

Blockchain Applications In Energy Trading Deloitte Us

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.

This book constitutes the refereed proceedings of the 3rd International Congress on Blockchain and Applications 2021, held in Salamanca, Spain, in October 2021. Among the scientific community, blockchain and artificial intelligence are a promising combination that will transform the production and manufacturing industry, media, finance, insurance, e-government, etc. Nevertheless, there is no consensus with schemes or best practices that would specify how blockchain and artificial intelligence should be used together. The 38 full papers presented were carefully reviewed and selected from over 44 submissions. They contain the latest advances on blockchain and artificial intelligence and on their application domains, exploring innovative ideas, guidelines, theories, models, technologies, and tools and identifying critical issues and challenges that researchers and practitioners must deal with in future research.

This contributed volume provides the state-of-the-art development on security and privacy for cyber-physical systems (CPS) and industrial Internet of Things (IIoT). More specifically, this book discusses the security challenges in CPS and IIoT systems as well as how Artificial Intelligence (AI) and Machine Learning (ML) can be used to address these challenges. Furthermore, this book proposes various defence strategies, including intelligent cyber-attack and anomaly detection algorithms for different IIoT applications. Each chapter corresponds to an important snapshot including an overview of the opportunities and challenges of realizing the AI in IIoT environments, issues related to data security, privacy and application of blockchain technology in the IIoT environment. This book also examines more advanced and specific topics in AI-based solutions developed for efficient anomaly detection in IIoT environments. Different AI/ML techniques including deep representation learning, Snapshot Ensemble Deep Neural Network (SEDNN), federated learning and multi-stage learning are discussed and analysed as well. Researchers and professionals working in computer security with an emphasis on the scientific foundations and engineering techniques for securing IIoT systems and their underlying computing and communicating systems will find this book useful as a reference. The content of this book will be particularly useful for advanced-level students studying computer science, computer technology, cyber security, and information systems. It also applies to advanced-level students studying electrical engineering and system engineering, who would benefit from the case studies.

As we enter the Industrial Revolution 4.0, demands for an increasing degree of trust and privacy protection continue to be voiced. The development of blockchain technology is very important because it can help frictionless and transparent financial transactions and improve the business experience, which in turn has far-reaching effects for economic, psychological, educational and organizational improvements in the way we work, teach, learn and care for ourselves and each other. Blockchain is an eccentric technology, but at the same time, the least understood and most disruptive technology of the day. This book covers the latest technologies of cryptocurrencies and blockchain technology and their applications. This book discusses the blockchain and cryptocurrencies related issues and also explains how to provide the security differently through an algorithm, framework, approaches, techniques and mechanisms. A comprehensive understanding of what blockchain is and how it works, as well as insights into how it will affect the future of your organization and industry as a whole and how to integrate blockchain technology into your business strategy. In addition, the book explores the blockchain and its with other technologies like Internet of Things, big data and artificial intelligence, etc.

Like many other scientific innovations, scientists are looking to protect the internet of things (IoT) from unfortunate losses, theft, or misuse. As one of the current hot trends in the digital world, blockchain technology could be the solution for securing the IoT. Blockchain Applications in IoT Security presents research for understanding IoT-generated data security issues, existing security facilities and their limitations and future possibilities, and the role of blockchain technology. Featuring coverage on a broad range of topics such as cryptocurrency, remote monitoring, and smart computing, this book is ideally designed for security analysts, IT specialists, entrepreneurs, business professionals, academicians, researchers, students, and industry professionals seeking current studies on the limitations and possibilities behind competitive blockchain technologies.

Third edition of International Conference on Intelligent Computing and Optimization and as a premium fruit, this book, pursue to gather research leaders, experts and scientists on Intelligent Computing and Optimization to share knowledge, experience and current research achievements. Conference and book provide a unique opportunity for the global community to interact and share novel research results, explorations and innovations among colleagues and friends. This book is published by SPRINGER, Advances in Intelligent Systems and Computing. Ca. 100 authors submitted full papers to ICO'2020. That global representation demonstrates the growing interest of the research community here. The book covers innovative and creative research on sustainability, smart cities, meta-heuristics optimization, cyber-security, block chain, big data analytics, IoTs, renewable energy, artificial intelligence, Industry 4.0, modeling and simulation. We editors thank all authors and reviewers for their important service. Best high-quality papers have been selected by the International PC for our premium series with SPRINGER. .

This contributed volume discusses diverse topics to demystify the rapidly emerging and evolving blockchain technology, the emergence of integrated platforms and hosted third-party tools, and the development of decentralized applications for various business domains. It presents various applications that are helpful for research scholars and scientists who are working toward identifying and pinpointing the potential of as well as the hindrances to this technology.

Our world is experiencing increasingly complex social and environmental challenges. The prevailing business models and, to some extent, capitalism per se, are frequently blamed for these problems due to their neglect of social and environmental values in favour of financial returns. Within this context, social finance has attracted the attention of governments, organizations, entrepreneurs, and researchers as a means of mobilizing resources and innovation with the goal of establishing effective long-term solutions. This edited collection summarizes, discusses, and analyzes new innovative trends in social finance. It features contributions that aim to highlight emerging trends (products, tools, and processes) in social finance, present a series of case studies related to the development, deployment, and scaling of social finance innovations, offer an understanding of how non-economic externalities are being incorporated, managed, and assessed in recent innovations, reveal the disruptive potential of social finance innovations by analyzing how they are redefining mainstream finance, analyze the scales of operation and impact of different innovations, and explore the complex relationship between social finance and social innovation. Featuring contributions from both the research and practitioner community as well as policy actors, the book provides more than a snapshot of the current social finance field by specifically highlighting the major challenges and difficulties that require the urgent attention of policymakers and social entrepreneurs. Thomas Walker is a full professor of finance at Concordia University in Montreal, Canada. He previously served as an associate dean, department chair, and director of Concordias David OBrien Centre for Sustainable Enterprise. Prior to his academic career, he worked for firms such as Mercedes Benz, KPMG, and Utility Consultants International. He has published over 70 journal articles and books. Jane McGaughey is an associate professor of diaspora studies at Concordia Universitys School of Irish Studies, holding a PhD in Irish history from the University of London. Her research focuses on the intersections of historical and contemporary migration, gender, and ethnic discrimination. Sherif Goubran is an instructor in the Department of Architecture (School of Sciences and Engineering) at the American University in Cairo. He is currently a PhD candidate in the Individualized Program (INDI) at Concordia University, where he is conducting interdisciplinary research on sustainability in the built environment within the fields of design, building engineering, and real estate finance. Nadra Wagdy is an associate consultant at CID Consulting in Egypt. She is contributing to the development and scaling of an Extended Producer Responsibility program, working with the informal waste sector. She has extensive experience supporting cooperatives and not-for-profit organizations across their development phases: starting from validating their business plan and governance model to scaling-up their operations.

This book includes original, peer-reviewed research papers from the 2020 International Top-Level Forum on Engineering Science and Technology Development Strategy -- the 5th PURPLE MOUNTAIN FORUM on Smart Grid Protection and Control(PMF2020), held in Nanjing, China, on August 15-16, 2020. Hot topics and cutting edge technologies are included: - Advanced Power Transmission Technology - AC-DC Hybrid Power Grid Technology - IoT Technology and Application - Operation, Protection and Control of Power Systems Supplied with High Penetration of Renewable Energy Sources - Active Distribution Network Technology - Smart Power Consumption and Energy-saving Technology - New Technology on Substation Automation - Clean Energy Technology - Energy Storage Technology and Application - Key Technology and Application of Integrated Energy - Application of AI, Block Chain, Big Data and Other New Technologies in Energy Industry - Application of New Information and Communication Technology in Energy Industry - Application of Technical Standard System and Related Research in Energy Industry The papers included in this proceeding share the latest research results and practical application examples on the methodologies and algorithms in these areas, which makes the book a valuable reference for researchers, engineers, and university students.

The blockchain revolution has drastically impacted global economics and the strategic practices within different industries. Cryptocurrency specifically has forever changed the face of business and the implementation of business online. While innovative, people are still in the early stages of building and developing blockchain technology and its applications, and it is critical that researchers and practitioners obtain a better understanding of this global phenomenon. Architectures and Frameworks for Developing and Applying Blockchain Technology is an essential reference source that presents the technological foundation, recent research findings, developments, and critical issues associated with blockchain technology from both computer science and social science perspectives. Featuring topics such as artificial intelligence, digital economy, and network technology, this book is ideally designed for academics, researchers, industry leaders, IT consultants, engineers, programmers, practitioners, government officials, policymakers, and students.

This book presents selected papers from the 10th International Conference on Information Science and Applications (ICISA 2019), held on December 16–18, 2019, in Seoul, Korea, and provides a snapshot of the latest issues regarding technical convergence and convergences of security technologies. It explores how information science is at the core of most current research as well as industrial and commercial activities. The respective chapters cover a broad range of topics, including ubiquitous computing, networks and information systems, multimedia and visualization, middleware and operating systems, security and privacy, data mining and artificial intelligence, software engineering and web technology, as well as applications and problems related to technology convergence, which are reviewed and illustrated with the aid of case studies. Researchers in academia, industry, and at institutes focusing on information science and technology will gain a deeper understanding of the current state of the art in information strategies and technologies for convergence security. ?

The convergence of Artificial Intelligence (AI) in blockchain creates one of the world's most reliable technology-enabled decision-making systems that is virtually tamper-proof and provides solid insights and decisions. The integration of AI and Blockchain affects many aspects from food supply chain logistics and healthcare record sharing to media royalties and financial security. It is imperative that regulatory standards are emphasized in order to support positive outcomes from the integration of AI in blockchain technology. Regulatory Aspects of Artificial Intelligence on Blockchain provides relevant legal and security frameworks and the latest empirical research findings in blockchain and AI. Through the latest research and standards, the book identifies and offers solutions for overcoming legal consequences that pertain to the application of AI into the blockchain system, especially concerning the usage of smart contracts. The chapters, while investigating the legal and security issues associated with these applications, also include topics such as smart contracts, network vulnerability, cryptocurrency, machine learning, and more. This book is essential for technologists, security analysts, legal specialists, privacy and data security practitioners, IT consultants, standardization professionals, researchers, academicians, and students interested in blockchain and AI from a legal and security viewpoint.

Blockchain is widely considered a new key technology. The Foundation for Technology Assessment (TA-SWISS) has proposed a comprehensive assessment of blockchain technologies. With this publication, TA-SWISS provides the much-needed social contextualisation of blockchain. The first, more technical part of the study takes an in-depth look at how blockchain functions and examines the economic potential of this technology. By analysing multiple real-world applications, the study sheds light on where the blockchain has advantages over traditional applications and where existing technologies continue to be the better solution. The second part of the study examines how blockchain became mainstream. It explores the origins of blockchain in the early history of information technology and computer networks. The study also reveals the impact blockchain has on industrial and public spaces. Finally, it discusses the social implications and challenges of blockchain against the background of a new socio-technical environment.

"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. ." -- Prové de l'editor.

Blockchain-Based Smart Grids presents emerging applications of blockchain in electrical system and looks to future developments in the use of blockchain technology in the energy market. Rapid growth of renewable energy resources in power systems and significant developments in the telecommunication systems has resulted in new market designs being employed to cover unpredictable and distributed generation of electricity. This book considers the marriage of blockchain and grid modernization, and discusses the transaction shifts in smart grids, from centralized to peer-to-peer structures. In addition, it addresses the effective application of these structures to speed up processes, resulting in more flexible electricity systems. Aimed at moving towards blockchain-based smart grids with renewable applications, this book is useful to researchers and practitioners in all sectors of smart grids, including renewable energy providers, manufacturers and professionals involved in electricity generation from renewable sources, grid modernization and smart grid applications.

This book constitutes the proceedings papers from the 17th European, Mediterranean, and Middle Eastern Conference on Information Systems, EMCIS 2020, held in Dubai, UAE, in November 2020. Due to the COVID-19 pandemic the conference took place virtually. EMCIS focuses on approaches that facilitate the identification of innovative research of significant relevance to the Information Systems discipline following sound research methodologies that lead to results of measurable impact. The 56 papers presented in this volume were carefully reviewed and selected from a total of 161 submissions to the main conference. They are grouped in section on Big Data and Analytics, Blockchain Technology and Applications, Digital Government, Digital Services and Social Media, Emerging Computing Technologies and Trends for Business Process Management, Enterprise Systems, Healthcare Information Systems, Information Systems Security and Information Privacy Protection, Innovative Research Projects, Management and Organisational Issues in Information Systems.

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.

Distributed Energy Resources in Local Integrated Energy Systems: Optimal Operation and Planning reviews research and policy developments surrounding the optimal operation and planning of DER in the context of local integrated energy systems in the presence of multiple energy carriers, vectors and multi-objective requirements. This assessment is carried out by analyzing impacts and benefits at local levels, and in distribution networks and larger systems. These frameworks represent valid tools to provide support in the decision-making process for DER operation and planning. Uncertainties of RES generation and loads in optimal DER scheduling are addressed, along with energy trading and blockchain technologies. Interactions among various energy carriers in local energy systems are investigated in scalable and flexible optimization models for adaptation to a number of real contexts thanks to the wide variety of generation, conversion and storage technologies considered, the exploitation of demand side flexibility, emerging technologies, and through the general mathematical formulations established. Integrates multi-energy DER, including electrical and thermal distributed generation, demand response, electric vehicles, storage and RES in the context of local integrated energy systems Fosters the integration of DER in the electricity markets through the concepts of DER aggregation Addresses the challenges of emerging paradigms as energy communities and energy blockchain applications in the current and future energy landscape Proposes operation optimization models and methods through multi-objective approaches for fostering short- and long-run sustainability of local energy systems Assesses and models the uncertainties of renewable resources and intermittent loads in the short-term decision-making process for smart decentralized energy systems

This book provides a comprehensive introduction to different elements of smart city infrastructure - smart energy, smart water, smart health, and smart transportation - and how they work independently and together. Theoretical development and practical applications are presented, along with related standards, recommended practices, and professional guidelines. Throughout the book, diagrams and case studies are provided that demonstrate the systems presented, and extensive use of scenarios helps readers better grasp how smart grids, the Internet of Things, big data analytics, and trading models can improve road safety, healthcare, smart water management, and a low-carbon economy. A must-read for practicing engineers, consultants, regulators, utility operators, and environmentalists involved in smart city development, the book will also appeal to city planners and designers, as well as upper-level undergraduate and graduate students studying energy, environmental science, technology, economics, signal processing, information science, and power engineering.

This book presents theoretical, technical, and practical information on the modernization of future energy networks. All the basic requirements covering concepts, modeling, optimizing, and analyzing of future energy grids with various energy carriers such as electricity, gas, heat, and water, as well as their markets and contracts, are explained in detail. The main focus of the book is on modernizing both the energy consumers and the energy producers and analyzing various aspects of grid modernization such as

reliability, resiliency, stability, and security. Coverage includes advanced communication protocols and solution methods for the Internet of Energy (IoE) infrastructure and energy trading in future energy grids with high/full share of renewable energy resources (RERs) within the transactive energy (TE) paradigm. Probabilistic modeling and optimizing of modern grids will be evaluated using realistic case studies considering the economic aspects of multi-carrier energy markets. This book will be welcomed as an important resource by researchers and postgraduate students studying energy systems, as well as practicing engineers working on modernizing energy grids and the design, planning, scheduling, and operation of smart power systems. Proposes practical solutions for solving the challenges of modern multi-carrier energy grids; Examines various types of energy storage systems and distributed energy resources (DERs) with an emphasis on renewable energy resources (RERs); Provides comprehensive mathematical models for optimizing of future modern multi-carrier energy grids.

Blockchain-Based Smart Grids Academic Press

IRENA's Innovation Landscape report highlights innovations in enabling technologies.

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.

The four-volume set LNCS 11746–11749 constitutes the proceedings of the 17th IFIP TC 13 International Conference on Human-Computer Interaction, INTERACT 2019, held in Paphos, Cyprus, in September 2019. The total of 111 full papers presented together with 55 short papers and 48 other papers in these books was carefully reviewed and selected from 385 submissions. The contributions are organized in topical sections named: Part I: accessibility design principles; assistive technology for cognition and neurodevelopment disorders; assistive technology for mobility and rehabilitation; assistive technology for visually impaired; co-design and design methods; crowdsourcing and collaborative work; cyber security and e-voting systems; design methods; design principles for safety/critical systems. Part II: e-commerce; education and HCI curriculum I; education and HCI curriculum II; eye-gaze interaction; games and gamification; human-robot interaction and 3D interaction; information visualization; information visualization and augmented reality; interaction design for culture and development I. Part III: interaction design for culture and development II; interaction design for culture and development III; interaction in public spaces; interaction techniques for writing and drawing; methods for user studies; mobile HCI; personalization and recommender systems; pointing, touch, gesture and speech-based interaction techniques; social networks and social media interaction. Part IV: user modelling and user studies; user experience; users' emotions, feelings and perception; virtual and augmented reality I; virtual and augmented reality II; wearable and tangible interaction; courses; demonstrations and installations; industry case studies; interactive posters; panels; workshops.

Despite the urgent need for action, there is a widespread lack of understanding of the benefits of using green energy sources for not only reducing carbon emissions and climate change, but also for growing a sustainable economy and society. Future citizens of the world face increasing sustainability issues and need to be better prepared for energy transformation and sustainable future economic development. Cases on Green Energy and Sustainable Development is a critical research book that focuses on the important role renewable energy and energy efficiency play in energy transition and sustainable development and covers economic and promotion policies of major renewable energy and energy-efficiency technologies. Highlighting a wide range of topics such as economics, energy storage, and transportation technologies, this book is ideal for environmentalists, academicians, researchers, engineers, policymakers, and students.

This book gathers selected research papers presented at the First International Conference on Digital Technologies and Applications (ICDTA 21), held at Sidi Mohamed Ben Abdellah University, Fez, Morocco, on 29-30 January 2021. highlighting the latest innovations in digital technologies as: artificial intelligence, Internet of things, embedded systems, network technology, information processing, and their applications in several areas such as hybrid vehicles, renewable energy, robotic, and COVID-19. The respective papers encourage and inspire researchers, industry professionals, and policymakers to put these methods into practice.

The Blockchain Technology for Secure and Smart Applications across Industry Verticals, Volume 121, presents the latest information on a type of distributed ledger used for maintaining a permanent and tamper-proof record of transactional data. The book presents a novel compendium of existing and budding Blockchain technologies for various smart applications. Chapters in this new release include the Basics of Blockchain, The Blockchain History, Architecture of Blockchain, Core components of Blockchain, Blockchain 2.0: Smart Contracts, Empowering Digital Twins with Blockchain, Industrial Use Cases at the Cusp of the IoT and Blockchain Paradigms, Blockchain Components and Concepts, Digital Signatures, Accumulators, Financial Systems, and more. This book is a unique effort to illuminate various techniques to represent, improve and authorize multi-institutional and multidisciplinary research in a different type of smart applications, like the financial system, smart grid, transportation system, etc. Readers in identity-privacy, traceability, immutability, transparency, auditability, and security will find it to be a valuable resource. Provides a snapshot of the state of current research based on the decentralized system that provides security and privacy to the smart applications Chapters cover the fundamental concepts of the newly emerged Blockchain technology along with, the various smart applications Helps to elucidate new trading platforms that provides business benefits like efficiency, auditability, traceability, transparency, feedback, and security

Recently, cryptocurrencies have made major news headlines. Some people have invested in them, while others have watched in confusion, not sure what it all means. Kyle Michaud admirably takes on the task of unraveling the complexities, taking us through the history of Bitcoin's beginnings before delving into Blockchain's great potential as a distributed decentralized database to change the current third-party paradigm when it comes to everything from healthcare to banking to car sales. You won't find a clearer explanation for Blockchain anywhere, nor a more practical guide in terms of how it can concretely be applied to your everyday life.

Contributions are encouraged in all fields of Smart Grids and Energy Systems, particularly those in the following areas Smart Grids and Active Distribution Networks Grid Planning, Operation and Management Renewable Generation and Distributed Energy Resources Computational Intelligence, ICT and Blockchain Applications in Smart Grids Emerging Technologies and End user Systems Microgrids, Standalone Power Systems, and Virtual Power Plants Grid Resiliency, Reliability, Stability and Protection Electricity Market, Innovative Business Mechanism, Policy Regulatory Aspects Energy Forecasting, Peer to peer Energy Trading and Transactive Energy Management Smart Homes, Buildings and Cities and Cyber Security Smart Condition Monitoring and Fault Diagnosis Techniques IoT Enabled Energy Systems

This book constitutes revised papers from the seven workshops and one accompanying event which took place at the 21st International Conference on Business Information Systems, BIS 2018, held in Berlin, Germany, in July 2018. Overall across all workshops, 58 out of 122 papers were accepted. The workshops included in this volume are: AKTB 2018 - 10th Workshop on Applications of Knowledge-Based Technologies in Business BITA 2018 - 9th Workshop on Business and IT Alignment BSCT 2018 - 1st Workshop on Blockchain and Smart Contract Technologies IDEA 2018 - 4th International Workshop on Digital Enterprise Engineering and Architecture IDEATE 2018 - 3rd Workshop on Big Data and Business Analytics Ecosystems SciBOWater 2018 - Scientific Challenges & Business Opportunities in Water Management QOD 2018 - 1st Workshop on Quality of Open Data In addition, one keynote speech in full-paper length and contributions from the Doctoral Consortium are included

The increased digitization and automation taking place at a rapid pace across all the spheres are our activity are creating a world of unforeseen convenience. However, we are put to an unimaginable risk of cyber-threats. At the same time, there is a lack of trust sweeping across with the counterparties and a tremendous threat to the privacy of the global citizens with the trusted third parties like governments and organizations that are unable to prevent breaches of data and malicious cyber-attacks. In such a scenario, how do we de-risk our transactions from these threats and still take advantage of the digital transformation pioneered by the emerging technologies? Blockchain! So, what is this Blockchain technology and how does it endow its users with all these compelling benefits? Let us dissect the various components of this technology and demystify the various aspects and be prepared for the revolution ahead! Srinivas is one of the few individuals in the country who really understands Blockchain! His book truly demystifies this topic and has a lot of insights. It's a must-read for anyone interested in understanding this new technology. - Hari T.N. Author, Investor, Start -up Evangelist Co-Author, Saying No to Jugaad - The Making of BigBasket This book is indeed a great effort to put Blockchain in a right perspective with respect to its utility beyond the Bitcoin for Enterprises, NGO's, Government and Institutions. - Dr. M. Muneer Founder -Medici Inst, MD - Rezonent India, CEO - CustomerLab This exciting book will explore how Blockchain (BC) technology has the potential to overcome challenges in the current cyber-physical system (CPS) environment. BC is a timestamp ledger of blocks that is used for storing and sharing data in a distributed manner. BC has attracted attention from practitioners and academics in different disciplines, including law, finance, and computer science, due to its use of distributed structure, immutability and security and privacy. However, applying blockchain in a cyber-physical system (CPS) is not straightforward and involves challenges, including lack of scalability, resource consumption, and delay. This book will provide a comprehensive study on blockchain for CPS. CPS and the existing solutions in CPS and will outline the limitations are presented. The key features of blockchain and its salient features which makes it an attractive solution for CPS are discussed. The fundamental challenges in adopting blockchain for CPS including scalability, delay, and resource consumption are presented and described. Blockchain applications in smart grids, smart vehicles, supply chain; and IoT Data marketplaces are explored. The future research directions to further improve blockchain performance in CPS is also provided.

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.

This book describes the implementation of green IT in various human and industrial domains. Consisting of four sections: "Development and Optimization of Green IT", "Modelling and Experiments with Green IT Systems", "Industry and Transport Green IT Systems", "Social, Educational and Business Aspects of Green IT", it presents results in two areas – the green components, networks, cloud and IoT systems and infrastructures; and the industry, business, social and education domains. It discusses hot topics such as programmable embedded and mobile systems, sustainable software and data centers, Internet servicing and cyber social computing, assurance cases and lightweight cryptography in context of green IT. Intended for university students, lecturers and researchers who are interested in power saving and sustainable computing, the book also appeals to engineers and managers of companies that develop and implement energy efficient IT applications.

This book presents an in-depth study to show that a sustainable future urban life is possible. To build a safer and more sustainable future, as humankind, we would like to use

more renewable energy, increase energy efficiency, reduce our carbon and water footprints in all economic sectors. The increasing population and humans' ever-increasing demand for consumption pose another question whether the world's resources are sufficient for present and future generations. Fair access to water, energy, and food is the objective for all. In line with the United Nations Sustainable Development Goals, scientists, researchers, engineers, and policymakers worldwide are working hard to achieve these objectives. To answer all these challenges, we would like to introduce the core of Smart Cities of the future, the building block of the future urban life: Open Digital Innovation Hub (ODIH). ODIH will serve as the Home of the Future a fully digitalised and smart, self-sustaining building that answers all the motivation we highlight here. In ODIH, we introduce a living space that produces its water, energy, and food by minimising carbon and water footprints thanks to the Internet of Things, Artificial Intelligence, and Blockchain technologies. It will also serve as an open innovation environment for start-ups and entrepreneurs who wish to integrate their solutions into the infrastructure of ODIH and test those in real-time. We believe this will be a true open innovation test-bed for new business models.

The success of many companies through the assistance of bitcoin proves that technology continually dominates and transforms how economics operate. However, a deeper, more conceptual understanding of how these technologies work to identify innovation opportunities and how to successfully thrive in an increasingly competitive environment is needed for the entrepreneurs of tomorrow. Transforming Businesses With Bitcoin Mining and Blockchain Applications provides innovative insights into IT infrastructure and emerging trends in the realm of digital business technologies. This publication analyzes and extracts information from Bitcoin networks and provides the necessary steps to designing open blockchain. Highlighting topics that include financial markets, risk management, and smart technologies, the research contained within the title is ideal for entrepreneurs, business professionals, managers, executives, academicians, researchers, and business students.

While there are many books on blockchains, this guide focuses on blockchain applications for business. The target audience is business students, professionals, and managers who want to learn about the overall blockchain landscape -- the investments, the size of markets, major players and the global reach -- as well as the potential business value of blockchain applications and the challenges that must be overcome to achieve that value. We present use cases and derive action principles for building enterprise blockchain capabilities. Readers will learn enough about the underlying technologies to speak intelligently to technology experts in the space, as the guide also covers the blockchain protocols, code bases and provides a glossary of terms. We use this guide as the textbook for our undergraduate and graduate Blockchain Fundamentals course at the University of Arkansas. Other professors interested in adopting this guide for instructional purposes are welcome to contact the author for supporting instructional materials. A new wave of technological innovations, often called "fintech," is accelerating change in the financial sector. What impact might fintech have on financial services, and how should regulation respond? This paper sets out an economic framework for thinking through the channels by which fintech might provide solutions that respond to consumer needs for trust, security, privacy, and better services, change the competitive landscape, and affect regulation. It combines a broad discussion of trends across financial services with a focus on cross-border payments and especially the impact of distributed ledger technology. Overall, the paper finds that boundaries among different types of service providers are blurring; barriers to entry are changing; and improvements in cross-border payments are likely. It argues that regulatory authorities need to balance carefully efficiency and stability trade-offs in the face of rapid changes, and ensure that trust is maintained in an evolving financial system. It also highlights the importance of international cooperation.

?This book provides the reader with the most up-to-date knowledge of blockchain in mainstream areas of security, trust, and privacy in the decentralized domain, which is timely and essential (this is due to the fact that the distributed and P2P applications is increasing day-by-day, and the attackers adopt new mechanisms to threaten the security and privacy of the users in those environments). This book also provides the technical information regarding blockchain-oriented software, applications, and tools required for the researcher and developer experts in both computing and software engineering to provide solutions and automated systems against current security, trust and privacy issues in the cyberspace. Cybersecurity, trust and privacy (CTP) are pressing needs for governments, businesses, and individuals, receiving the utmost priority for enforcement and improvement in almost any societies around the globe. Rapid advances, on the other hand, are being made in emerging blockchain technology with broadly diverse applications that promise to better meet business and individual needs. Blockchain as a promising infrastructural technology seems to have the potential to be leveraged in different aspects of cybersecurity promoting decentralized cyberinfrastructure. Blockchain characteristics such as decentralization, verifiability and immutability may revolve current cybersecurity mechanisms for ensuring the authenticity, reliability, and integrity of data. Almost any article on the blockchain points out that the cybersecurity (and its derivatives) could be revitalized if it is supported by blockchain technology. Yet, little is known about factors related to decisions to adopt this technology, and how it can systemically be put into use to remedy current CTP's issues in the digital world. Topics of interest for this book include but not limited to: Blockchain-based authentication, authorization and accounting mechanisms Applications of blockchain technologies in digital forensic and threat hunting Blockchain-based threat intelligence and threat analytics techniques Formal specification of smart contracts Automated tools for outsmarting smart contracts Security and privacy aspects of blockchain technologies Vulnerabilities of smart contracts Blockchain for securing cyber infrastructure and internet of things networks Blockchain-based cybersecurity education systems This book provides information for security and privacy experts in all the areas of blockchain, cryptocurrency, cybersecurity, forensics, smart contracts, computer systems, computer networks, software engineering, applied artificial intelligence for computer security experts, big data analysts, and decentralized systems. Researchers, scientists and advanced level students working in computer

systems, computer networks, artificial intelligence, big data will find this book useful as well.

This reference presents information about different facets of IoT and blockchain systems that have been recently proposed for practical situations. Chapters provide knowledge about how these technologies are applied in functions related to trust management, identity management, security threats, access control and privacy. Key Features: - Introduces the reader to fundamental concepts of IoT and blockchain technology - reports advances in the field of IoT, ubiquitous computing and blockchain computing - includes the applications of different frameworks - explains the role of blockchains in improving IT security - provides examples of smart grids, data transmission models, digital business platforms, agronomics and big data solutions - Includes references for further reading Blockchain Applications for Secure IoT Frameworks Technologies Shaping the Future is a handy reference for information technology professionals and students who want updated information about applications of IoT and blockchains in secure operational and business processes.

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