Blockchain Basics Springer

This book focuses on the innovation of blockchain technology and the advantages it offers. It provides a clear and comprehensive overview of blockchain technology and its possibilities, and thereby helps readers to form an opinion and draw their own conclusions about its potential exploitations. The book begins with a chapter on the topic of decentralized networks, which familiarizes readers with their challenges by using the example of an online trading platform. Hereinafter, it is then detailed what blockchain technology is, where it comes from, and how it works. The necessary underlying technologies are explained, and various individual approaches as well as their composition are presented. Using well-known examples such as Bitcoin and Ethereum as an illustration, the book looks at the architecture of blockchain technology and focuses on the challenges such as security and scalability. The options available when introducing blockchain technology are also outlined, and best-practice examples are presented to get a better idea of what areas benefit from this technology. Numerous examples and detailed explanations will accompany the readers throughout the book. By the time they have reached the end, they will be able to decide for themselves what is truly innovative about blockchain technology and what is nothing more than hype.

If you are curious about the basics of artificial intelligence, blockchain technology, and quantum computing as key enablers for digital transformation and innovation, Digital Fluency is your handy guide. The real-world applications of these cutting-edge technologies are expanding rapidly, and your daily life will continue to be affected by each of them. There is no better time than now to get started and become digitally fluent. You need not have previous knowledge of these versatile technologies, as author Volker Lang will expertly guide you through this digital age. He illustrates key concepts and applications in numerous practical examples and more than 48 catchy figures throughout Digital Fluency. The end of each chapter presents you with a helpful implementation checklist of central lessons before proceeding to the next. This book gets to the heart of digital buzzwords and concepts, and tells you what they truly mean. Breaking down topics such as automated driving and intelligent robotics powered by artificial intelligence, blockchain-based cryptocurrencies and smart contracts, drug development and optimization of financial investment portfolios by quantum computing, and more is imperative to being ready for what the future of industry holds. Whether your own digital transformation journey takes place within your private or public organization, your studies, or your individual household, Digital Fluency maps out a concrete digital action plan for all of your technology and innovation strategy needs. What You Will Learn Gain guidance in the digital age without requiring any previous knowledge about digital technologies and digital transformation Get acquainted with the most popular current and prospective applications of artificial intelligence, blockchain technology, and quantum computing across a wide range of industries including healthcare, financial services, and the automobile industry Become familiar with the digital innovation models of Amazon, Google, Microsoft, IBM, and other world-leading organizations Implement your own digital transformation successfully along the eight core dimensions of a concrete digital action plan Who This Book Is For Thought-leaders, business executives and industry strategists, management and strategy consultants, politicians and policy makers, entrepreneurs, financial analysts, investors and venture capitalists, students and research scientists, as well as general readers, who want to become digitally fluent.

This book provides extensive insights on blockchain systems, starting from a historical perspective and moving towards building foundational knowledge, with focus on communication networks. It covers blockchain applications, algorithms, architectures, design and implementation, and security and privacy issues, providing the reader with a comprehensive overview. Further, it discusses blockchain systems and its integration to communication networks. The book includes hands-on, practical tutorials, self-assessment exercises, and review questions; tips and sample programs are also provided throughout. Complementary supporting material for instructors, including open source programming code for practical tutorials and exercises, is also available. The target audience includes graduate students, professionals, and researchers working in the areas of blockchain systems, distributed ledger technology, computer networks and communications, artificial intelligence, and cybersecurity.

This book brings together two major trends: data science and blockchains. It is one of the first books to

systematically cover the analytics aspects of blockchains, with the goal of linking traditional data mining research communities with novel data sources. Data science and big data technologies can be considered cornerstones of the data-driven digital transformation of organizations and society. The concept of blockchain is predicted to enable and spark transformation on par with that associated with the invention of the Internet. Cryptocurrencies are the first successful use case of highly distributed blockchains, like the world wide web was to the Internet. The book takes the reader through basic data exploration topics, proceeding systematically, method by method, through supervised and unsupervised learning approaches and information visualization techniques, all the way to understanding the blockchain data from the network science perspective. Chapters introduce the cryptocurrency blockchain data model and methods to explore it using structured query language, association rules, clustering, classification, visualization, and network science. Each chapter introduces basic concepts, presents examples with real cryptocurrency blockchain data and offers exercises and questions for further discussion. Such an approach intends to serve as a good starting point for undergraduate and graduate students to learn data science topics using cryptocurrency blockchain examples. It is also aimed at researchers and analysts who already possess good analytical and data skills, but who do not yet have the specific knowledge to tackle analytic questions about blockchain transactions. The readers improve their knowledge about the essential data science techniques in order to turn mere transactional information into social, economic, and business insights.

Towards Industry 4.0 — Current Challenges in Information Systems
Blockchain Systems and Communication Networks: From Concepts to Implementation
Rethinking Macroeconomic Policy and Economic Theory
Theory and Applications
Blockchains, Smart Contracts, Decentralised Autonomous Organisations and the Law
The Case of Reverse Securitisation
Research Anthology on Blockchain Technology in Business, Healthcare, Education, and Government

Cryptographic Primitives in Blockchain Technology provides an introduction to the mathematical and cryptographic concepts behind blockchain technologies and shows how they are applied in blockchain-based systems.

This book presents refereed proceedings of the Second International Conference on Advances in Cyber Security, ACeS 2020, held in Penang, Malaysia, in September 2020. Due to the COVID-19 pandemic the conference was held online. The 46 full papers and 1 short paper were carefully reviewed and selected from 132 submissions. The papers are organized in topical sections on internet of things, industry 4.0 and blockchain, and cryptology; digital forensics and surveillance, botnet and malware, and intrusion detection/prevention; ambient cloud and edge computing, wireless and cellular communication; governance, social media, mobile and web, data privacy, data policy and fake news.

This book is a collection of academic lectures given on fintech, a topic that has been written about extensively but only from a business or technological point of view. In contrast to other publications on the subject, this book shows the reader how fintech should be understood in relation to economics, financial theory, policy, and law. It provides introductory explanations on fintech-related concepts and instruments such as blockchains, crypto assets, machine learning, high-frequency trading, and AI. The collected lectures also point to surrounding issues including start-ups, monetary policy, asset management, cyber and other security, and stability of financial systems. The authors include professors, a former central bank official, current officials at Japan's Financial Services Authority, a

lawyer, the former dean of the Asian Development Bank Institute, and private sector professionals at the frontline of fintech. The book is most suitable for those both within and outside of academia who are beginning to learn about fintech and wish to successfully take part in the revolution that is certain to have wide-ranging effects on our economy and society.

This book analyzes the fundamental issues faced when blockchain technology is applied to real-life applications. These concerns, not only in the realm of computer science, are caused by the nature of technological design. Blockchain is considered the foundation of a wide range of flexible ecosystems; its technology is an excellent mixture of mathematics, cryptography, incentive mechanisms, economics, and pertinent regulations. The book provides an essential understanding of why such fundamental issues arise, by revising the underlying theories. Blockchain theory is thus presented in an easy-to-understand, useful manner. Also explained is the reason why blockchain is hard to adopt for real-life problems but is valuable as a foundation for flexible ecosystems. Included are directions for solving those problems and finding suitable areas for blockchain applications in the future. The authors of this work are experts from a wide range of backgrounds such as cryptography, distributed computing, computer science, trust, identity, regulation, and standardization. Their contributions collected here will appeal to all who are interested in blockchain and the elements surrounding it.

Understanding the Basics of Artificial Intelligence, Blockchain Technology, Quantum Computing, and Their Applications for Digital Transformation

Secure, Decentralized, Distributed and Trusted Industry Environment

Second International Conference, ACeS 2020, Penang, Malaysia, December 8-9, 2020, Revised Selected Papers

Foundations of Blockchain

A Practical Guide for Designing, Implementing, Publishing, Testing, and Securing Distributed Blockchain-based Projects

Blockchain and Supply Chain Logistics

The 10th International Conference on Intelligent Networking and Collaborative Systems (INCoS-2018)

This book explores recent advances in blockchain technology and its impact on Industry 4.0 via advanced technologies. It provides an in-depth analysis of the step by step evolution of Industry 4.0 and blockchain technologies for creating the next-generation, secure, decentralized, distributed and trusted industry environment and enhancing the productivity of industries. The book describes how blockchain technology makes the industrial internet (Industry 4.0) a transparent, reliable and secure environment for people, processes, systems, and services, presenting a strong, technological and conceptual framework and roadmap for decision-makers involved in the transformation of any area of industry.

This book presents a state-of-the-art overview of blockchains, a significant innovation that has already started to redesign business, social and political interactions. The technology is attracting considerable interest among researchers in industry and academia wanting to study and leverage the potential of blockchains to provide a decentralized and distributed public ledger for all the participating parties.

Comprehensively discussing the current and future challenges, opportunities, applications, business models and values, the book appeals to diverse stakeholders, scholars, practitioners and business leaders interested in blockchains.

This edited book provides a platform to bring together researchers, academia and industry collaborators to exchange their knowledge and work to develop better understanding about the scope of blockchain technology in business management applications of different sectors such as retail sector, supply chain and logistics, healthcare sector, manufacturing sector, judiciary, finance and government sector in terms of data quality and timeliness. The book presents original unpublished research papers on blockchain technology and business management on novel architectures, prototypes and case studies.

Deepen your understanding of blockchain technology and develop your own blockchain applications. This book provides a thorough review of distribution-based systems on blockchain technology, starting from the fundamental concepts that underlie it, all the way through the implementation of a blockchain network for business purposes. Author Joseph Thachil George begins by introducing you to blockchain and some basic concepts of technology, including distributed systems, systems of systems, cyber-physical systems, the Byzantine Consensus, the CAP theorem, and cryptographic techniques. Next, he analyzes the structure of blocks and smart contracts and the mother of all blockchain platforms, Bitcoin. That sets the stage for an examination of transaction structure, validation, and flow, from creation to registration in the ledger and structure of the blocks, the Nakamoto consensus, and finally forks. From there, you'll experience a deep dive into Ethereum; including the concepts of Gas and Message, smart contracts and the Ethereum virtual machine. From there, you'll learn about the Ethereum consensus protocol, Ethereum Casper, and the Ethereum Proof-of-Stake algorithm. You'll then see how blockchain can be connected to a distributed system, followed by a demonstration of how you can model a distributed system using Blockly4SoS and Kilobots. The concluding chapters offer a practical example that combines distributed systems with blockchain technology. After reading this book, you will understand how to implement blockchain technology in a distributed system and be able to leverage this knowledge in your own projects. What You Will Learn Learn the concept of blockchains by way of a practical example Grasp the connection between distributed systems and blockchain technology Learn the design of blockchain with hyperledger fabric Learn the design of cyber-physical systems in a distributed environment Who Is This Book For Developers who are enthusiastic about the design and implementation of distributed systems.

Hype or Innovation

Advances in Enterprise Engineering XIII

Advances in Cyber Security

From Myth to Real Life

Integrating Blockchain Technology Into the Circular Economy

Supply Chain Finance and Blockchain Technology

Blockchain Technology and Innovations in Business Processes

The second volume of this edited collection offers a number of contributions from leading scholars investigating Blockchain and its implications for business. Focusing on the transformation of the overall value chain, the sections cover the foundations of Blockchain and its sustainability, social and legal applications. It features a variety of use cases, from tourism to healthcare. Using a number of theoretical and methodological approaches, this innovative publication aims to further the cause of this ground-breaking technology and its use within information technology, supply chain and wider business management research.

This book provides a comprehensive analysis of fundamental topics related to blockchain. Throughout, the authors explore different vital issues and specific areas of blockchain. For convenience, the authors present the elementary description, visualize the working procedure of blockchain paradigm, and highlight the areas it can be applied in real life. They explain the blockchain process from a diverse perspective i.e. distributed Internet of Things (IoT), interdependent networks, intelligent mining, etc. They also analyze the interconnection of a blockchain network and such novel research areas to show a pathway towards a new research direction. This book also holds the core challenges and open research issues of blockchain technology, considering existing applications. Chapters include consensus mechanisms of blockchain, blockchain applicability in centralized and decentralized internet of things, blockchain interoperability from the perspective of interdependent networks, and blockchain for resource-constrained devices. Specifies the importance of theoretical methods in dealing with problems in the context of blockchain for interdependent decision making; Provides a comprehensive investigation of blockchain algorithms and the recently developed methods based on this algorithm; Provides basics and mathematical foundations needed to learn and deploy blockchain.

Blockchain BasicsA Non-Technical Introduction in 25 StepsApress

This book provides the latest research findings, and discusses, from both theoretical and practical perspectives, innovative research methods and development techniques related to intelligent social networks and collaborative systems, intelligent networking systems, mobile collaborative systems and secure intelligent cloud systems. It also presents the synergies among various paradigms in such a multi-disciplinary field of intelligent collaborative systems. With the rapid development of the Internet, we are experiencing a shift from the traditional sharing of information and applications as the main purpose of the Web to an emergent paradigm, which locates people at the very centre of networks and exploits the value of individuals' connections, relations and collaboration. Social networks are also playing a major role in the dynamics and structure of intelligent Web-based networking and collaborative systems. Virtual campuses, virtual communities and organizations strongly leverage intelligent networking and collaborative systems by means of a great variety of formal and informal electronic relations, such as business-to-business, peer-to-peer and various types of online collaborative learning interactions, including the emerging e-learning systems. This has resulted in entangled systems that need to be managed efficiently and autonomously. In addition, the latest, powerful technologies based on grid and wireless infrastructure as well as cloud computing are currently enhancing collaborative and networking applications significantly, but are also facing new issues and challenges. The principal purpose of the research and development community is to stimulate research that will lead to the creation of responsive environments for networking and, in the longer term, the development of adaptive, secure, mobile, and intuitive intelligent systems for collaborative work and learning.

Understand and Develop Blockchain Applications Through Distributed Systems
Building a High Quality Marketplace for Crypto Data
UnBlock the Blockchain
Blockchain Basics
Heuristic and Knowledge-Based Security Checks of Source Code Artifacts Using Community Knowledge
Using Smart Contracts and Digital Currencies in your Business
Blockchain and Crypto Currency

This book aims to attract researchers and practitioners who are working in Information Technology and Computer Science. This edited book is about basics and high level concepts regarding Blockchain Technology and Application, Multimedia Security,

Information Processing, Security of Network, Cloud and IoT, Cryptography and Cryptosystem, Learning and Intelligent Computing, Information Hiding. It is becoming increasingly important to develop adaptive, intelligent computing-centric, energy-aware, secure and privacy-aware mechanisms in high performance computing and IoT applications. The book serves as a useful guide for industry persons and also helps beginners to learn things from basic to advance in the area of better computing paradigm. Our aim is intended to provide a platform for researchers, engineers, academicians as well as industrial professionals from all over the world to present their research results in security related areas. We believe that this volume not only presents novel and interesting ideas but also will stimulate interesting discussions from the participants and inspire new ideas.

This book provides basic concepts and deep knowledge about various security mechanisms that can be implemented in IoT through Blockchain technology. This book aids readers in gaining insight and knowledge about providing security and solutions to different challenges in IoT using Blockchain technology. This book primarily focuses on challenges to addressing the integration of the IoT with Blockchain with respect to potential benefits for IoT. This book gives descriptive analysis of Blockchain integrated with IoT applications and platforms for the development of IoT solutions along with possible topologies to that integration. Several application examples are included in a variety of industries.

This book discusses various aspects of Industry 4.0 from the perspective of information system evolution. Industry 4.0 refers to a new phase in the industrial revolution that relies heavily on interconnectivity, automation, machine learning, real-time data, the Internet of Things and blockchain technology. The interdisciplinary book addresses a number of topics related to modern information technologies, and presents innovative concepts, methods, models and tools for the development of information systems to support Industry 4.0. Focusing on artificial intelligence, collective knowledge processing and blockchain technology, it appeals to a wide readership, including researchers, students, business managers and professionals, software developers, as well as IT and management specialists.

Examine what would happen if we were to deploy blockchain technology at the sovereign level and use it to create a decentralized cashless economy. This book explains how finance and economics work today, and how the convergence of various technologies related to the financial sector can help us find solutions to problems, such as excessive debt creation, banks getting too big to fail, and shadow banking. The Blockchain Alternative offers sensible corrections to outdated and incorrect dogmas, such as the efficient markets hypothesis and rational expectations theory. You'll also be introduced to universal basic income, the consequences of going cashless, why complexity economics needs to be understood and what kinds of tools and theories you'll need to redefine the existing definition of capitalism. While the book does discuss technologies and methods that are primed for our future, a number of references are made to economic history and the works of great thinkers from a different era. You'll see how the blockchain can be used to deploy solutions that were devised in the past, but

which can serve as the antidote to our current economic malaises. You'll discover that what is required today is not an adaptation of the old theories, but a new methodology that is suited to this new era. Without undertaking such an endeavor, one will always be burdened with a definition of capitalism that is out of kilter with the evolution of our digital humanity. What would this mean to monetary and fiscal policy, market structure and our current understanding of economics? More importantly would we need to change our current understanding of capitalism? And if we were to change our perceptions, what would the future version look like? This book answers these questions, and analyses some of the most pertinent issues of our generation. What You'll Learn Examine fractional banking, debt, and the financialization of assets Gain a firm understanding of the "too big to fail" theory, smart contracts, and Fintech Review economics and agent-based modelling Use the blockchain and complexity economics to rethink economics and capitalistic systems Who This Book Is For The primary audience is bankers and other finance professionals, policy makers, and students of finance and economics. The secondary audience is anyone seeking a deeper understanding of the current financial system, the blockchain, and the future of capitalism. Praise for The Blockchain Alternative "...a bold and pioneering effort to make sense of how emerging digital technologies might be used to reshape public policies, including macroeconomic and social policies, in basic ways. Everyone interested in this very important emerging question should read this book." - Dr. Sanjay G. Reddy, Associate Professor of Economics at The New School for Social Research and Research Associate of the Initiative for Policy Dialogue at Columbia University. "Writing on blockchain today is analogous to writing about the internet, before it became massively distributed. The book pushes us to think about the quantum leap that this technology may infer to our capitalist model, if scaled at the pace described by the book. Written with the support of strong empirical models but also with an open mind towards the future, this is a must read for anyone interested in becoming part of the new economic infrastructure" - Dr. Mark Esposito, Harvard University's Division of Continuing Education & Judge Business School, University of Cambridge "With a rigorously balanced dosage of versatility and rationale we are allured into a multifaceted trajectory across ingrained yet functionally arcane economic models, only to plunge into a conceptually revolutionary realm which irreversibly stimulates us into envisaging a fascinating novel scheme of world order". - Ioana Surpateanu, Political Adviser to the European Parliament "If there is only one book that I am reading on how blockchain is going to change our lives, it will have to be "The Blockchain Alternative." - Dr. Terence Tse, Associate Professor of Finance, ESCP Europe Business School

The Blockchain Developer
Evolutionary Case Studies
A Non-Technical Introduction in 25 Steps
Blockchain Applications in IoT Ecosystem
The Economics of Fintech
Legal Tech, Smart Contracts and Blockchain
Introducing Blockchain Applications

In recent decades, the industrial revolution has increased economic growth despite its immersion in global environmental issues such as climate change. Researchers emphasize the adoption of circular economy practices in global supply chains and businesses for better socio-environmental sustainability without compromising economic growth. Integrating blockchain technology into business practices could promote the circular economy as well as global environmental sustainability. Integrating Blockchain Technology Into the Circular Economy discusses the technological advancements in circular economy practices, which provide better results for both economic growth and environmental sustainability. It provides relevant theoretical frameworks and the latest empirical research findings in the applications of blockchain technology. Covering topics such as big data analytics, financial market infrastructure, and sustainable performance, this book is an essential resource for managers, operations managers, executives, manufacturers, environmentalists, researchers, industry practitioners, students and educators of higher education, and academicians.

Become a Blockchain developer and design, build, publish, test, maintain and secure scalable decentralized Blockchain projects using Bitcoin, Ethereum, NEO, EOS and Hyperledger. This book helps you understand Blockchain beyond development and crypto to better harness its power and capability. You will learn tips to start your own project, and best practices for testing, security, and even compliance. Immerse yourself in this technology and review key topics such as cryptoeconomics, coding your own Blockchain P2P network, different consensus mechanisms, decentralized ledger, mining, wallets, blocks, and transactions. Additionally, this book provides you with hands-on practical tools and examples for creating smart contracts and dApps for different blockchains such as Ethereum, NEO, EOS, and Hyperledger. Aided by practical, real-world coding examples, you'll see how to build dApps with Angular utilizing typescript from start to finish, connect to the blockchain network locally on a test network, and publish on the production mainnet environment. Don't be left out of the next technology revolution – become a Blockchain developer using The Blockchain Developer today. What You'll Learn Explore the Blockchain ecosystem is and the different consensus mechanisms Create miners, wallets, transactions, distributed networks and DApps Review the main features of Bitcoin: Ethereum, NEO and EOS, and Hyperledger are Interact with popular node clients as well as implementing your own Blockchain Publish and test your projects for security and scalability Who This Book Is For Developers, architects and engineers who are interested in learning about Blockchain or implementing Blockchain into a new greenfield project or integrating Blockchain into a brownfield project. Technical entrepreneurs, technical investors or even executives who want to better understand Blockchain technology and its potential.

There is a broad consensus amongst law firms and in-house legal departments that next generation "Legal Tech" – particularly in the form of Blockchain-based technologies and Smart Contracts – will have

a profound impact on the future operations of all legal service providers. Legal Tech startups are already revolutionizing the legal industry by increasing the speed and efficiency of traditional legal services or replacing them altogether with new technologies. This on-going process of disruption within the legal profession offers significant opportunities for all business. However, it also poses a number of challenges for practitioners, trade associations, technology vendors, and regulators who often struggle to keep up with the technologies, resulting in a widening regulatory "gap." Many uncertainties remain regarding the scope, direction, and effects of these new technologies and their integration with existing practices and legacy systems. Adding to the challenges is the growing need for easy-to-use contracting solutions, on the one hand, and for protecting the users of such solutions, on the other. To respond to the challenges and to provide better legal communications, systems, and services Legal Tech scholars and practitioners have found allies in the emerging field of Legal Design. This collection brings together leading scholars and practitioners working on these issues from diverse jurisdictions. The aim is to introduce Blockchain and Smart Contract technologies, and to examine their on-going impact on the legal profession, business and regulators.

In 25 concise steps, you will learn the basics of blockchain technology. No mathematical formulas, program code, or computer science jargon are used. No previous knowledge in computer science, mathematics, programming, or cryptography is required. Terminology is explained through pictures, analogies, and metaphors. This book bridges the gap that exists between purely technical books about the blockchain and purely business-focused books. It does so by explaining both the technical concepts that make up the blockchain and their role in business-relevant applications. What You'll Learn What the blockchain is Why it is needed and what problem it solves Why there is so much excitement about the blockchain and its potential Major components and their purpose How various components of the blockchain work and interact Limitations, why they exist, and what has been done to overcome them Major application scenarios Who This Book Is For Everyone who wants to get a general idea of what blockchain technology is, how it works, and how it will potentially change the financial system as we know it

Blockchain Security in Cloud Computing
A Practical Guide to Distributed Ledger Technology
A Mathematical Introduction
The Executive Guide to Blockchain
Advances in Intelligent Networking and Collaborative Systems
Blockchain Gaps
9th Enterprise Engineering Working Conference, EEWC 2019, Lisbon, Portugal, May 20–24, 2019, Revised Papers

The book highlights the rise of Bitcoin, which is based on blockchain technology, and some of the many types of coins and tokens that emerged thereafter. Although Bitcoin and other cryptocurrencies have made national and international news with their dramatic rise and decline in value, nevertheless the underlying technology is being

adopted by both industry and governments, which have noted the benefits of speed, cost efficiency, and protection from hacking. Based on numerous downloaded articles, laws, cases, and other materials, the book discusses the digital transformation, the types of cryptocurrencies, key actors, and the benefits and risks. It also addresses legal issues of digital technology and the evolving U.S. federal regulation. The varying treatment by individual U.S. states is reviewed together with attempts by organizations to arrive at a uniform regulatory regime. Both civil and criminal prosecutions are highlighted with an examination of the major cases that have arisen. Whether and how to tax cryptocurrency transactions both in the U.S. and internationally are analyzed, and ends with a speculative narrative of future developments.

This book investigates how the Blockchain Technology (BCT) for Supply Chain Finance (SCF) programs allows businesses to come together in partnerships and accelerate cash flows throughout the supply chain. BCT promises to change the way individuals and corporations exchange value and information over the Internet, and is perfectly positioned to enable new levels of collaboration among the supply chain actors. The book reveals new opportunities stemming from the application of BCT to SCF financing solutions, particularly reverse factoring – or approved payables financing. To do so, it first identifies the principal barriers and pain points in delivering financing solutions. Then, a possible blockchain-driven supply chain model is defined. Using this framework, the book subsequently discusses relevant use cases for the technology, which could open up new opportunities in the SCF space. It demonstrates that blockchain and distributed ledgers technologies could deliver substantial benefits for all parties involved in SCF transactions, promising to expedite the processes and lower the overall costs of financing programs. Industry giants such as IBM, Maersk, China-based Dianrong and FnConn (a Foxconn subsidiary) are currently working to digitize the global, cross-border supply chain using blockchain technology, and will likely soon create blockchain platforms for supply chain finance. These solutions aim to reduce complexity and make data sharing more secure, accurate and efficient. This book offers a highly topical resource for stakeholders across the entire supply chain, helping them prepare for the upcoming technological revolution.

The growth of Blockchain technology presents a number of legal questions for lawyers, regulators and industry participants alike. Primarily, regulators must allow Blockchain technology to develop whilst also ensuring it is not being abused. This book addresses the challenges posed by various applications of Blockchain technology, such as cryptocurrencies, smart contracts and initial coin offerings, across different fields of law. Contributors explore whether the problems posed by Blockchain and its applications can be addressed within the present legal system or whether significant rethinking is required.

Keeping up with fast evolving technology is a challenge that every business leader faces. As organisations start to wake up to the Fourth Industrial Revolution, it's becoming more important than ever to be able to utilise and exploit new digital platforms. With the simple aim of demystifying blockchain for business leaders, The Executive Guide to Blockchain offers a jargon-free explanation and framework to better understand blockchain technologies and their impact on organizations. Enabling any business leader with or without specific computing knowledge to reap the benefits of blockchain whilst understanding the limitations, this book will empower you to: Identify

opportunities for blockchain in your own business sectors Understand smart contracts and their relationship with the law Create a blockchain strategy and business case Implement blockchain technologies and maximise their potential. Written by experts in non-technical language, this practical resource can be applied to any industry, and arm you with the knowledge needed to capture the possibilities of digital business.

Handbook of Research on Cloud Computing and Big Data Applications in IoT

Digital Fluency

National and International Perspectives

Business Transformation through Blockchain

Blockchain

Possibilities and Opportunities

Cryptographic Primitives in Blockchain Technology

This book is targeted towards cybersecurity professionals (especially those dealing with cloud security) or any stakeholders dealing with cybersecurity who want to understand the next level of security infrastructure using blockchain. The book's security and privacy analysis help with an understanding of the basics of blockchain, and it explores the quantifying impact of the new attack surfaces introduced by blockchain technologies and platforms. In addition, the book contains relevant and current updates on the topic. It follows a practical approach to help understand how blockchain technology is used to transform cybersecurity solutions.

The goal of this dissertation is to support developers in applying security checks using community knowledge. Artificial intelligence approaches combined with natural language processing techniques are employed to identify security-related information from community websites such as Stack Overflow or GitHub. All security-related information is stored in a security knowledge base. This knowledge base provides code fragments that represent the community´s knowledge about vulnerabilities, security-patches, and exploits. Comprehensive knowledge is required to carry out security checks on software artifacts, such as data covering known vulnerabilities and their manifestation in the source code as well as possible attack strategies. Approaches that check software libraries and source code fragments are provided for the automated use of the data. Insecure software libraries can be detected using the NVD combined with metadata and library file hash approaches introduced in this dissertation. Vulnerable source code fragments can be identified using community knowledge represented by code fragments extracted from the largest coding community websites: Stack Overflow and GitHub. A state-of-the-art clone detection approach is modified and enriched by several heuristics to enable vulnerability detection and leverage community knowledge while maintaining good performance. Using various case studies, the approaches implemented in Eclipse plugins and a JIRA plugin are adapted to the users´ needs and evaluated.

This book introduces blockchain technology applications in supply chains. Blockchain is a relatively new tool, nevertheless, there have been considerable

advances over the last five years, and blockchain is now poised to revolutionize the conventional supply chains with the offering of accountability and quality to the wider complex supply networks. Based on literature reviews and original research, this book serves as an essential introduction to blockchain and its applications in supply chain. The unique features of the book are empirical studies to demonstrate the application of blockchain technology in food, healthcare, manufacturing, transportation and retail sectors. Each chapter includes research framework and open research questions. Simple narration of concept and detailed insights from primary research information. Use case narrative will provoke the readers to demystify the myths in application of concepts in the supply chain . Overall, the book demystifies blockchain technology, reviews evolution and outlines its future applications by blending contents to meet the expectations of both academic and practice community. This open access book contributes to the creation of a cyber ecosystem supported by blockchain technology in which technology and people can coexist in harmony. Blockchains have shown that trusted records, or ledgers, of permanent data can be stored on the Internet in a decentralized manner. The decentralization of the recording process is expected to significantly economize the cost of transactions. Creating a ledger on data, a blockchain makes it possible to designate the owner of each piece of data, to trade data pieces, and to market them. This book examines the formation of markets for various types of data from the theory of market quality proposed and developed by M. Yano. Blockchains are expected to give data itself the status of a new production factor. Bringing ownership of data to the hands of data producers, blockchains can reduce the possibility of information leakage, enhance the sharing and use of IoT data, and prevent data monopoly and misuse. The industry will have a bright future as soon as better technology is developed and when a healthy infrastructure is created to support the blockchain market.

Data Science Techniques for Cryptocurrency Blockchains
Build Your Own Blockchain
Blockchain Technology in Internet of Things

Blockchain, Artificial Intelligence, and the Internet of Things
Innovations in Electrical and Electronic Engineering
Transforming Cybersecurity Solutions using Blockchain
Today, cloud computing, big data, and the internet of things (IoT) are becoming indubitable parts of modern information and communication systems. They cover not only information and communication technology but also all types of systems in society including within the realms of business, finance, industry, manufacturing, and management. Therefore, it is critical to remain up-to-date on the latest advancements and applications, as well as current issues and challenges. The Handbook of Research on

Cloud Computing and Big Data Applications in IoT is a pivotal reference source that provides relevant theoretical frameworks and the latest empirical research findings on principles, challenges, and applications of cloud computing, big data, and IoT. While highlighting topics such as fog computing, language interaction, and scheduling algorithms, this publication is ideally designed for software developers, computer engineers, scientists, professionals, academicians, researchers, and students.

This book provides a comprehensive introduction to blockchain and distributed ledger technology. Intended as an applied guide for hands-on practitioners, the book includes detailed examples and in-depth explanations of how to build and run a blockchain from scratch. Through its conceptual background and hands-on exercises, this book allows students, teachers and crypto enthusiasts to launch their first blockchain while assuming prior knowledge of the underlying technology. How do I build a blockchain? How do I mint a cryptocurrency? How do I write a smart contract? How do I launch an initial coin offering (ICO)? These are some of questions this book answers. Starting by outlining the beginnings and development of early cryptocurrencies, it provides the conceptual foundations required to engineer secure software that interacts with both public and private ledgers. The topics covered include consensus algorithms, mining and decentralization, and many more. "This is a one-of-a-kind book on Blockchain technology. The authors achieved the perfect balance between the breadth of topics and the depth of technical discussion. But the real gem is the set of carefully curated hands-on exercises that guide the reader through the process of building a Blockchain right from Chapter 1." Volodymyr Babich, Professor of Operations and Information Management, McDonough School of Business, Georgetown University "An excellent introduction of DLT technology for a non-technical audience. The book is replete with examples and exercises, which greatly facilitate the learning of the underlying processes of blockchain technology for all, from students to entrepreneurs." Serguei Netessine, Dhirubhai Ambani Professor of Innovation and Entrepreneurship, The Wharton School, University of Pennsylvania "Whether you want to start from scratch or deepen your blockchain knowledge about the latest developments, this book is an essential reference. Through clear explanations and practical code examples, the authors take you on a progressive journey to discover the technology foundations and build your own blockchain. From an operations perspective, you can learn the principles behind the distributed ledger technology relevant for transitioning towards blockchain-enabled supply chains. Reading this book, you'll get inspired, be able to assess the applicability of blockchain to supply chain operations, and learn from best practices recognized in real-world examples." Ralf W. Seifert, Professor of Technology and Operations Management at EPFL and Professor of Operations Management at IMD

Even though blockchain technology was originally created as a ledger system for bitcoin to operate on, using it for areas other than cryptocurrency has become increasingly popular as of late. The transparency and security provided by blockchain technology is challenging innovation in a variety of businesses and is being applied in fields that include accounting and finance, supply chain management, and education. With the ability to perform such tasks as tracking fraud and securing the distribution of medical records, this technology is key to the advancement of many industries.

The **Research Anthology on Blockchain Technology in Business, Healthcare, Education, and Government** is a vital reference source that examines the latest scholarly material on trends, techniques, and uses of blockchain technology applications in a variety of industries, and how this technology can further transparency and security. Highlighting a range of topics such as cryptography, smart contracts, and decentralized blockchain, this multi-volume book is ideally designed for academics, researchers, industry leaders, managers, healthcare professionals, IT consultants, engineers, programmers, practitioners, government officials, policymakers, and students.

This book focuses on the fundamentals of blockchain technology along with the means and methods of its integration with Internet of Things (IoT). The book allows the reader to have a deeper understanding of blockchain technology, IoT and various application areas wherein both technologies can be implemented. The book serves the purpose of providing knowledge about the fundamentals of blockchain and IoT to a common reader along with allowing a research scholar to identify some futuristic problem areas that emerge from the convergence of both technologies. Furthermore, the authors discuss relevant application areas such as smart city, e-healthcare, smart travel, etc. throughout the course of the book. The book also talks through a few case studies illustrating the implementation and benefits of using blockchain and IoT. Provides a comprehensive view of blockchain technology and its integration with IoT; Facilitates in having a valuable understanding of various application areas pertaining to blockchain and IoT; Assists the reader in exploring new research areas wherein blockchain and IoT can find their applicability based upon their list of benefits.
The Blockchain Alternative
Regulation of Cryptocurrencies and Blockchain Technologies
Proceedings of the 3rd International Conference on Security with Intelligent Computing and Big-data Services (SICBS), 4–6 December 2019, New Taipei City, Taiwan
Blockchain Technology for Industry 4.0
Security with Intelligent Computing and Big-Data Services 2019

Proceedings of ICEEE 2021

This book presents selected papers from the 2021 International Conference on Electrical and Electronics Engineering (ICEEE 2020), held on January 2–3, 2021. The book focuses on the current developments in various fields of electrical and electronics engineering, such as power generation, transmission and distribution; renewable energy sources and technologies; power electronics and applications; robotics; artificial intelligence and IoT; control, automation and instrumentation; electronics devices, circuits and systems; wireless and optical communication; RF and microwaves; VLSI; and signal processing. The book is a valuable resource for academics and industry professionals alike.

This book constitutes the proceedings of the 9th Enterprise Engineering Working Conference, EEWC 2019, held in Lisbon, Portugal, May 2019. EEWC aims at addressing the challenges that modern and complex enterprises are facing in a rapidly changing world. The participants of the working conference share a belief that dealing with these challenges requires rigorous and scientific solutions, focusing on the design and engineering of enterprises. The goal of EEWC is to stimulate interaction between the different stakeholders, scientists as well as practitioners, interested in making Enterprise Engineering a reality. The 8 full papers and 3 short papers presented in this volume were carefully reviewed and selected from 22 submissions. They were organized in topical sections on processes; DEMO; models and enterprise architecture; and blockchain.

This book explores the concepts and techniques of cloud security using blockchain. Also discussed is the possibility of applying blockchain to provide security in various domains. The authors discuss how blockchain holds the potential to significantly increase data privacy and security while boosting accuracy and integrity in cloud data. The specific highlight of this book is focused on the application of integrated technologies in enhancing cloud security models, use cases, and its challenges. The contributors, both from academia and industry, present their technical evaluation and comparison with existing technologies. This book pertains to IT professionals, researchers, and academicians towards fourth revolution technologies.

This book focuses on picturing B-IoT techniques from a few perspectives, which are architecture, key technologies, security and privacy, service models and framework, practical use cases and more. Main contents of this book derive from most updated technical achievements or breakthroughs in the field. A number of representative IoT service offerings will be covered by this book, such as vehicular networks, document sharing system, and telehealth. Both theoretical and practical contents will be involved in this book in order to assist readers to have a comprehensive and deep understanding the mechanism of using blockchain for powering up IoT systems. The blockchain-enabled Internet of Things (B-IoT) is deemed to be a novel technical alternative that provides network-based services with additional functionalities, benefits, and implementations in terms of decentralization, immutability, and auditability.

Towards the enhanced secure and privacy-preserving Internet of Things (IoT), this book introduces a few significant aspects of B-IoT, which includes fundamental knowledge of both blockchain and IoT, state-of-the-art reviews of B-IoT applications, crucial components in the B-IoT system and the model design, and future development potentials and trends. IoT technologies and services, e.g. cloud data storage technologies and vehicular services, play important roles in wireless technology developments. On the other side, blockchain technologies are being adopted in a variety of academic societies and professional realms due to its promising characteristics. It is observable that the research and development on integrating these two technologies will provide critical thinking and solid references for contemporary and future network-relevant solutions. This book targets researchers and advanced level students in computer science, who are focused on cryptography, cloud computing and internet of things, as well as electrical engineering students and researchers focused on vehicular networks and more. Professionals working in these fields will also find this book to be a valuable resource.