

Cloud Computing Fundamentals 2 Springer

Cloud computing continues to emerge as a subject of substantial industrial and academic interest. Although the meaning and scope of “cloud computing” continues to be debated, the current notion of clouds blurs the distinctions between grid services, web services, and data centers, among other areas. Clouds also bring considerations of lowering the cost for relatively bursty applications to the fore. Cloud Computing: Principles, Systems and Applications is an essential reference/guide that provides thorough and timely examination of the services, interfaces and types of applications that can be executed on cloud-based systems. The book identifies and highlights state-of-the-art techniques and methods for designing cloud systems, presents mechanisms and schemes for linking clouds to economic activities, and offers balanced coverage of all related technologies that collectively contribute towards the realization of cloud computing. With an emphasis on the conceptual and systemic links between cloud computing and other distributed computing approaches, this text also addresses the practical importance of efficiency, scalability, robustness and security as the four cornerstones of quality of service. Topics and features: explores the relationship of cloud computing to other distributed computing paradigms, namely peer-to-peer, grids, high performance computing and web services; presents the principles, techniques, protocols and algorithms that can be adapted from other distributed computing paradigms to the development of successful clouds; includes a Foreword by Professor Mark Baker of the University of Reading, UK; examines current cloud-practical applications and highlights early deployment experiences; elaborates the economic schemes needed for clouds to become viable business models. This book will serve as a comprehensive reference for researchers and students engaged in cloud computing. Professional system architects, technical managers, and IT consultants will also find this unique text a practical guide to the application and delivery of commercial cloud services. Prof. Nick Antonopoulos is Head of the School of Computing, University of Derby, UK. Dr. Lee Gillam is a Lecturer in the Department of Computing at the University of Surrey, UK.

Automation systems used for research and educational purposes have become more complex, there has been an increase in the need for new computing architecture. High performance and cloud computing provide reliable and cost-effective information technology infrastructure that enhances research and educational processes. Handbook of Research on High Performance and Cloud Computing in Scientific Research and Education presents the applications of cloud computing in various settings, such as scientific research, education, e-learning, ubiquitous learning, and social computing. Providing various examples, practical solutions, and applications of high performance and cloud computing; this book is a useful reference for professionals and researchers discovering the applications of information and communication technologies in science and education, as well as scholars seeking insight on how modern technologies support scientific research.

This timely textbook presents a comprehensive guide to the core topics in cybersecurity, covering issues of security that extend beyond traditional computer networks to the ubiquitous mobile communications and online social networks that have become part of our daily lives. In the context of our growing dependence on an ever-changing digital ecosystem, this book stresses the importance of security awareness, whether in our homes, our businesses, or our public spaces. This fully updated new edition features new material on the security issues raised by blockchain technology, and its use in logistics, digital ledgers, payments systems, and digital contracts. Topics and features: Explores the full range of security risks and vulnerabilities in all connected digital systems Inspires debate over future developments and improvements necessary to enhance the security of personal, public, and private enterprise systems Raises thought-provoking questions regarding legislative, legal, social, technical, and ethical challenges, such as the tension between privacy and security Describes the fundamentals of traditional computer network security, and common threats to security Reviews the current landscape of tools, algorithms, and professional best practices in use to maintain security of digital systems Discusses the security issues introduced by the latest generation of network technologies, including mobile systems, cloud computing, and blockchain Presents exercises of varying levels of difficulty at the end of each chapter, and concludes with a diverse selection of practical projects Offers supplementary material for students and instructors at an associated website, including slides, additional projects, and syllabus suggestions This important textbook/reference is an invaluable resource for students of computer science, engineering, and information management, as well as for practitioners working in data- and information-intensive industries.

Cloud Computing and Digital Media: Fundamentals, Techniques, and Applications presents the fundamentals of cloud and media infrastructure, novel technologies that integrate digital media with cloud computing, and real-world applications that exemplify the potential of cloud computing for next-generation digital media. It brings together technologies for media/data communication, elastic media/data storage, security, authentication, cross-network media/data fusion, interdevice media interaction/reaction, data centers, PaaS, SaaS, and more. The book covers resource optimization for multimedia cloud computing—a key technical challenge in adopting cloud computing for various digital media applications. It describes several important new technologies in cloud computing and digital media, including query processing, semantic classification, music retrieval, mobile multimedia, and video transcoding. The book also illustrates the profound impact of emerging health-care and educational applications of cloud computing. Covering an array of state-of-the-art research topics, this book will help you understand the techniques and applications of cloud computing, the interaction/reaction of mobile devices, and digital media/data processing and communication.

Fundamentals of Multimedia

Fundamentals to Design, Build, and Manage Cloud Applications

Fundamentals of Cryptology

Cloud Logistics

Computing and Communication Systems in Urban Development

Cloud Computing Fundamentals

Architecture, Data Storage, Implementation, and Security

This essential textbook presents a concise introduction to the fundamental principles of software engineering, together with practical guidance on how to apply the theory in a real-world, industrial environment. The wide-ranging coverage encompasses all areas of software design, management, and quality. Topics and features: presents a broad overview of software engineering, including software lifecycles and phases in software development, and project management for software engineering; examines the areas of requirements engineering, software configuration management, software inspections, software testing, software quality assurance, and process quality; covers topics on software metrics and problem solving, software reliability and dependability, and software design and coding. Agile approaches, describes a set of mathematical techniques to specify and derive a program from its specification, introducing the Z specification language; discusses software process improvement, describing the CMMI model, and introduces UML, a visual modelling language for software systems; reviews a range of tools to support various activities in software engineering. Offers advice on the selection and management of a software supplier; describes key innovations in the field of software as distributed systems, service-oriented architecture, software as a service, cloud computing, and embedded systems; includes key learning topics, summaries and review questions in each chapter, together with a useful glossary. This practical and easy-to-follow textbook/reference is ideal for computer science students seeking to learn how to build high quality and reliable software on time and on budget. The text also serves as a self-study primer for software engineers, quality professionals, and software managers.

The service industry is continually improving, forcing service-oriented engineering to improve alongside it. In a digitalized world, technology within the service industry has adapted to support interactions between users and organizations. By identifying key problems and features, service providers can help increase facilitator profitability and user satisfaction. Multidisciplinary Approaches to Service-Oriented Engineering is a well-rounded collection of research that examines methods of providing optimal system design for service systems and applications engineering. While exploring topics such as cloud ecosystems, interface localization, and requirement prioritization, this publication provides information about the approaches and development of software architectures to improve service quality. This book is a vital resource for engineers, theoreticians, educators, developers, IT consultants, researchers, practitioners, and professionals.

Cloud computing has emerged as a new paradigm for hosting and delivering computing resources over the Internet. This research proposed a cross-cloud communication framework (CCF) for enabling communication among clouds with minimal management burden. Further, it enabled the borrowing and lending of resources among clouds whenever required to fulfil the client requests. It also facilitated to share the information of attacks and intruding entities to cater with same attacks on different clouds. The framework was deployed using web-based prototype development to test and validate the cross-cloud communication. The prototype was developed using open source technologies. Moreover, algorithms were developed using low level description technique for the processes of resource borrowing and lending and, sharing of attacks information. The algorithms were analyzed to test their asymptotic running time complexity, and programmed in accordance with prototype of the study for testing and validation. The results showed high success rate of 94.4% for sharing of resources among clouds with mean allocation time of 12 microseconds. It was observed that 94.4% of the time clients requests were fulfilled successfully after borrowing the resources from cloud network. An average of 100% results were collected for protecting multiple clouds from same attack by sharing the attacks and intruders information among clouds in different situations. It is therefore concluded that cross-cloud communication framework can benefit for sharing of resources and attacks information among clouds for efficient resource management and allocation and protection against same attacks at different clouds.

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

Introduction to Machine Learning in the Cloud with Python

Measuring Quality of Cloud Services from a Client Perspective

Multidisciplinary Approaches to Service-Oriented Engineering

Concepts, Design Methods, and Applications

Handbook of Cloud Computing

Cloud Computing and Digital Media

Designing and Executing Architectural Models with SysADL Grounded on the OMG SysML Standard

Blockchain Technology: Platforms, Tools and Use Cases, Volume 111, the latest release in the Advances in Computers series published since 1960, presents detailed coverage of innovations in computer hardware, software, theory, design and applications. In addition, it provides contributors with a medium in which they can explore their subjects in greater depth and breadth than journal articles usually allow. This volume has 8 Chapters that discuss the various aspects of Blockchain technology. Provides in-depth surveys and tutorials on new computer technology, with this release focusing on blockchain Presents well-known authors and researchers in the field Contains extensive bibliographies with most chapters Includes volumes that are devoted to single themes or subfields of computer science

Swarm Intelligence in Cloud Computing is an invaluable treatise for researchers involved in delivering intelligent optimized solutions for reliable deployment, infrastructural stability, and security issues of cloud-based resources. Starting with a bird’s eye view on the prevalent state-of-the-art techniques, this book enriches the readers with the knowledge of evolving swarm intelligent optimized techniques for addressing different cloud computing issues including task scheduling, virtual machine allocation, load balancing and optimization, deadline handling, power-aware profiling, fault resilience, cost-effective design, and energy efficiency. The book offers comprehensive coverage of the most essential topics, including: Role of swarm intelligence on cloud computing services Cloud resource sharing strategies Cloud service provider selection Dynamic task and resource scheduling Data center resource management. Indrajit Pan is an Associate Professor in Information Technology of RCC Institute of Information Technology, India. He received his PhD from Indian Institute of Engineering Science and Technology, Shibpur, India. With an academic experience of 14 years, he has published around 40 research publications in different international journals, edited books, and conference proceedings. Mohamed Abd Elaziz is a Lecturer in the Mathematical Department of Zagazig University, Egypt. He received his PhD from the same university. He is the author of more than 100 articles. His research interests include machine learning, signal processing, image processing, cloud computing, and evolutionary algorithms. Siddhartha Bhattacharyya is a Professor in Computer Science and Engineering of Christ University, Bangalore. He received his PhD from Jadavpur University, India. He has published more than 230 research publications in international journals and conference proceedings in his 20 years of academic experience.

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

Cloud service benchmarking can provide important, sometimes surprising insights into the quality of services and leads to a more quality-driven design and engineering of complex software architectures that use such services. Starting with a broad introduction to the field, this book guides readers step-by-step through the process of designing, implementing and executing a cloud service benchmark, as well as understanding and dealing with its results. It covers all aspects of cloud service benchmarking, i.e., both benchmarking the cloud and benchmarking in the cloud, at a basic level. The book is divided into five parts: Part I discusses what cloud benchmarking is, provides an overview of cloud services and their key properties, and describes the notion of a cloud system and cloud-service quality. It also addresses the benchmarking lifecycle and the motivations behind running benchmarks in particular phases of an application lifecycle. Part II then focuses on benchmark design by discussing key objectives (e.g., repeatability, fairness, or understandability) and defining metrics and measurement methods, and by giving advice on developing own measurement methods and metrics. Next, Part III explores benchmark execution and implementation challenges and objectives as well as aspects like runtime monitoring and result collection. Subsequently, Part IV addresses benchmark results, covering topics such as an abstract process for turning data into insights, data preprocessing, and basic data analysis methods. Lastly, Part V concludes the book with a summary, suggestions for further reading and pointers to benchmarking tools available on the Web. The book is intended for researchers and graduate students of computer science and related subjects looking for an introduction to benchmarking cloud services, but also for industry practitioners who are interested in evaluating the quality of cloud services or who want to assess key qualities of their own implementations through cloud-based experiments.

Guide to Biometrics

Blockchain Technology: Platforms, Tools and Use Cases

Computer Architecture and Organization

Guide to Computer Network Security

Principles and Practice

A Professional Reference and Interactive Tutorial

Fundamentals and Architecture Security

This textbook introduces the “Fundamentals of Multimedia”, addressing real issues commonly faced in the workplace. The essential concepts are explained in a practical way to enable students to apply their existing skills to address problems in multimedia. Fully revised and updated, this new edition now includes coverage of such topics as 3D TV, social networks, high-efficiency video compression and conferencing, wireless and mobile networks, and their attendant technologies. Features: presents an overview of the key concepts in multimedia, including color science; reviews lossless and lossy compression methods for image, video and audio data; examines the demands placed by multimedia communications on wired and wireless networks; discusses the impact of social media and cloud computing on information sharing and on multimedia content search and retrieval; includes study exercises at the end of each chapter; provides supplementary resources for both students and instructors at an associated website.

This textbook addresses the conceptual and practical aspects of the various phases of the lifecycle of service systems, ranging from service ideation, design, implementation, analysis, improvement and trading associated with service systems engineering. Written by leading experts in the field, this indispensable textbook will enable a new wave of future professionals to think in a service-focused way with the right balance of competencies in computer science, engineering, and management. Fundamentals of Service Systems is a centerpiece for a course syllabus on service systems. Each chapter includes a summary, a list of learning objectives, an opening case, and a review section with questions, a project description, a list of key terms, and a list of further reading bibliography. All these elements enable students to learn at a faster and more comfortable pace. For researchers, teachers, and students who want to learn about this new emerging science, Fundamentals of Service Systems provides an overview of the core disciplines underlying the study of service systems. It is aimed at students of information systems, information technology, and business and economics. It also targets business and IT practitioners, especially those who are looking for better ways of innovating, designing, modeling, analyzing, and optimizing service systems.

This volume gathers selected, peer-reviewed original contributions presented at the International Conference on Computational Vision and Bio-inspired Computing (ICCVBIC) conference which was held in Coimbatore, India, on November 29-30, 2018. The works included here offer a rich and diverse sampling of recent developments in the fields of Computational Vision, Fuzzy, Image Processing and Bio-inspired Computing. The topics covered include computer vision; cryptography and digital privacy; machine learning and artificial neural networks; genetic algorithms and computational intelligence; the Internet of Things; and biometric systems, to name but a few. The applications discussed range from security, healthcare and epidemic control to urban computing, agriculture and robotics. In this book, researchers, graduate students and professionals will find innovative solutions to real-world problems in industry and society as a whole, together with inspirations for further research.

The current work provides CIOs, software architects, project managers, developers, and cloud strategy initiatives with a set of architectural patterns that offer nuggets of advice on how to achieve common cloud computing-related goals. The cloud computing patterns capture knowledge and experience in an abstract format that is independent of concrete vendor products. Readers are provided with a toolbox to structure cloud computing strategies and design cloud application architectures. By using this book cloud-native applications can be implemented and best suited cloud vendors and tooling for individual usage scenarios can be selected. The cloud computing patterns offer a unique blend of academic knowledge and practical experience due to the mix of authors. Academic knowledge is brought in by Christoph Fehling and Professor Dr. Frank Leymann who work on cloud research at the University of Stuttgart. Practical experience in building cloud applications, selecting cloud vendors, and designing enterprise architecture as a cloud customer is brought in by Dr. Ralph Retter who works as an IT architect at T2Systems. Walter Schueck, who works as a Technology Manager in the field of Enterprise Architecture at Daimler AG, and Peter Arbitter, the former head of T2Systems’ cloud architecture and IT portfolio team and now working for Microsoft. Voices on Cloud Computing Patterns Cloud computing is especially beneficial for large companies such as Daimler AG. Prerequisite is a thorough analysis of its impact on the existing applications and the IT architectures. During our collaborative research with the University of Stuttgart, we identified a vendor-neutral and structured approach to describe properties of cloud offerings and requirements on cloud environments. The resulting Cloud Computing Patterns have profoundly impacted our corporate IT strategy regarding the adoption of cloud computing. They help our architects, project managers and developers in the refinement of architectural guidelines and communicate requirements to our integration partners and software suppliers. Dr. Michael Gorritz – CIO Daimler AG Ever since 2005 T2Systems has provided a flexible and reliable cloud platform with its “Dynamic Services”. Today these cloud services cover a huge variety of corporate applications, especially enterprise resource planning, business intelligence, video, voice communication, collaboration, messaging and mobility services. The book was written by senior cloud pioneers sharing their technology foresight combining essential information and practical experiences. This valuable compilation helps both practitioners and clients to really understand which new types of services are really available, how they really work and importantly how to benefit from the cloud. Dr. Marcus Hacke – Senior Vice President, T2Systems International GmbH This book provides a conceptual framework and very timely guidance for people and organizations building applications in the cloud. Patterns are a proven approach to building robust and sustainable applications and systems. The authors adapt and extend it to cloud computing, drawing on their own experience and deep contributions to the field. Each pattern includes an extensive discussion of the state of the art, with implementation considerations and practical examples that the reader can apply to their own projects. By capturing our collective knowledge about building good cloud applications and by providing a format to integrate new insights, this book provides an important tool not just for individual practitioners and teams, but for the cloud computing community at large. Kristof Kloetner – General Manager, Rational Software, IBMSoftware Group

Cloud Computing Solutions

From Fundamentals to Application Methods

A Detailed Perspective

Software Architecture for Big Data and the Cloud

A Deep Dive into NoSQL Databases: The Use Cases and Applications

Cloud Computing Advancements in Design, Implementation, and Technologies

Guide to Cloud Computing

In today’s dynamic business environment, IT departments are under permanent pressure to meet two divergent requirements: to reduce costs and to support business agility with higher flexibility and responsiveness of the IT infrastructure. Grid and Cloud Computing enable a new approach towards IT. They enable increased scalability and more efficient use of IT based on virtualization of heterogeneous and distributed IT resources. This book provides a thorough understanding of the fundamentals of Grids and Clouds and of how companies can benefit from them. A wide array of topics is covered, e.g. business models and legal aspects. The applicability of Grids and Clouds in companies is illustrated with four cases of real business experiments. The experiments illustrate the technical solutions and the organizational and IT governance challenges that arise with the introduction of Grids and Clouds. Practical guidelines on how to successfully introduce Grids and Clouds in companies are provided.

Guide to Cloud ComputingPrinciples and PracticeSpringer Science & Business Media

The protection of sensitive information against unauthorized access or fraudulent changes has been of prime concern throughout the centuries. Modern communication techniques, using computers connected through networks, make all data even more vulnerable for these threats. Also, new issues have come up that were not relevant before, e. g. how to add a (digital) signature to an electronic document in such a way that the signer can not deny later on that the document was signed by him/her. Cryptology addresses the above issues. It is at the foundation of all information security. The techniques employed to this end have become increasingly mathematical of nature. This book serves as an introduction to modern cryptographic methods. After a brief survey of classical cryptosystems, it concentrates on three main areas. First of all, stream ciphers and block ciphers are discussed. These systems have extremely fast implementations, but sender and receiver have to share a secret key. Public key cryptosystems (the second main area) make it possible to protect data without a prearranged key. Their security is based on intractable mathematical problems, like the factorization of large numbers. The remaining chapters cover a variety of topics, such as zero-knowledge proofs, secret sharing schemes and authentication codes. Two appendices explain all mathematical prerequisites in great detail. One is on elementary number theory (Euclid’s Algorithm, the Chinese Remainder Theorem, quadratic residues, inversion formulas, and continued fractions). The other appendix gives a thorough introduction to finite fields and their algebraic structure.

This book consists of a collection of the high-quality research articles in the field of computer vision and robotics which are presented in the International Conference on Computer Vision and Robotics (CVR 2021), organized by BBD University Lucknow, India, during 7–8 August 2021. The book discusses applications of computer vision and robotics in the fields like medical science, defence, and smart city planning. The book presents recent works from researchers, academicians, industry, and policy makers.

Swarm Intelligence For Cloud Computing

DATA OWNERS CONCERNS IN CLOUD SECURITY AND MITIGATIONS

Reference Architecture Design

Advances of DNA Computing in Cryptography

Information and Communication Technology for Intelligent Systems

Handbook of Research on High Performance and Cloud Computing in Scientific Research and Education

Grid and Cloud Computing

As the Web grows and expands into ever more remote parts of the world, the availability of resources over the Internet increases exponentially. Making use of this widely prevalent tool, organizations and individuals can share and store knowledge like never before. Cloud Technology: Concepts, Methodologies, Tools, and Applications investigates the ubiquitous Web, exploring the use of applications and software that make use of the Internet’s anytime, anywhere availability. By bringing together research and ideas from across the globe, this publication will be of use to computer engineers, software developers, and end users in business, education, medicine, and more. Cloud computing has revolutionized computer systems, providing greater dynamism and flexibility to a variety of operations. It can help businesses quickly and effectively adapt to market changes, and helps promote users’ continual access to vital information across platforms and devices. Cloud Computing Advancements in Design, Implementation, and Technologies presents the state-of-the-art, standards, and practices of cloud computing, in an effort to identify emerging trends that will ultimately define the future of the cloud. A valuable reference for academics and practitioners alike, this title covers topics such as virtualization technology, utility computing, cloud application services, and cloud computing.

A Deep Dive into NoSQL Databases: The Use Cases and Applications, Volume 109, the latest release in the Advances in Computers series first published in 1960, presents detailed coverage of innovations in computer hardware, software, theory, design and applications. In addition, it provides contributors with a medium in which they can explore their subjects in greater depth and breadth. This update includes sections on NoSQL and NewSQL databases for big data analytics and distributed computing, NewSQL databases and scalable in-memory analytics, NoSQL web crawler application, NoSQL Security, a Comparative Study of different In-Memory (No/New)SQL Databases, NoSQL Hands On-4 NoSQL Ecosystem, and more. Provides a very comprehensive, yet compact, book on the popular domain of NoSQL databases for IT professionals, practitioners and professors Articulates and accentuates big data analytics and how it gets simplified and streamlined by NoSQL database systems Sets a stimulating foundation with all the relevant details

This book delivers a comprehensive overview of units of measurement. Beginning with a historical look at metrology in Ancient India, the book explains fundamental concepts in metrology such as basic, derived and dimensionless quantities, and introduces the concept of quantity calculus. It discusses and critically examines various three sets of units used both presently and in the past, while explaining why only four base units are needed for a system of measurement. It discusses the Metre Convention as well as the creation of the International Bureau of Weights and Measures, and gives a detailed look at the evolution of the current SI base units of time, length, mass, electric current, temperature, and luminous intensity. This updated second edition is extended with timely new chapters discussing past efforts to redefine the SI base units as well as the most recent 2019 redefinitions based entirely on the speed of light and other fundamental physical constants. Additionally, it provides biographical presentations of many of the commonly used units of measurements, such as Newton, Joule and Ohm. With its accessible and comprehensive treatment of the field, together with its unique presentation of the underlying history, this book is well suited to any student and researcher interested in the practical and historical aspects of the field of metrology.

Edge Computing

Software Architecture in Action

Units of Measurement

Guide to Computing Fundamentals in Cyber-Physical Systems

Proceedings of ICTIS 2018, Volume 1

Concepts, Methodologies, Tools, and Applications

Cryptography for Security and Privacy in Cloud Computing

As is common practice in research, many new cryptographic techniques have been developed to tackle either a theoretical question or foreseeing a soon to become reality application. Cloud computing is one of these new areas, where cryptography is expected to unveil its power by bringing striking new features to the cloud. Cloud computing is an evolving paradigm, whose basic attempt is to shift computing and storage capabilities to external service providers. This resource offers an overview of the possibilities of cryptography for protecting data and identity information, and beyond well-known cryptographic primitives such as encryption or digital signatures. This book represents a compilation of various recent cryptographic primitives, providing readers with the features and limitations of each.

CLOUD COMPUTING SOLUTIONS the main purpose of this book is to include all the cloud-related technologies in a single platform, so that researchers, academicians, postgraduate students, and those in the industry can easily understand the cloud-based ecosystems. This book discusses the evolution of cloud computing through grid computing and cluster computing. It will help researchers and practitioners to understand grid and distributed computing cloud infrastructure, virtual machines, virtualization, live migration, scheduling techniques, auditing concept, security and privacy, business models, and case studies through the state-of-the-art cloud computing countermeasures. This book covers the spectrum of cloud computing-related technologies and the wide-ranging contents will differentiate this book from others. The topics treated in the book include: The evolution of cloud computing from grid computing, cluster computing, and distributed systems; Covers cloud computing and virtualization environments; Discusses live migration, database, auditing, and applications as part of the materials related to cloud computing; Provides concepts of cloud storage, cloud strategy planning, and management, cloud security, and privacy issues; Explains complex concepts clearly and covers information for advanced users and beginners. Audience The primary audience for the book includes IT, computer science specialists, researchers, graduate students, designers, experts, and engineers who are occupied with research.

The emergence of open access, web technology, and e-publishing has slowly transformed modern libraries into digital libraries. With this variety of technologies utilized, cloud computing and virtual technology has become an advantage for libraries to provide a single efficient system that saves money and time. Cloud Computing and Virtualization Technologies in Libraries highlights the concerns and limitations that need addressing in order to optimize the benefits of cloud computing to the virtualization of libraries. Focusing on the latest innovations and technological advancements in cloud computing for professionals, students, and researchers interested in cloud library management and development in different types of information environments.

An Introduction to Statistical Learnings provides an accessible overview of the field of statistical learning, an essential toolset for making sense of the vast and complex data sets that have emerged in fields ranging from biology to finance to marketing to astrophysics in the past twenty years. This book presents some of the most important modeling and prediction techniques, along with relevant applications. Topics include linear regression, classification, resampling methods, shrinkage approaches, tree-based methods, support vector machines, clustering, and more. Color graphics and real-world examples are used to illustrate the methods presented. Since the goal of this textbook is to facilitate the use of these statistical learning techniques by practitioners in science, industry, and other fields, each chapter contains a tutorial on implementing the analyses and methods presented in R, an extremely popular open source statistical software platform. Two of the authors co-wrote The Elements of Statistical Learning (Hastie, Tibshirani and Friedman, 2nd edition 2009), a popular reference book for statistics and machine learning researchers. An Introduction to Statistical Learning covers many of the same topics, but at a level accessible to a much broader audience. This book is targeted at statisticians and non-statisticians alike who wish to use cutting-edge statistical learning techniques to analyze their data. The text assumes only a previous course in linear regression and no knowledge of matrix algebra.

A Business Perspective on Technology and Applications

A Cloud Computing Framework For Sharing Of Cloud Resources And Attacks Information Amongst Cloud Networks

Fundamentals, Techniques, and Applications

Proceedings of CVR 2021

Concepts and Practices

New Trends in Computational Vision and Bio-inspired Computing

Fundamentals, Advances and Applications

Falco Jaekel develops a reference architecture for cloud logistics systems. The reference architecture shows how to apply the principles and concepts of cloud computing (e.g. virtualization, service-orientation) to logistics system design and thus how to deliver certain physical logistics capabilities such as transport and storage with the essential cloud characteristics (e.g. on-demand, rapid elasticity, pay-per-use). Within certain scenarios, this innovative mode of delivery can reconcile logistics efficiency with effectiveness and thus may enable firms to achieve competitive advantage in dynamic environments.

In today’s workplace, computer and cybersecurity professionals must understand both hardware and software to deploy effective security solutions. This book introduces readers to the fundamentals of computer architecture and organization for security, and provides them with both theoretical and practical solutions to design and secure computer systems. Offering an in-depth and innovative introduction to modern computer systems and patent-pending technologies in computer security, the text integrates design considerations with hands-on lessons learned to help practitioners design computer systems that are immune from attacks. Studying computer architecture and organization from a security perspective is a new area. There are many books on computer architectures and many others on computer security. However, books introducing computer architecture and organization with security as the main focus are still rare. This book addresses not only how to secure computer components (CPU, Memory, I/O, and network) but also how to secure data and the computer system as a whole. It also incorporates experiences from the author’s recent award-winning teaching and research. The book also introduces the latest technologies, such as trusted computing, RISC-V, QEMU, cache security, virtualization, cloud computing, IoT, and quantum computing, as well as other advanced computing topics into the classroom in order to close the gap in workforce development. The book is chiefly intended for undergraduate and graduate students in computer architecture and computer organization, as well as engineers, researchers, cybersecurity professionals, and middleware designers.

Cloud computing has become a significant technology trend. Experts believe cloud computing is currently reshaping information technology and the IT marketplace. The advantages of using cloud computing include cost savings, speed to market, access to greater computing resources, high availability, and scalability. Cloud Computing includes contributions from world experts in the field of cloud computing from academia, research laboratories and private industry. This book presents the systems, tools, and services of the leading providers of cloud computing including Google, Yahoo, Amazon, IBM, and Microsoft. The basic concepts of cloud computing and cloud computing applications are also introduced. Current and future technologies applied in cloud computing are also discussed. Case studies, examples, and exercises are provided throughout. Handbook of Cloud Computing is intended for advanced-level students and researchers in computer science and electrical engineering as a reference book. This handbook is also beneficial to computer and system infrastructure designers, developers, business managers, entrepreneurs and investors within the cloud computing related industry. This book presents the most recent challenges and developments in sustainable computing systems with the objective of promoting awareness and best practices for the real world. It aims to present new directions for further research and technology improvements in this important area.

Cloud Computing Patterns

History, Fundamentals and Redefining the SI Base Units

Selected works presented at the ICCVBC 2018, Coimbatore, India

Concise Guide to Software Engineering

Cloud Technology: Concepts, Methodologies, Tools, and Applications

The book gathers papers addressing state-of-the-art research in all areas of Information and Communication Technologies and their applications in intelligent computing, cloud storage, data mining and software analysis. It presents the outcomes of the third International Conference on Information and Communication Technology for Intelligent Systems, which was held on April 6–7, 2018, in Ahmedabad, India. Divided into two volumes, the book discusses the fundamentals of various data analytics and algorithms, making it a valuable resource for researchers' future studies.

This book discusses the current technologies of cryptography using DNA computing. Various chapters of the book will discuss the basic concepts of cryptography, steganography, basic concepts of DNA and DNA computing, approaches of DNA computing in cryptography, security attacks, practical implementaon of DNA computing, applications of DNA computing in the cloud computing environment, applications of DNA computing for big data, etc. It provides a judicious mix of concepts, solved examples and real life case studies.

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

This book provides an introduction to machine learning and cloud computing, both from a conceptual level, along with their usage with underlying infrastructure. The authors emphasize fundamentals and best practices for using AI and ML in a dynamic infrastructure with cloud computing and high security, preparing readers to select and make use of appropriate techniques. Important topics are demonstrated using real applications and case studies.

with Applications in R
Principles, Systems and Applications

Cloud Computing
Cloud Service Benchmarking
Computer Vision and Robotics
Cloud Computing and Virtualization Technologies in Libraries
Fundamentals of Service Systems

This book describes the landscape of cloud computing from first principles, leading the reader step-by-step through the process of building and configuring a cloud environment. The book not only considers the technologies for designing and creating cloud computing platforms, but also the business models and frameworks in real-world implementation of cloud platforms. Emphasis is placed on "learning by doing," and readers are encouraged to experiment with a range of different tools and approaches. Topics and features: includes review questions, hands-on exercises, study activities and discussion topics throughout the text; demonstrates the approaches used to build cloud computing infrastructures; reviews the social, economic, and political aspects of the on-going growth in cloud computing use; discusses legal and security concerns in cloud computing; examines techniques for the appraisal of financial investment into cloud computing; identifies areas for further research within this rapidly-moving field.

This book presents a systematic model-based approach for software architecture according to three complementary viewpoints: structure, behavior, and execution. It covers a unified modeling approach and consolidates theory and practice with well-established learning outcomes. The authors cover the fundamentals of software architecture description and presents SysADL, a specialization of the OMG Standard Systems Modeling Language (SysML) with the aim of bringing together the expressive power of an Architecture Description Language (ADL) with a standard notation, widely accepted by industry and compliant with the ISO/IEC/IEEE 42010 Standard on Architecture Description in Systems and Software Engineering. The book is clearly structured in four parts: The first part focuses on the fundamentals of software architecture, exploring the concepts and constructs for modeling software architecture from differing viewpoints. Each chapter covers a specific viewpoint illustrated with examples of a real system. The second part focuses on how to design software architecture for achieving quality attributes. Each chapter covers a specific quality attribute and presents well-defined approaches to achieve it. Each architectural case study is illustrated with different examples drawn from a real-life system. The third part shows readers how to apply software architecture style to design architectures that meet the quality attributes. Each chapter covers a specific architectural style and gives insights on how to describe substyles. Each style is illustrated by variants and examples of a real-life system. The fourth part presents how to textually represent software architecture models to complement visual notation, including different examples. Software Architecture in Action is designed for teaching the required modeling techniques to both undergraduate and graduate students, giving them the practical techniques and tools needed to design the architecture of software-intensive systems. Similarly, this book will appeal to software development architects, designers, programmers and project managers too.

Software Architecture for Big Data and the Cloud is designed to be a single resource that brings together research on how software architectures can solve the challenges imposed by building big data software systems. The challenges of big data on the software architecture can relate to scale, security, integrity, performance, concurrency, parallelism, and dependability, amongst others. Big data handling requires rethinking architectural solutions to meet functional and non-functional requirements related to volume, variety and velocity. The book's editors have varied and complementary backgrounds in requirements and architecture, specifically in software architectures for cloud and big data, as well as expertise in software engineering for cloud and big data. This book brings together work across different disciplines in software engineering, including work expanded from conference tracks and workshops led by the editors. Discusses systematic and disciplined approaches to building software architectures for cloud and big data with state-of-the-art methods and techniques Presents case studies involving enterprise, business, and government service deployment of big data applications Shares guidance on theory, frameworks, methodologies, and architecture for cloud and big data

Starting with fingerprints more than a hundred years ago, there has been ongoing research in biometrics. Within the last forty years face and speaker recognition have emerged as research topics. However, as recently as a decade ago, biometrics itself did not exist as an independent field. Each of the biometric-related topics grew out of different disciplines. For example, the study of fingerprints came from forensics and pattern recognition, speaker recognition evolved from signal processing, the beginnings of face recognition were in computer vision, and privacy concerns arose from the public policy arena. One of the challenges of any new field is to state what the core ideas are that define the field in order to provide a research agenda for the field and identify key research problems. Biometrics has been grappling with this challenge since the late 1990s. With the maturation of biometrics, the separate biometrics areas are coalescing into the new discipline of biometrics. The establishment of biometrics as a recognized field of inquiry allows the research community to identify problems that are common to biometrics in general. It is this identification of common problems that will define biometrics as a field and allow for broad advancement.