MAN networking * Datacom market analysis and future projections from industry leading forecasters

The Fundamentals of Data Science: Big Data, Deep Learning, and Machine Learning: What You Need to Know about Data Science and why it Matters

A Complete Guide To Planning, Designing and Building a Cloud Data Center

IP Addressing Fundamentals

Fundamentals of Data Visualization

Microsoft Azure Essentials - Fundamentals of Azure

Provides the fundamentals, technologies, and best practices in designing, constructing and managing mission critical, energy efficient data centers Organizations in need of high-speed connectivity and nonstop systems operations depend upon data centers for a range of deployment solutions. A data center is a facility used to house computer systems and associated components, such as telecommunications and storage systems. It generally includes multiple power sources, redundant data communications connections, environmental controls (e.g., air conditioning, fire suppression) and security devices. With contributions from an international list of experts, The Data Center Handbook instructs readers to: Prepare strategic plan that includes location plan, site selection, roadmap and capacity planning Design and build "green" data centers, with mission critical and energy-efficient infrastructure Apply best practices to reduce energy consumption and carbon emissions Apply IT technologies such as cloud and virtualization Manage data centers in order to sustain operations with minimum costs Prepare and practice disaster reovery and business continuity plan The book imparts essential knowledge needed to implement data center design and construction, apply IT technologies, and continually improve data center operations.

Radiology Fundamentals is a concise introduction to the dynamic field of radiology for medical students, non-radiology house staff, physician assistants, nurse practitioners, radiology assistants, and other allied health professionals. The goal of the book is to provide readers with general examples and brief discussions of basic radiographic principles and to serve as a curriculum guide, supplementing a radiology education and providing a solid foundation for further learning. Introductory chapters provide readers with the fundamental scientific concepts underlying the medical use of imaging modalities and technology, including ultrasound, computed tomography, magnetic resonance imaging, and nuclear medicine. The main scope of the book is to present concise chapters organized by anatomic region and radiology sub-specialty that highlight the radiologist's role in diagnosing and treating common diseases, disorders, and conditions. Highly illustrated with images and diagrams, each chapter in Radiology Fundamentals begins with learning objectives to aid readers in recognizing important points and connecting the basic radiology concepts that run throughout the text. It is the editors' hope that this valuable, up-to-date resource will foster and further stimulate self-directed radiology learning—the process at the heart of medical education.

Fundamentals of Data Warehouses