

## How Blockchain And Energy Monitors Will Create The

This book provides a comprehensive platform to the scientific, education and research communities working on various fields related to sustainable energy. It covers the exploration, generation and application of this area to meet societal needs as well as addressing global issues related to the environment. The content of this book presents research related to energy and how to tackle climate change as a comprehensive framework based on the success of the Millennium Development Goals (MDGs). The authors use the scientific method to analyze and deliver viable technical solutions, demonstrating how chemistry and engineering can be combined to solve technically challenging problems. While maintaining high scientific rigor, a quantitative approach is offered in select chapters to the study of energy related to our societies increasing need for electrical and chemical energy feedstocks.

**Transforming Climate Finance and Green Investment with Blockchains** establishes and analyzes the connection between this revolutionary technology and global efforts to combat climate change. The benefits of blockchain come through various profound alterations, such as the adoption of smart contracts that are set to redefine governance and regulatory structures and transaction systems in coming decades. Each chapter contains a problem statement that describes the challenges blockchain technology can address. The book brings together original visions and insights from global members of the Blockchain Climate Institute, comprising thought leaders, financial professionals, international development practitioners, technology entrepreneurs, and more. This book will help readers understand blockchain technology and how it can facilitate the implementation of the Paris Agreement and accelerate the global transition to a green economy. Provides an authoritative examination of this emerging digital technology and its implications on global climate change governance Includes detailed proposals and thorough discussions of implementation issues that are specific to green economy sectors Relates innovative proposals to existing applications to demonstrate the value add of blockchain technology Covers blockchain for the smarter energy sector, for fraud-free emissions management, to streamline climate investments, and legal frameworks for blockchain-based climate finance

**The Internet of Energy (IoE)**, with the integration of advanced information and communication technologies (ICT), has led to a transformation of traditional networks to smart systems. **Internet of Energy Handbook** provides updated knowledge in the field of energy management with an Internet of Things (IoT) perspective. Features Explains the technological developments for energy management leading to a reduction in energy consumption through topics like smart energy systems, smart sensors, communication, techniques, and utilization

Includes dedicated sections covering varied aspects related to renewable sources of energy, power distribution, and generation Incorporates energy efficiency, optimization, and sensor technologies Covers multidisciplinary aspects in computational intelligence and IoT Discusses building energy management aspects including temperature, humidity, the number of persons involved, and light intensity This handbook is aimed at graduate students, researchers, and professionals interested in power systems, IoT, smart grids, electrical engineering, and transmission.

This book focuses on the economics of smart meters and is one of the first to present comprehensive evidence on the impacts, cost-benefits and risks associated with smart metering. Throughout this volume, Jacopo Torriti integrates his findings from institutional cost-benefit analyses and smart metering trials in a range of European countries with key economic and social concepts and policy insights derived from almost ten years of research in this area. He explores the extent to which the benefits of smart meters outweigh the cost, and poses key questions including: which energy savings can be expected from the roll out of smart meters in households? Is Cost-Benefit Analysis an appropriate economic tool for assessing the impacts of smart metering rollouts? Can smart meters play a significant role in research on people's activities and the timing of energy demand? Torriti concludes by providing a much-needed survey of recent changes and expected future developments in this growing field. This book will be of great interest to students and scholars of energy policy and demand and smart metering infrastructure.

The objective of this book is to teach what IoT is, how it works, and how it can be successfully utilized in business. This book helps to develop and implement a powerful IoT strategy for business transformation as well as project execution. Digital change, business creation/change and upgrades in the ways and manners in which we work, live, and engage with our clients and customers, are all enveloped by the Internet of Things which is now named "Industry 5.0" or "Industrial Internet of Things. The sheer number of IoT(a billion+), demonstrates the advent of an advanced business society led by sustainable robotics and business intelligence. This book will be an indispensable asset in helping businesses to understand the new technology and thrive.

This volume deals with recent advances in and applications of computational intelligence and advanced machine learning methods in power systems, heating and cooling systems, and gas transportation systems. The optimal coordinated dispatch of the multi-energy microgrids with renewable generation and storage control using advanced numerical methods is discussed. Forecasting models are designed for electrical insulator faults, the health of the battery, electrical insulator faults, wind speed and power, PV output power and transformer oil test parameters. The loads balance algorithm for an offshore wind farm is proposed. The information security problems in the energy internet are analyzed and attacked using information transmission contemporary models, based on

blockchain technology. This book will be of interest, not only to electrical engineers, but also to applied mathematicians who are looking for novel challenging problems to focus on.

This book constitutes the refereed proceedings of the 32nd International Conference on Advanced Information Systems Engineering, CAiSE 2020, held in Grenoble, France, in June 2020.\* The 33 full papers presented in this volume were carefully reviewed and selected from 185 submissions. The book also contains one invited talk in full paper length. The papers were organized in topical sections named: distributed applications; AI and big data in IS; process mining and analysis; requirements and modeling; and information systems engineering. Abstracts on the CAiSE 2020 tutorials can be found in the back matter of the volume. \*The conference was held virtually due to the COVID-19 pandemic.

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.

This comprehensive overview of IoT systems architecture includes in-depth treatment of all key components: edge, communications, cloud, data processing, security, management, and uses. Internet of Things: Concepts and System Design provides a reference and foundation for students and practitioners that they can build upon to design IoT systems and to understand how the specific parts they are working on fit into and interact with the rest of the system. This is especially important since IoT is a multidisciplinary area that requires diverse skills and knowledge including: sensors, embedded systems, real-time systems, control systems, communications, protocols, Internet, cloud computing, large-scale distributed processing and storage systems, AI and ML, (preferably) coupled with domain experience in the area where it is to be applied, such as building or manufacturing automation. Written in a reader-minded approach that starts by describing the problem (why should I care?), placing it in context (what

does this do and where/how does it fit in the great scheme of things?) and then describing salient features of solutions (how does it work?), this book covers the existing body of knowledge and design practices, but also offers the author's insights and articulation of common attributes and salient features of solutions such as IoT information modeling and platform characteristics.

Distributed technologies work without the necessity of a middleman. Until blockchain technology came into the limelight, users were forced to exchange value and trade employing a third-party intermediary. What started off as a means to solve the barriers around global transaction of currencies, is now being evolved into a technological paradigm shift that could potentially impact and improve many forms of industries. A lot of people around the world confuses the market dynamics and conditions of cryptocurrencies with the underlying technology. Every time the market goes bullish, it is branded as a bubble. When it corrects by over 80%, it is branded as a scam. But how many of us looked at the US stock market charts and compared it with the performance of the cryptocurrencies? Bitcoin has paved the way for a new technological evolution, but is the technology maturing or is it at the brink of destruction? What are the real-life use cases? This book is an attempt to look into the world of decentralisation and why they are beneficial for society. As scalability is an essential factor for the existence of blockchain, this book sheds light on the current advancement in solving immediate scalability problems and how it could revolutionise the financial and economic sector. This is not an attempt to explain speculative use cases. In essence, it is an attempt to highlight the existing companies that have successfully built a product, the startups working around the world to solve the scalability issues around blockchain technology. To separate the signal from the noise, this book is a must-read for the technology enthusiasts. Farabi, the author of Exponential Progress, is the Head of Research at IntelXSys™ and working as one of the Research Experience Leads for Clinical Research and Innovation (CRI) module at the Imperial College London. He has worked with over 100 companies as a technology consultant and spoken at a number of international conferences around the world.

In recent years, intelligent cities, also known as smart cities or cognitive cities, have become a perceived solution for improving the quality of life of citizens while boosting the efficiency of city services and processes. This new vision involves the integration of various sectors of society through the use of the internet of things. By continuing to enhance research for the better development of the smart environments needed to sustain intelligent cities, citizens will be empowered to provision the e-services provided by the city, city officials will have the ability to interact directly with the community as well as monitor digital environments, and smart communities will be developed where citizens can enjoy improved quality of life.

**Developing and Monitoring Smart Environments for Intelligent Cities** compiles the latest research on the development, management, and monitoring of digital cities and intelligent environments into one complete reference source. The book contains chapters that examine current technologies and the future use of internet of things frameworks as well as device connectivity approaches, communication protocols,

security challenges, and their inherent issues and limitations. Including unique coverage on topics such as connected vehicles for smart transportation, security issues for smart homes, and building smart cities for the blind, this reference is ideal for practitioners, urban developers, urban planners, academicians, researchers, and students.

The convergence of blockchain and Internet of things (IoT) powered by data and artificial intelligence (AI) is on the agenda of several big companies and some of them have already started using its implementations, initiatives, and solutions in various projects. In this book, the author calls the convergence of these three technologies: the blockchain of intelligent things. This book is targeted to help a broad audience, including anyone interested in and responsible for vision, projects, and implementations of blockchain, IoT, and AI in medium-sized companies and large enterprises. This would include business and technology managers, IT professionals, and last but not least, business or technology students, looking to broadening their knowledge and expertise. This book is number two in a series of four books. The first chapters of the book take you from the convergence of blockchain and IoT, via an overview of the most important blockchain of things projects such as IOTA, and the industries, which are heavily being disrupted, into the blockchain of intelligent things, which essentially adds the business value of data science and AI. Further topics you will find in this book include chapters such as required skills, jobs and future, industrial IoT (IIoT) platforms, and opportunities, challenges, and trends of the blockchain of intelligent things. Readers looking for a methodology to engage in blockchain, IoT, and/or AI projects, can find a comprehensive description in my previous book *New World Technologies: 2020 and Beyond*.

Cognitive Computing is a new topic which aims to simulate human thought processes using computers that self-learn through data mining, pattern recognition, and natural language processing. This book focuses on the applications of Cognitive Computing in areas like Robotics, Blockchain, Deep Learning, and Wireless Technologies. This book covers the basics of Green Computing, discusses Cognitive Science methodologies in Robotics, Computer Science, Wireless Networks, and Deep Learning. It goes on to present empirical data and research techniques, modelling techniques and offers a data-driven approach to decision making and problem solving. This book is written for researchers, academicians, undergraduate and graduate students, and industry persons who are working on current applications of Cognitive Computing.

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.

Dive into a secure future Professionals look to Ethereum as a blockchain-based platform to develop safe applications and conduct secure transactions. It takes a knowledgeable guiding hand to understand how Ethereum works and what it does — and *Ethereum For Dummies* provides that guidance. Written by one of the leading voices in the blockchain community and best selling author of *Blockchain For Dummies*, this book demystifies the workings of Ethereum and shows how it can enhance security, transactions, and investments. As an emerging application of blockchain technology, Ethereum attracts a wide swath of professionals ranging from financial pros who see it as a way to enhance their business, security analysts who want to conduct secure transactions, programmers who build apps that employ the Ethereum blockchain, or investors interested in cashing in on the rise of cryptocurrency. *Ethereum For Dummies* offers a starting point to all members of this audience as it provides easy-to-understand explanation of the tools and techniques of using Ethereum. Understand the fundamentals of Ethereum Build smart contracts Create decentralized applications Examine public and private chains If you need to get a grip on one of the biggest applications of blockchain technology, this book makes it easier.

The field of computational intelligence has grown tremendously over that past five years, thanks to evolving soft computing and artificial intelligent methodologies, tools and techniques for envisaging the essence of intelligence embedded in real life observations. Consequently, scientists have been able to explain and understand real life processes and practices which previously often remain unexplored by virtue of their underlying imprecision, uncertainties and redundancies, and the unavailability of appropriate methods for describing the incompleteness and vagueness of information represented. With the advent of the field of computational intelligence, researchers are now able to explore and unearth the intelligence, otherwise insurmountable, embedded in the systems under consideration. Computational Intelligence is now not limited to only specific computational fields, it has made inroads in signal processing, smart manufacturing, predictive control, robot navigation, smart cities, and sensor design to name a few. *Recent Trends in Computational Intelligence Enabled Research: Theoretical Foundations and Applications* explores the use of this computational paradigm across a wide range of applied domains which handle meaningful information. Chapters investigate a broad spectrum of the applications of computational intelligence across different platforms and disciplines, expanding our knowledge base of various research initiatives in this direction. This volume aims to bring together researchers, engineers, developers and practitioners from academia and industry

working in all major areas and interdisciplinary areas of computational intelligence, communication systems, computer networks, and soft computing. Provides insights into the theory, algorithms, implementation, and application of computational intelligence techniques Covers a wide range of applications of deep learning across various domains which are researching the applications of computational intelligence Investigates novel techniques and reviews the state-of-the-art in the areas of machine learning, computer vision, soft computing techniques

This report analyses international case studies of innovative business models and regulatory arrangements and provides recommendations for a truly smart energy system. “Active consumers who have access to distributed energy resources, such as solar photovoltaics, storage, electric vehicles and heating appliances will play a crucial role in the challenging transition to a low carbon energy system”, explains Monica Giulietti, one of the report’s authors. For fairer prices: use tariffs based on capacity rather than on volume The current network tariff regime is not optimal for a smart energy system. Researchers recommend that tariffs be more directly linked to costs. A more advanced tariff structure is feasible in a smart electricity network: tariffs can be dependent on time and location and adapt to local network congestion. “A shift towards tariffs based on capacity will also reduce the subsidisation of the energy system by poorer consumers to the richer ones, thereby improving the fairness of the tariff structure”, says Bert Willems, co-author of the report. The DSO-TSO interaction models are to be enhanced The report highlights different proposals for DSO-TSO interactions that allow the trade of flexible services provided by distributed energy resources under different regulatory and market contexts, in the United Kingdom, Australia, New York and Europe. “While we’ve observed that in all cases an expansion of the DSO’s roles, capabilities and coordination with the TSO is required, our analysis also shows that most jurisdictions have not yet identified their preferred organisational set-up. The European Commission should systematically take into account the differences of Member States, such as the number, size and independence of DSOs, in future studies or impact assessments”, says Karim Anaya, co-author of the study. Both price and non-price factors are required for consumers to engage Bringing together smart meter technology, blockchain and apps can help consumers to take part in energy transactions by informing them about the advantages provided by distributed energy resources at a given time. However, these technologies can only help if the costs for consumers are low. Otherwise, non-price factors such as climate activism or environmental preferences will be the sole drivers for consumers to participate in this system. Although financial benefits only cannot motivate consumers’ engagement in a complex system, they are significant signals. And we need strong signals if we want consumers to modify longstanding habits. Going off-grid: the risk of death spiral The authors warn that, in the long run, when the costs of storage and local generation are expected to drop, local energy communities might decide to disconnect from the distribution network and operate on a stand-alone basis. The cost of the distribution network will then have to be covered by the remaining network users who, as a result, will see their energy bills increase. This could lead to a “death spiral” where more customers leave the distribution network (though unlikely in northern Europe), making these obsolete. Networks would go bankrupt and only small island grids would remain. “Smart consumers are highly dependent on the ecosystem they are operating in. We

can learn from international experiences that Europe needs to develop innovative regulatory models and be ready to test new institutional schemes that involve consumers to support the energy transition. The work ahead goes beyond monitoring what the Clean Energy Package can deliver, we have to anticipate new trends and take action to give more clarity to what DSOs and TSOs can do together and avoid new bottlenecks”, concludes Chloé Le Coq.

This book, with contributions by both leading scholars and industry experts, provides a coherent framework for understanding complex determinants and patterns of industry competitiveness. Divided into eight parts, it covers both quantitative and qualitative research on the following topics: technologies, economic development, and human resources in Industry 4.0; management in the digital economy; artificial intelligence and knowledge management approaches; drivers of sustainable and innovative development in corporations; resilient and competitive systems in the energy sector; compliance and anti-corruption mechanisms; and competence networks and technological integration. Thanks to its highly stimulating discussions on the determinants and patterns of industry competitiveness, this book appeals to a wide readership.

This book constitutes the proceedings of the International Conference on Internet of Things, ICIOT 2018, held in Seattle, WA, USA, in June 2018. The 13 full papers and 1 short paper presented in this volume was carefully reviewed and selected for inclusion in this book. The contributions are organized in topical sections named: Research Track – Architecture; Research Track – Smart IoT; Application and Industry Track; and Short Paper Track. They deal with research and application innovations in the internet of things services.

The use of renewable energies and energy saving and efficiency are needs of global society and universities. Universities have a large responsibility and social impact, as they are an example and engine of social change. Universities, in the European context, must be at the forefront of ESA processes, seeking to be at the same level as, and preferably higher than, the rest of society, seeking a goal of 20% renewable energy for 2020 and, in the longer term, greater energy efficiency based on a diverse use of renewable energy and studying the feasibility of other energy processes (cogeneration, trigeneration, etc.). The application of renewable energies and energy efficiency allow universities to make significant savings in their costs and contribute to sustainable development and the fight against climate change. Actions in pursuit of these goals in addition to the objective of energy saving should promote research and form an example for the university community. This book aims to advance the contribution of energy saving and the use of renewable energies in order to achieve more sustainable universities.

Focusing on different tools, platforms, and techniques, Blockchain and the Smart City: Infrastructure and Implementation uses case studies from around the world to examine blockchain deployment in diverse smart city applications. The book begins by examining the fundamental theories and concepts of blockchain. It looks at key smart cities' domains such as banking, insurance, healthcare, and supply chain management. It examines Using case studies for each domain, the book looks at payment mechanisms, fog/edge computing, green computing, and algorithms and consensus mechanisms for smart cities implementation. It looks at tools such as



Hyperledger, Ethereum, Corda, IBM Blockchain, Hydrachain, as well as policies and regulatory standards, applications, solutions, and methodologies. While exploring future blockchain ecosystems for smart and sustainable city life, the book concludes with the research challenges and opportunities academics, researchers, and companies in implementing blockchain applications. Independently organized chapters for greater readability, adaptability, and flexibility Examines numerous issues from multiple perspectives and academic and industry experts Explores both advances and challenges of cutting-edge technologies Coverage of security, trust, and privacy issues in smart cities

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 presents updated research trends in energy harvesting, energy management and green technology as well as highlighting new product and application developments towards a wider acceptance of smart and green energy and what additions of ICT such as WSN and smart applications have contributed toward green technology"--

This book discusses several exciting research topics and applications in the intelligent Heterogenous Networks (Het-Net) and Internet of Things (IoT) era. We are resolving significant issues towards realizing the future vision of the Artificial Intelligence (AI) in IoT-enabled spaces. Such AI-powered IoT solutions will be employed in satisfying critical conditions towards further advances in our daily smart life. This book overviews the associated issues and proposes the most up to date alternatives. The objective is to pave the way for AI-powered IoT-enabled spaces in the next generation Het-Net technologies and open the door for further innovations. The book presents the latest advances and research into heterogeneous networks in critical IoT applications. It discusses the most important problems, challenges, and issues that arise when designing real-time intelligent heterogeneous networks for diverse scenarios. Includes fundamentals and advances in intelligent heterogeneous network studies and practical applications; Presents important problems, challenges and issues that arise when designing real-time heterogeneous networks for diverse scenarios; Provides an overview of real-time performance issues in heterogeneous networks, specifically about multi-tasking, multi-level scheduling, localization and security issues. .

An authoritative introduction to the exciting new technologies of digital money Bitcoin and Cryptocurrency Technologies provides a comprehensive introduction to the revolutionary yet often misunderstood new technologies of digital currency. Whether

you are a student, software developer, tech entrepreneur, or researcher in computer science, this authoritative and self-contained book tells you everything you need to know about the new global money for the Internet age. How do Bitcoin and its block chain actually work? How secure are your bitcoins? How anonymous are their users? Can cryptocurrencies be regulated? These are some of the many questions this book answers. It begins by tracing the history and development of Bitcoin and cryptocurrencies, and then gives the conceptual and practical foundations you need to engineer secure software that interacts with the Bitcoin network as well as to integrate ideas from Bitcoin into your own projects. Topics include decentralization, mining, the politics of Bitcoin, altcoins and the cryptocurrency ecosystem, the future of Bitcoin, and more. An essential introduction to the new technologies of digital currency Covers the history and mechanics of Bitcoin and the block chain, security, decentralization, anonymity, politics and regulation, altcoins, and much more Features an accompanying website that includes instructional videos for each chapter, homework problems, programming assignments, and lecture slides Also suitable for use with the authors' Coursera online course Electronic solutions manual (available only to professors)

Business Purpose Design is an essential guide for a human-centric and holistic purpose for businesses. Discontinuity, uncertainty, complexity, and ambiguity are driving forces of our world. Entire markets, industries, departments, and specialist areas interact and correlate with each other - unplanned and open-ended. In our world, orientation and a common driver is key to navigate, to distinguish relevant information from irrelevant, to take decisions and lead companies to create a positive future. Together with 32 outstanding personalities, from thought leaders, executives, founders, designers, and scientists, Monika looks at the 30 most relevant topics für purpose entrepreneurship. Bonus: Many examples, trend outlooks, and conceptional images inspire new thoughts and ideas - and reassure existing developments. Furthermore, takeaways for every topic offer a hands-on guide to act right away. With the Business Purpose Design model, organizations of any size can design, build, and grow their business towards becoming impact-driven. It provides a toolkit, and over 90 practical tips to design or and implement purpose within an organization right away. It allows for many perspectives. Co-created by over 32 practitioners from 30 disciplines. Illustrated with a critical eye by one of Europe's most sophisticated graphic-recording duo. Specially designed for executives, consultants, entrepreneurs, coaches, managers, designers and leaders of all types of organizations. [www.business-purpose.com](http://www.business-purpose.com)

This book presents select proceedings of the International Conference on Intelligent Automation and Soft Computing (IASC2021). Various topics covered in this book include AI algorithm, neural networks, pattern recognition, machine learning, blockchain technology, system engineering, computer vision and image processing, adaptive control and robotics, big data and data processing, networking and security. The book is a valuable reference for beginners, researchers, and professionals interested in artificial intelligence, automation, and soft computing. .

The Regulatory Technology Handbook The transformational potential of RegTech has been confirmed in recent years with US\$1.2 billion invested in start-ups (2017) and an expected additional spending of US\$100 billion by 2020. Regulatory technology will not only provide efficiency gains for compliance and reporting functions, it will radically change market structure and supervision. This

book, the first of its kind, is providing a comprehensive and invaluable source of information aimed at corporates, regulators, compliance professionals, start-ups and policy makers. The REGTECH Book brings into a single volume the curated industry expertise delivered by subject matter experts. It serves as a single reference point to understand the RegTech eco-system and its impact on the industry. Readers will learn foundational notions such as:

- The economic impact of digitization and datafication of regulation
- How new technologies (Artificial Intelligence, Blockchain) are applied to compliance
- Business use cases of RegTech for cost-reduction and new product origination
- The future regulatory landscape affecting financial institutions, technology companies and other industries

Edited by world-class academics and written by compliance professionals, regulators, entrepreneurs and business leaders, the RegTech Book represents an invaluable resource that paves the way for 21st century regulatory innovation.

The interest in Blockchain technology and its ability of creating consensus in decentralized networks is significantly increasing. This book provides a detailed consideration of the Blockchain technology and its possible implementations within the scope of energy management. Before investigating the functionality of a Blockchain, the basic mathematical problem that Blockchain solves, known as the Byzantine Generals Problem, is examined. Furthermore, this book describes the Ethereum platform, as most Blockchain energy applications are based on Smart Contracts stored in the Ethereum Blockchain. Afterwards, a descriptive insight into ongoing projects in the field of energy management is given. Conclusively, it is illustrated how a local peer-to-peer energy market can be implemented, based on the Ethereum Blockchain.

Can there be reliable information that is also relevant to decision making? Information for Efficient Decision Making: Big Data, Blockchain and Relevance focuses on the consolidation of information to facilitate making decisions in firms, in order to make their operations efficient to reduce their costs and consequently, increase their profitability. The advent of blockchain has generated great interest as an alternative to centralized organizations, where the data is gathered through a centralized ledger keeping of activities of the firm. The decentralized ledger keeping is one of the main features of blockchain that has given rise to many issues of technology, development, implementation, privacy, acceptance, evaluation and so on. Blockchain concept is a follow-up to big data environment facilitated by enormous progress in computer hardware, storage capacities and technological prowess. This has resulted in the rapid acquiring of data not considered possible earlier. With shrewd modeling analytics and algorithms, the applications have grown to significant levels. This handbook discusses the progress in data collection, pros and cons of collecting information on decentralized publicly available ledgers and several applications.

The seven volumes LNCS 12249-12255 constitute the refereed proceedings of the 20th International Conference on Computational Science and Its Applications,

ICCSA 2020, held in Cagliari, Italy, in July 2020. Due to COVID-19 pandemic the conference was organized in an online event. Computational Science is the main pillar of most of the present research, industrial and commercial applications, and plays a unique role in exploiting ICT innovative technologies. The 466 full papers and 32 short papers presented were carefully reviewed and selected from 1450 submissions. Apart from the general track, ICCSA 2020 also include 52 workshops, in various areas of computational sciences, ranging from computational science technologies, to specific areas of computational sciences, such as software engineering, security, machine learning and artificial intelligence, blockchain technologies, and of applications in many fields.

Wireless communication is continuously evolving to improve and be a part of our daily communication. This leads to improved quality of services and applications supported by networking technologies. We are now able to use LTE, LTE-Advanced, and other emerging technologies due to the enormous efforts that are made to improve the quality of service in cellular networks. As the future of networking is uncertain, the use of deep learning and big data analytics is a point of focus as it can work in many capacities at a variety of levels for wireless communications. Implementing Data Analytics and Architectures for Next Generation Wireless Communications addresses the existing and emerging theoretical and practical challenges in the design, development, and implementation of big data algorithms, protocols, architectures, and applications for next generation wireless communications and their applications in smart cities. The chapters of this book bring together academics and industrial practitioners to exchange, discuss, and implement the latest innovations and applications of data analytics in advanced networks. Specific topics covered include key encryption techniques, smart home appliances, fog communication networks, and security in the internet of things. This book is valuable for technologists, data analysts, networking experts, practitioners, researchers, academicians, and students.

This book looks at the growing segment of Internet of Things technology (IoT) known as Internet of Medical Things (IoMT), an automated system that aids in bridging the gap between isolated and rural communities and the critical healthcare services that are available in more populated and urban areas. Many technological aspects of IoMT are still being researched and developed, with the objective of minimizing the cost and improving the performance of the overall healthcare system. This book focuses on innovative IoMT methods and solutions being developed for use in the application of healthcare services, including post-surgery care, virtual home assistance, smart real-time patient monitoring, implantable sensors and cameras, and diagnosis and treatment planning. It also examines critical issues around the technology, such as security vulnerabilities, IoMT machine learning approaches, and medical data compression for lossless data transmission and archiving. Internet of Medical Things is a valuable reference for researchers, students, and postgraduates working in biomedical,

electronics, and communications engineering, as well as practicing healthcare professionals.

Understanding the recent developments in renewable energy is crucial for a range of fields in today's society. As environmental awareness and the need for a more sustainable future continues to grow, the uses of renewable energy, particularly in areas such as smart grid, must be considered and studied thoroughly to be implemented successfully and move society toward a more sustainable future. *Optimal Planning of Smart Grid With Renewable Energy Resources* offers a detailed guide to the new problems and opportunities for sustainable growth in engineering by focusing on modeling diverse problems occurring in science and engineering as well as novel effective theoretical methods and robust optimization theories, which can be used to analyze and solve multiple types of problems. Covering topics such as electric drives and energy systems, this publication is ideal for researchers, academicians, industry professionals, engineers, scholars, instructors, and students.

*Blockchain-Based Smart Grids* Academic Press

The electrical demands in several countries around the world are increasing due to the huge energy requirements of prosperous economies and the human activities of modern life. In order to economically transfer electrical powers from the generation side to the demand side, these powers need to be transferred at high-voltage levels through suitable transmission systems and power substations. To this end, high-voltage transmission systems and power substations are in demand. Actually, they are at the heart of interconnected power systems, in which any faults might lead to unsuitable consequences, abnormal operation situations, security issues, and even power cuts and blackouts. In order to cope with the ever-increasing operation and control complexity and security in interconnected high-voltage power systems, new architectures, concepts, algorithms, and procedures are essential. This book aims to encourage researchers to address the technical issues and research gaps in high-voltage transmission systems and power substations in modern energy systems.

Blockchain, Internet of Things, and Artificial Intelligence provides an integrated overview and technical description of the fundamental concepts of blockchain, IoT, and AI technologies. State-of-the-art techniques are explored in depth to discuss the challenges in each domain. The convergence of these revolutionized technologies has leveraged several areas that receive attention from academicians and industry professionals, which in turn promotes the book's accessibility more extensively. Discussions about an integrated perspective on the influence of blockchain, IoT, and AI for smart cities, healthcare, and other business sectors illuminate the benefits and opportunities in the ecosystems worldwide. The contributors have focused on real-world examples and applications and highlighted the significance of the strengths of blockchain to transform the readers' thinking toward finding potential solutions. The faster

maturity and stability of blockchain is the key differentiator in artificial intelligence and the Internet of Things. This book discusses their potent combination in realizing intelligent systems, services, and environments. The contributors present their technical evaluations and comparisons with existing technologies. Theoretical explanations and experimental case studies related to real-time scenarios are also discussed. FEATURES Discusses the potential of blockchain to significantly increase data while boosting accuracy and integrity in IoT-generated data and AI-processed information Elucidates definitions, concepts, theories, and assumptions involved in smart contracts and distributed ledgers related to IoT systems and AI approaches Offers real-world uses of blockchain technologies in different IoT systems and further studies its influence in supply chains and logistics, the automotive industry, smart homes, the pharmaceutical industry, agriculture, and other areas Presents readers with ways of employing blockchain in IoT and AI, helping them to understand what they can and cannot do with blockchain Provides readers with an awareness of how industry can avoid some of the pitfalls of traditional data-sharing strategies This book is suitable for graduates, academics, researchers, IT professionals, and industry experts.

Learn the skills to get in on the crypto craze The world of cryptocurrency includes some of the coolest technologies and most lucrative investments available today. And you can jump right into the middle of the action with *Cryptocurrency All-in-One For Dummies*, a collection of simple and straightforward resources that will get you up to speed on cryptocurrency investing and mining, blockchain, Bitcoin, and Ethereum. Stop scouring a million different places on the web and settle in with this one-stop compilation of up-to-date and reliable info on what's been called the "21st century gold rush." So, whether you're just looking for some fundamental knowledge about how cryptocurrency works, or you're ready to put some money into the markets, you'll find what you need in one of the five specially curated resources included in this book. *Cryptocurrency All-in-One For Dummies* will help you: Gain an understanding of how cryptocurrency works and the blockchain technologies that power cryptocurrency Find out if you're ready to invest in the cryptocurrency market and how to make smart decisions with your cash Build a cryptocurrency mining rig out of optimized and specifically chosen computing hardware Dive into the details of leading cryptocurrencies like Bitcoin and Ethereum Perfect for anyone curious and excited about the potential that's been unlocked by the latest in cryptocurrency tech, this book will give you the foundation you need to become a savvy cryptocurrency consumer, investor, or miner before you know it.

This book focuses on emerging issues following the integration of artificial intelligence systems in our daily lives. It focuses on the cognitive, visual, social and analytical aspects of computing and intelligent technologies, highlighting ways to improve technology acceptance, effectiveness, and efficiency. Topics such as responsibility, integration and training are discussed throughout. The

book also reports on the latest advances in systems engineering, with a focus on societal challenges and next-generation systems and applications for meeting them. It also discusses applications in smart grids and infrastructures, systems engineering education as well as defense and aerospace. The book is based on both the AHFE 2018 International Conference on Human Factors in Artificial Intelligence and Social Computing, Software and Systems Engineering, The Human Side of Service Engineering and Human Factors in Energy, July 21–25, 2018, Loews Sapphire Falls Resort at Universal Studios, Orlando, Florida, USA. 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.

Can blockchain solve your biggest business problem? While the world is transfixed by bitcoin mania, your competitors are tuning out the noise and making strategic bets on blockchain. Your rivals are effortlessly tracking every last link in their supply chains. They're making bureaucratic paper trails obsolete while keeping their customers' data safer and discovering new ways to use this next foundational technology to sustain their competitive advantage. What should you be doing with blockchain now to ensure that your business is poised for success? "Blockchain: The Insights You Need from Harvard Business Review" brings you today's most essential thinking on blockchain, explains how to get the right initiatives started at your company, and prepares you to seize the opportunity of the coming blockchain wave. Business is changing. Will you adapt or be left behind? Get up to speed and deepen your understanding of the topics that are shaping your company's future with the Insights You Need from Harvard Business Review series. Featuring HBR's smartest thinking on fast-moving issues--blockchain, cybersecurity, AI, and more--each book provides the foundational introduction and practical case studies your organization needs to compete today and collects the best research, interviews, and analysis to get it ready for tomorrow. You can't afford to ignore how these issues will transform the landscape of business and society. The Insights You Need series will help you grasp these critical ideas--and prepare you and your company for the future.

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