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Collaborative Technologies and Data Science in Smart City Applications - Aram Hajian 2018-08-30

In September 2018, researchers from Armenia, Chile, Germany and Japan met in Yerevan to discuss technologies with applications in Smart Cities, Data Science and Information-Theoretic Approaches for Smart Systems, Technical Challenges for Smart Environments, and Smart Human Centered Computing. This book presents their contributions to the CODASSCA 2018 workshop on Collaborative Technologies and Data Science in Smart City Applications, a cutting-edge topic in Computer Science today.

[Further Advances in Internet of Things in Biomedical and Cyber Physical Systems](#) - Valentina E. Balas 2021-03-22

This book covers the further advances in the field of the Internet of things, biomedical engineering and cyber physical system with recent applications. It is covering the various real-time, offline applications, and case studies in the field of recent technologies and case studies of the Internet of things, biomedical engineering and cyber physical system with recent technology trends. In the twenty-first century, the automation and management of data are vital, in that, the role of the Internet of things proving the potential support. The book is consisting the excellent work of researchers and academician who are working in the domain of emerging technologies, e.g., Internet of things, biomedical engineering and cyber physical system. The chapters cover the major achievements by solving and suggesting many unsolved problems, which are sure to be going to prove a strong support in industries towards automation goal using of the Internet of things, biomedical engineering and cyber physical system.

Proceedings of the International Conference on Signal, Networks, Computing, and Systems - Daya K. Lobiyal 2016-10-13

The book is a collection of high-quality peer-reviewed research papers presented in the first International Conference on Signal, Networks, Computing, and Systems (ICSNCS 2016) held at Jawaharlal Nehru University, New Delhi, India during February 25–27, 2016. The book is organized in two volumes and primarily focuses on theory and applications in the broad areas of communication technology, computer science and information security. The book aims to bring together the latest scientific research works of academic scientists, professors, research scholars and students in the areas of signal, networks, computing and systems detailing the practical challenges encountered and the solutions adopted.

Autonomous Control for a Reliable Internet of Services - Ivan Ganchev 2018-05-30

This open access book was prepared as a Final Publication of the COST Action IC1304 “Autonomous Control for a Reliable Internet of Services (ACROSS)”. The book contains 14 chapters and constitutes a show-case of the main outcome of the Action in line with its scientific goals. It will serve as a valuable reference for undergraduate and post-graduate students, educators, faculty members, researchers, engineers, and research strategists working in this field. The explosive growth of the Internet has fundamentally changed the global society. The emergence of concepts like SOA, SaaS, PaaS, IaaS, NaaS, and Cloud Computing in general has catalyzed the migration from the information-oriented Internet into an Internet of Services (IoS). This has opened up virtually unbounded possibilities for the creation of new and innovative services that facilitate business processes and improve the quality of life. However, this also calls for new approaches to ensuring the quality and reliability of these services. The objective of this book is, by applying a systematic approach, to assess the state-of-the-art and consolidate the main research results achieved in this area.

Cognitive (Internet of) Things - Arvind Sathi 2016-09-24

This book explores cognitive behavior among Internet of Things. Using a series of current and futuristic examples – appliances, personal assistants, robots, driverless cars, customer care, engineering, monetization, and many more – the book covers use cases, technology and communication aspects of how machines will support individuals and organizations. This book examines the Cognitive Things covering a number of important questions: • What are Cognitive Things? • What applications can be driven from Cognitive Things – today and tomorrow? • How will these Cognitive Things collaborate with each and other, with individuals and with organizations? • What is the cognitive era? How is it different from the automation era? • How will the Cognitive Things support or accelerate human problem solving? • Which technical components make up cognitive behavior? • How does it redistribute the work-load between humans and machines? • What types of data can be collected from them and shared with external organizations? • How do they recognize and authenticate authorized users? How is the data safeguarded from potential theft? Who owns the data and how are the data ownership rights enforced? Overall, Sathi explores ways in which Cognitive Things bring value to individuals as well as organizations and how to integrate the use of the devices into changing organizational structures. Case studies are used throughout to illustrate how innovators are already benefiting from the initial explosion of devices and data. Business executives, operational managers, and IT professionals will understand the fundamental changes required to fully benefit from cognitive technologies and how to utilize them for their own success.

From Internet of Things to Smart Cities - Hongjian Sun 2017-09-01

From Internet of Things to Smart Cities: Enabling Technologies explores the information and communication technologies (ICT) needed to enable real-time responses to current environmental, technological, societal, and economic challenges. ICT technologies can be utilized to help with reducing carbon emissions, improving resource utilization efficiency, promoting active engagement of citizens, and more. This book aims to introduce the latest ICT technologies and to promote international collaborations across the scientific community, and eventually, the general public. It consists of three tightly coupled parts. The first part explores the involvement of enabling technologies from basic machine-to-machine communications to Internet of Things technologies. The second part of the book focuses on state of the art data analytics and security techniques, and the last part of the book discusses the design of human-machine interfaces, including smart home and cities. Features Provides an extended literature review of relevant technologies, in addition to detailed comparison diagrams, making new readers be easier to grasp fundamental and wide knowledge Contains the most recent research results in the field of communications, signal processing and computing sciences for facilitating smart homes, buildings, and cities Includes future research directions in Internet of Things, smart homes, smart buildings, smart grid, and smart cities Presents real examples of applying these enabling technologies to smart homes, transportation systems and cities With contributions from leading experts, the book follows an easy structure that not only presents timely research topics in-depth, but also integrates them into real world applications to help readers to better understand them.

Design and Development of Efficient Energy Systems - Suman Lata Tripathi 2021-03-16

There is not a single industry which will not be transformed by machine learning and Internet of Things (IoT). IoT and machine learning have altogether changed the technological scenario by letting the user

monitor and control things based on the prediction made by machine learning algorithms. There has been substantial progress in the usage of platforms, technologies and applications that are based on these technologies. These breakthrough technologies affect not just the software perspective of the industry, but they cut across areas like smart cities, smart healthcare, smart retail, smart monitoring, control, and others. Because of these “game changers,” governments, along with top companies around the world, are investing heavily in its research and development. Keeping pace with the latest trends, endless research, and new developments is paramount to innovate systems that are not only user-friendly but also speak to the growing needs and demands of society. This volume is focused on saving energy at different levels of design and automation including the concept of machine learning automation and prediction modeling. It also deals with the design and analysis for IoT-enabled systems including energy saving aspects at different level of operation. The editors and contributors also cover the fundamental concepts of IoT and machine learning, including the latest research, technological developments, and practical applications. Valuable as a learning tool for beginners in this area as well as a daily reference for engineers and scientists working in the area of IoT and machine technology, this is a must-have for any library.

Security and Privacy in Smart Sensor Networks - Maleh, Yassine 2018-05-09

Security and privacy protection within computer networks can be a challenge. By examining the current problems and challenges this domain is facing, more efficient strategies can be established to safeguard personal information against invasive pressures. Security and Privacy in Smart Sensor Networks is a critical scholarly resource that examines recent developments and emerging trends in smart sensor security and privacy by providing new models, practical solutions, and technological advances related to security. Featuring coverage on a broad range of topics such as cloud security, encryption, and intrusion detection systems, this book is geared towards academicians, engineers, IT specialists, researchers, and students seeking current research on authentication and intrusion detection.

Internet of Things and Big Data Analytics for Smart Generation - Valentina E. Balas 2018-12-30

This book discusses emerging technologies in the field of the Internet of Things and big data, an area that will be scaled in next two decades. Written by a team of leading experts, it is the only book focusing on the broad areas of both the Internet of things and big data. The thirteen chapters present real-time experimental methods and theoretical explanations, as well as the implementation of these technologies through various applications. Offering a blend of theory and hands-on practices, the book enables graduate, postgraduate and research students who are involved in real-time project scaling techniques to understand projects and their execution. It is also useful for senior computer students, researchers and industry workers who are involved in experimenting with the Internet of Things and big data technologies, helping them to solve the real-time problem. Moreover, the chapters covering cutting-edge technologies help multidisciplinary researchers who are bridging the gap of two different outset real-time problems.

Applied Information Processing Systems - Brijesh Iyer 2021-07-20

This book is a collection of selected high-quality research papers presented at the International Conference on Computing in Engineering and Technology (IC CET 2021), organized by Dr. Babasaheb Ambedkar Technological University, Lonere, India, during January 30–31, 2021. Focusing on frontier topics and next-generation technologies, it presents original and innovative research from academics, scientists, students and engineers alike. The theme of the conference is Applied Information Processing System.

Artificial Intelligence Techniques for Advanced Computing Applications - D. Jude Hemanth 2020-07-23

This book features a collection of high-quality research papers presented at the International Conference on Advanced Computing Technology (ICACT 2020), held at the SRM Institute of Science and Technology, Chennai, India, on 23–24 January 2020. It covers the areas of computational intelligence, artificial intelligence, machine learning, deep learning, big data, and applications of artificial intelligence in networking, IoT and bioinformatics

Advances in Deep Learning, Artificial Intelligence and Robotics - Luigi Troiano 2022-01-03

This book of Advances in Deep Learning, Artificial Intelligence and Robotics (proceedings of ICDLAIR 2020) is intended to be used as a reference by students and researchers who collect scientific and technical contributions with respect to models, tools, technologies and applications in the field of modern artificial

intelligence and robotics. Deep Learning, AI and robotics represent key ingredients for the 4th Industrial Revolution. Their extensive application is dramatically changing products and services, with a large impact on labour, economy and society at all. The research and reports of new technologies and applications in DL, AI and robotics like biometric recognition systems, medical diagnosis, industries, telecommunications, AI petri nets model-based diagnosis, gaming, stock trading, intelligent aerospace systems, robot control and web intelligence aim to bridge the gap between these non-coherent disciplines of knowledge and fosters unified development in next-generation computational models for machine intelligence.

Security Designs for the Cloud, IoT, and Social Networking - Dac-Nhuong Le 2019-10-08

Security concerns around the rapid growth and variety of devices that are controlled and managed over the Internet is an immediate potential threat to all who own or use them. This book examines the issues surrounding these problems, vulnerabilities, what can be done to solve the problems, investigating the roots of the problems and how programming and attention to good security practice can combat the threats today that are a result of lax security processes on the Internet of Things, cloud computing and social media.

Powering the Internet of Things With 5G Networks - Mohanan, Vasuky 2017-07-12

With the rise of mobile and wireless technologies, more sustainable networks are necessary to support such communications. These next generation networks can now be utilized to strengthen the growing era of the Internet of Things. Powering the Internet of Things With 5G Networks is a comprehensive reference source for the latest scholarly research on the progression and design of fifth generation networks and their role in supporting the Internet of Things. Including a range of perspectives on topics such as privacy and security, large scale monitoring, and scalable architectures, this book is ideally designed for technology developers, academics, researchers, and practitioners interested in the convergence of the Internet of Things and 5G networks.

IOT Technical Challenges and Solutions - Arpan Pal 2016-11-30

This practical resource highlights the systematic problems Internet of Things is encountering on its journey to mass adoption. Professionals are offered solutions to key questions about IoT systems today, including potential network scalability issues, storage, and computing. Security and privacy are explored and the value of sensor-collected data is explained. Costs of deployment and transformation are covered and the model-driven deployment of IoT systems is explored. Presenting a pragmatic real-world approach to IoT, this book covers technology components such as communication, computing, storage and mobility, as well as business insights and social implications.

Internet of Things (IoT) Applications for Enterprise Productivity - Koç, Erdinç 2020-03-13

Development in information and communication technologies has led to the advancement of business and enabled enterprises to produce on a global scale. Productivity is a key function in maintaining a competitive advantage in today’s market. The internet of things has rapidly become prevalent in the productivity efforts of businesses. Understanding these technologies and how to implement them into current business practices is vital for researchers and practitioners. Internet of Things (IoT) Applications for Enterprise Productivity is a collection of innovative research on the advancing methods productivity efforts of business through the implementation of the internet of things. While highlighting topics including employee motivation, enterprise productivity, and supply chain tracking, this book is ideally designed for manufacturing professionals, industrialists, engineers, managers, practitioners, academicians, and students seeking current research on enterprise production systems and its transformation using internet of things technologies.

Security, Privacy and Trust in the IoT Environment - Zaigham Mahmood 2019-05-30

The Internet of Things (IoT) is a network of devices and smart things that provides a pervasive environment in which people can interact with both the cyber and physical worlds. As the number and variety of connected objects continue to grow and the devices themselves become smarter, users’ expectations in terms of adaptive and self-governing digital environments are also on the rise. Although, this connectivity and the resultant smarter living is highly attractive to general public and profitable for the industry, there are also inherent concerns. The most challenging of these refer to the privacy and security of data, user trust of the digital systems, and relevant authentication mechanisms. These aspects call for novel network

architectures and middleware platforms based on new communication technologies; as well as the adoption of novel context-aware management approaches and more efficient tools and devices. In this context, this book explores central issues of privacy, security and trust with regard to the IoT environments, as well as technical solutions to help address them. The main topics covered include:

- Basic concepts, principles and related technologies
- Security/privacy of data, and trust issues
- Mechanisms for security, privacy, trust and authentication
- Success indicators, performance metrics and future directions.

This reference text is aimed at supporting a number of potential audiences, including

- Network Specialists, Hardware Engineers and Security Experts
- Students, Researchers, Academics and Practitioners.

Intelligent Systems and Applications - W.C.-C. Chu 2015-04-14

This book presents the proceedings of the International Computer Symposium 2014 (ICS 2014), held at Tunghai University, Taichung, Taiwan in December. ICS is a biennial symposium founded in 1973 and offers a platform for researchers, educators and professionals to exchange their discoveries and practices, to share research experiences and to discuss potential new trends in the ICT industry. Topics covered in the ICS 2014 workshops include: algorithms and computation theory; artificial intelligence and fuzzy systems; computer architecture, embedded systems, SoC and VLSI/EDA; cryptography and information security; databases, data mining, big data and information retrieval; mobile computing, wireless communications and vehicular technologies; software engineering and programming languages; healthcare and bioinformatics, among others. There was also a workshop on information technology innovation, industrial application and the Internet of Things. ICS is one of Taiwan's most prestigious international IT symposiums, and this book will be of interest to all those involved in the world of information technology.

Intelligent Technologies and Applications - Imran Sarwar Bajwa 2020-05-08

This book constitutes the refereed proceedings of the Second International Conference on Intelligent Technologies and Applications, INTAP 2019, held in Bahawalpur, Pakistan, in November 2019. The 60 revised full papers and 6 revised short papers presented were carefully reviewed and selected from 224 submissions. Additionally, the volume presents 1 invited paper. The papers of this volume are organized in topical sections on AI and health; sentiment analysis; intelligent applications; social media analytics; business intelligence; Natural Language Processing; information extraction; machine learning; smart systems; semantic web; decision support systems; image analysis; automated software engineering.

Techno-Societal 2018 - Prashant M. Pawar 2019-11-06

This book, divided in two volumes, originates from Techno-Societal 2018: the 2nd International Conference on Advanced Technologies for Societal Applications, Maharashtra, India, that brings together faculty members of various engineering colleges to solve Indian regional relevant problems under the guidance of eminent researchers from various reputed organizations. The focus is on technologies that help develop and improve society, in particular on issues such as the betterment of differently abled people, environment impact, livelihood, rural employment, agriculture, healthcare, energy, transport, sanitation, water, education. This conference aims to help innovators to share their best practices or products developed to solve specific local problems which in turn may help the other researchers to take inspiration to solve problems in their region. On the other hand, technologies proposed by expert researchers may find applications in different regions. This offers a multidisciplinary platform for researchers from a broad range of disciplines of Science, Engineering and Technology for reporting innovations at different levels.

Modern Approaches in Machine Learning & Cognitive Science: A Walkthrough - Vinit Kumar Gunjan 2022-04-22

This book provides a systematic and comprehensive overview of AI and machine learning which have got the ability to identify patterns in large and complex data sets. A remarkable success has been experienced in the last decade by emulating the brain computer interface. It presents the cognitive science methods and technologies that have played an important role at the core of practical solutions for a wide scope of tasks between handheld apps, industrial process control, autonomous vehicles, environmental policies, life sciences, playing computer games, computational theory, and engineering development. The chapters in this book focuses on audiences interested in machine learning, cognitive and neuro-inspired computational systems, their theories, mechanisms, and architecture, which underline human and animal behaviour, and their application to conscious and intelligent systems. In the current version, it focuses on the successful

implementation and step-by-step explanation of practical applications of the domain. It also offers a wide range of inspiring and interesting cutting-edge contributions on applications of machine learning and cognitive science such as healthcare products, medical electronics, and gaming.

Internet of Things (IoT) - BK Tripathy 2017-10-10

The term IoT, which was first proposed by Kevin Ashton, a British technologist, in 1999 has the potential to impact everything from new product opportunities to shop floor optimization to factory worker efficiency gains, that will power top-line and bottom-line gains. As IoT technology is being put to diversified use, the current technology needs to be improved to enhance privacy and built secure devices by adopting a security-focused approach, reducing the amount of data collected, increasing transparency and providing consumers with a choice to opt out. Therefore, the current volume has been compiled, in an effort to draw the various issues in IoT, challenges faced and existing solutions so far. Key Points:

- Provides an overview of basic concepts and technologies of IoT with communication technologies ranging from 4G to 5G and its architecture.
- Discusses recent security and privacy studies and social behavior of human beings over IoT.
- Covers the issues related to sensors, business model, principles, paradigms, green IoT and solutions to handle relevant challenges.
- Presents the readers with practical ideas of using IoT, how it deals with human dynamics, the ecosystem, the social objects and their relation.
- Deals with the challenges involved in surpassing diversified architecture, protocol, communications, integrity and security.

The Internet of Things: Breakthroughs in Research and Practice - Management Association, Information Resources 2017-02-14

The ubiquity of modern technologies has allowed for increased connectivity between people and devices across the globe. This connected infrastructure of networks creates numerous opportunities for applications and uses. The Internet of Things: Breakthroughs in Research and Practice is an authoritative reference source for the latest academic material on the interconnectivity of networks and devices in the digital era and examines best practices for integrating this advanced connectivity across multiple fields. Featuring extensive coverage on innovative perspectives, such as secure computing, regulatory standards, and trust management, this book is ideally designed for engineers, researchers, professionals, graduate students, and practitioners seeking scholarly insights on the Internet of Things.

Internet of Things from Hype to Reality - Ammar Rayes 2022

This revised textbook presents updated material on its core content: an end-to-end IoT architecture that is comprised of devices, network, compute, storage, platform, applications along with management and security components. As with the second edition, it is organized into six main parts: an IoT reference model; fog computing and the drivers; IoT management and applications; smart services in IoT; IoT standards; and case studies. This editions features include overhaul of the IoT Protocols (Chapter 5) to include an expanded treatment of low-power wide area networks including narrow band IoT (NB-IoT) protocol, updated IoT platforms and capabilities (Chapter 7) to include comparison of commercially available platforms (e.g. AWS IoT Platform, Google Cloud IoT Platform, Microsoft Azure IoT Platform, and PTC ThinkWorx), updated security (Chapter 8) to include approaches for securing IoT devices with examples of IoT devices used in security attacks and associated solutions including MUD and DICE, and finally new Appendix B to include six IoT project detailed for students.

Modeling and Design of Secure Internet of Things - Charles A. Kamhoua 2020-06-11

An essential guide to the modeling and design techniques for securing systems that utilize the Internet of Things Modeling and Design of Secure Internet of Things offers a guide to the underlying foundations of modeling secure Internet of Things' (IoT) techniques. The contributors— noted experts on the topic—also include information on practical design issues that are relevant for application in the commercial and military domains. They also present several attack surfaces in IoT and secure solutions that need to be developed to reach their full potential. The book offers material on security analysis to help with in understanding and quantifying the impact of the new attack surfaces introduced by IoT deployments. The authors explore a wide range of themes including: modeling techniques to secure IoT, game theoretic models, cyber deception models, moving target defense models, adversarial machine learning models in military and commercial domains, and empirical validation of IoT platforms. This important book: Presents information on game-theory analysis of cyber deception Includes cutting-edge research finding such as IoT

in the battlefield, advanced persistent threats, and intelligent and rapid honeynet generation Contains contributions from an international panel of experts Addresses design issues in developing secure IoT including secure SDN-based network orchestration, networked device identity management, multi-domain battlefield settings, and smart cities Written for researchers and experts in computer science and engineering, Modeling and Design of Secure Internet of Things contains expert contributions to provide the most recent modeling and design techniques for securing systems that utilize Internet of Things.

[An Industrial IoT Approach for Pharmaceutical Industry Growth](#) - Valentina Emilia Balas 2020-05-15

An Industrial IoT Approach for Pharmaceutical Industry Growth, Volume Two uses an innovative approach to explore how the Internet of Things (IoT) and big data can improve approaches and make discoveries. Rapid growth of the IoT has encouraged many companies in the manufacturing sector to make use of this technology to unlock its potential. Using clear language and real-world case studies, this book discusses systems level from both a human-factors point-of-view and the perspective of networking, databases, privacy and anti-spoofing. The wide variety in topics presented offers multiple perspectives on how to integrate the Internet of Things into pharmaceutical manufacturing. This book represents a useful resource for researchers in pharmaceutical sciences, information and communication technologies, and those who specialize in healthcare and pharmacovigilance. Emphasizes efficiency in pharmaceutical manufacturing through an IoT/Big Data approach Explores cutting-edge technologies through sensor enabled environments in the pharmaceutical industry Discusses system levels from both a human-factors point-of-view and the perspective of networking, databases, privacy and anti-spoofing

[Real-Life Applications of the Internet of Things](#) - Monika Mangla 2022-08-01

This new volume provides an overview of the Internet of Things along with its architectures, its vital technologies, and their uses in our daily life. The book explores the integration of IoT with other emerging technologies, such as blockchain and cloud. Topics in the volume cover the many powerful features and applications of IoT, such as for weather forecasting, in agriculture, in medical science, in surveillance systems, and much more. The first section of the book covers many of the issues and challenges that arise from the Internet of Things (IoT), exploring security challenges, such as attack detection and prevention systems, as well as energy efficiency and resource management in IoT. The volume also introduces the use of IoT and smart technology in agricultural management, in healthcare diagnosis and monitoring, and in the financial industry. Chapters also focus on surveillance network technology, the technology shift from television to video streaming apps, using IoT-fog computing for smart healthcare, detection of anomalies in climate conditions, and even detection of illegal wood logging activity.

The Role of IoT and Blockchain - Sanjay K. Kuanar 2022-03-10

This volume provides informative chapters on the emerging issues, challenges, and new methods and state-of-the-art technologies on the Internet of Things and blockchain technology. It presents case studies and solutions that can be applied in the current business scenario, resolving challenges and providing solutions by integrating IoT with blockchain technology. The chapters discuss how the Internet of Things (IoT) represents a revolution of the Internet that can connect nearly all environment devices over the Internet to share data to create novel services and applications for improving quality of life. Although the centralized IoT system provides countless benefits, it raises several challenges. The volume presents IoT techniques and methodologies, blockchain techniques and methodologies, and case studies and applications for data mining algorithms, heart rate monitoring, climate prediction, disease prediction, security issues, automotive supply chains, voting prediction, forecasting particulate matter pollution, customer relationship management, and more.

Recent Advances in Manufacturing, Automation, Design and Energy Technologies - Sendhil Kumar Natarajan 2021-10-11

This book comprises the proceedings of the 1st International Conference on Future Technologies in Manufacturing, Automation, Design and Energy 2020. The contents of this volume focus on recent technological advances in the field of manufacturing, automation, design and energy. Some of the topics covered include additive manufacturing, renewable energy resources, design automation, process automation and monitoring, etc. This volume will prove a valuable resource for those in academia and industry.

Internet of Things - Qusay F. Hassan 2017-12-15

Internet of Things: Challenges, Advances, and Applications provides a comprehensive introduction to IoT, related technologies, and common issues in the adoption of IoT on a large scale. It surveys recent technological advances and novel solutions for challenges in the IoT environment. Moreover, it provides detailed discussion of the utilization of IoT and its underlying technologies in critical application areas, such as smart grids, healthcare, insurance, and the automotive industry. The chapters of this book are authored by several international researchers and industry experts. This book is composed of 18 self-contained chapters that can be read, based on interest. Features: Introduces IoT, including its history, common definitions, underlying technologies, and challenges Discusses technological advances in IoT and implementation considerations Proposes novel solutions for common implementation issues Explores critical application domains, including large-scale electric power distribution networks, smart water and gas grids, healthcare and e-Health applications, and the insurance and automotive industries The book is an excellent reference for researchers and post-graduate students working in the area of IoT, or related areas. It also targets IT professionals interested in gaining deeper knowledge of IoT, its challenges, and application areas.

Building the Internet of Things with IPv6 and MIPv6 - Daniel Minoli 2013-06-17

"If we had computers that knew everything there was to know about things—using data they gathered without any help from us—we would be able to track and count everything, and greatly reduce waste, loss, and cost. We would know when things needed replacing, repairing or recalling, and whether they were fresh or past their best. The Internet of Things has the potential to change the world, just as the Internet did. Maybe even more so." —Kevin Ashton, originator of the term, Internet of Things An examination of the concept and unimagined potential unleashed by the Internet of Things (IoT) with IPv6 and MIPv6 What is the Internet of Things? How can it help my organization? What is the cost of deploying such a system? What are the security implications? Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications answers these questions and many more. This essential book explains the concept and potential that the IoT presents, from mobile applications that allow home appliances to be programmed remotely, to solutions in manufacturing and energy conservation. It features a tutorial for implementing the IoT using IPv6 and Mobile IPv6 and offers complete chapter coverage that explains: What is the Internet of Things? Internet of Things definitions and frameworks Internet of Things application examples Fundamental IoT mechanisms and key technologies Evolving IoT standards Layer 1/2 connectivity: wireless technologies for the IoT Layer 3 connectivity: IPv6 technologies for the IoT IPv6 over low power WPAN (6lowpan) Easily accessible, applicable, and not overly technical, Building the Internet of Things with IPv6 and MIPv6 is an important resource for Internet and ISP providers, telecommunications companies, wireless providers, logistics professionals, and engineers in equipment development, as well as graduate students in computer science and computer engineering courses.

Research Anthology on Privatizing and Securing Data - Management Association, Information Resources 2021-04-23

With the immense amount of data that is now available online, security concerns have been an issue from the start, and have grown as new technologies are increasingly integrated in data collection, storage, and transmission. Online cyber threats, cyber terrorism, hacking, and other cybercrimes have begun to take advantage of this information that can be easily accessed if not properly handled. New privacy and security measures have been developed to address this cause for concern and have become an essential area of research within the past few years and into the foreseeable future. The ways in which data is secured and privatized should be discussed in terms of the technologies being used, the methods and models for security that have been developed, and the ways in which risks can be detected, analyzed, and mitigated. The Research Anthology on Privatizing and Securing Data reveals the latest tools and technologies for privatizing and securing data across different technologies and industries. It takes a deeper dive into both risk detection and mitigation, including an analysis of cybercrimes and cyber threats, along with a sharper focus on the technologies and methods being actively implemented and utilized to secure data online. Highlighted topics include information governance and privacy, cybersecurity, data protection, challenges in big data, security threats, and more. This book is essential for data analysts, cybersecurity professionals,

data scientists, security analysts, IT specialists, practitioners, researchers, academicians, and students interested in the latest trends and technologies for privatizing and securing data.

Artificial Intelligence of Things for Smart Green Energy Management - Sarah El Himer 2022-07-25

This book is intended to assist in the development of smart and efficient green energy solutions. It introduces energy systems, power generation, and power demands which able to minimise generation costs, power loss or environmental effects. It proposes cutting-edge solutions and approaches based on recent technologies such as intelligent renewable energy systems (wind and solar). These solutions, applied to different sectors, can provide a solid basis for meeting the needs of both developed and developing countries. The book provides a collection of contributions including new techniques, methods, algorithms, practical solutions and models based on applying artificial intelligence and the Internet of things into green energy management systems. It provides a comprehensive reference for researchers, scholars and industry in the field of green energy and computational intelligence.

Internet of Things - Simone Cirani 2018-11-12

This book addresses researchers and graduate students at the forefront of study/research on the Internet of Things (IoT) by presenting state-of-the-art research together with the current and future challenges in building new smart applications (e.g., Smart Cities, Smart Buildings, and Industrial IoT) in an efficient, scalable, and sustainable way. It covers the main pillars of the IoT world (Connectivity, Interoperability, Discoverability, and Security/Privacy), providing a comprehensive look at the current technologies, procedures, and architectures.

Rethinking the Internet of Things - Francis daCosta 2013-12-30

Apress is proud to announce that *Rethinking the Internet of Things* was a 2014 Jolt Award Finalist, the highest honor for a programming book. And the amazing part is that there is no code in the book. Over the next decade, most devices connected to the Internet will not be used by people in the familiar way that personal computers, tablets and smart phones are. Billions of interconnected devices will be monitoring the environment, transportation systems, factories, farms, forests, utilities, soil and weather conditions, oceans and resources. Many of these sensors and actuators will be networked into autonomous sets, with much of the information being exchanged machine-to-machine directly and without human involvement. Machine-to-machine communications are typically terse. Most sensors and actuators will report or act upon small pieces of information - "chirps". Burdening these devices with current network protocol stacks is inefficient, unnecessary and unduly increases their cost of ownership. This must change. The architecture of the Internet of Things must evolve now by incorporating simpler protocols toward at the edges of the network, or remain forever inefficient. *Rethinking the Internet of Things* describes reasons why we must rethink current approaches to the Internet of Things. Appropriate architectures that will coexist with existing networking protocols are described in detail. An architecture comprised of integrator functions, propagator nodes, and end devices, along with their interactions, is explored. What you'll learn Discusses the difference between the "normal" Internet and the Internet of Things. Describes a new architecture and its components in the "chirp" context. Explains the shortcomings of IP for IoT. Describes the anatomy of the IoT. Describes how to build a suitable network to maximize the amazing potential of the IoT. Who this book is for Thought leaders, executives, architectural, standards and development leaders in the evolving IoT industry. Corporations and organizations whose commercial products could be adapted simply to be functioning devices on the IOT while saving billions of dollars in unnecessary costs or proprietary designs. Those who wish to capitalize on technology change and those interested in the Internet, its capabilities and the need to improve it. Table of Contents Foreword Preface Chapter Goal: The reader will understand the new demands and opportunities of the Internet of Things (IoT). The preface introduces the idea of a new, simplified architectural approach that draws on nature. Chapter 1: It's Different Out Here Chapter Goal: Reader should understand the difference between traditional Internet networking and the Internet of Things. What are the unique characteristics of the IoT that demand a new architecture? Why traditional architectures such as IP are a poor fit. Characteristics of an IoT-optimized architecture. Chapter 2: Anatomy of the Internet of Things Chapter Goal: Reader will understand the underlying principles of the emerging IoT architecture. Fundamental concepts are: the division of networking complexity among different devices; the make-up of the "Chirp" and how they are propagated; distinctions between transport

and functional topologies; the concept of neighborhoods or zones of interest. Chapter 3: On the Edge Chapter Goal: Reader will learn the principles and characteristics of the End Devices in the IoT and how these will often differ from our present understanding of the Smartphone, tablet, and laptop. How the minimal networking needs of many IoT devices dictate elements of the architecture. Chapter 4: Building a Web of Things Chapter Goal: Reader will learn the characteristics and functionality of the Propagator node in the IoT Architecture. Some communications principles are introduced which will be more fully explored in Chapter 6. Chapter 5: Small Data, Big Data, and Human Interaction Chapter Goal: Reader will understand the role of Integrator functions in the IoT, the point in the IoT where humans interact to gain information from IoT data and to set parameters and control end devices. An explanation of zones of interest and neighborhoods, with a discussion of incorporating "small data" from chirps into big data analysis. Chapter 6: An Architecture for the Frontier Chapter Goal: Reader will gain an understanding of the challenges inherent in a communications architecture for the massive scale of the IoT. Exploiting the opportunities inherent in a machine-to-machine environment, a much simpler architecture is described in detail that readily scales to the required scope. This chapter adds technical depth to ideas introduced in Chapters 3-5. Chapter 7: IoT Examples and Applications Chapter Goal: Reader will learn about current and emerging applications in the Internet of Things. Reference will be made to new applications enabled by the simpler architecture described in this book that are difficult or not possible with traditional networking protocols. Chapter 8: Blueprint to the Internet of Things Chapter Goal: Exploring the steps to IoT deployment. Standards based versus ad hoc approaches, call for industry cooperation and consortia. Intermediate incremental steps to broader adoption.

6LoWPAN - Zach Shelby 2011-08-17

"It is stunningly thorough and takes readers meticulously through the design, configuration and operation of IPv6-based, low-power, potentially mobile radio-based networking." Vint Cerf, Vice President and Chief Internet Evangelist, Google This book provides a complete overview of IPv6 over Low Power Wireless Area Network (6LoWPAN) technology In this book, the authors provide an overview of the 6LoWPAN family of standards, architecture, and related wireless and Internet technology. Starting with an overview of the IPv6 'Internet of Things', readers are offered an insight into how these technologies fit together into a complete architecture. The 6LoWPAN format and related standards are then covered in detail. In addition, the authors discuss the building and operation of 6LoWPAN networks, including bootstrapping, routing, security, Internet integration, mobility and application protocols. Furthermore, implementation aspects of 6LoWPAN are covered. Key Features: Demonstrates how the 6LoWPAN standard makes the latest Internet protocols available to even the most minimal embedded devices over low-rate wireless networks Provides an overview of the 6LoWPAN standard, architecture and related wireless and Internet technology, and explains the 6LoWPAN protocol format in detail Details operational topics such as bootstrapping, routing, security, Internet integration, mobility and application protocols Written by expert authors with vast experience in the field (industrial and academic) Includes an accompanying website containing tutorial slides, course material and open-source code with examples (<http://6lowpan.net>) 6LoWPAN: The Wireless Embedded Internet is an invaluable reference for professionals working in fields such as telecommunications, control, and embedded systems. Advanced students and teachers in electrical engineering, information technology and computer science will also find this book useful.

Securing the Internet of Things: Concepts, Methodologies, Tools, and Applications - Management Association, Information Resources 2019-09-06

The ubiquity of modern technologies has allowed for increased connectivity between people and devices across the globe. This connected infrastructure of networks creates numerous opportunities for applications and uses. As the applications of the internet of things continue to progress so do the security concerns for this technology. The study of threat prevention in the internet of things is necessary as security breaches in this field can ruin industries and lives. *Securing the Internet of Things: Concepts, Methodologies, Tools, and Applications* is a vital reference source that examines recent developments and emerging trends in security and privacy for the internet of things through new models, practical solutions, and technological advancements related to security. Highlighting a range of topics such as cloud security, threat detection, and open source software, this multi-volume book is ideally designed for engineers, IT

consultants, ICT procurement managers, network system integrators, infrastructure service providers, researchers, academics, and professionals interested in current research on security practices pertaining to the internet of things.

Harnessing the Internet of Things (IoT) for a Hyper-Connected Smart World - Indu Bala 2022-10-06

Showcasing the diverse ways that IoT can be employed for improvement in many areas of contemporary life, this new volume explores a multitude of IoT applications that provide advanced solutions for real-world problems. The selection of topics includes network on chip as the new paradigm for system on chip integration for maintaining high performance for IoT applications; new router designs to increase speed; and the challenges of wireless underground sensor networks, which have a wide range of applications in military, underground sensing, testing soil traits and moisture content, pollution control and location detection, security, and detection of natural calamities. Various state-of-the-art techniques such as optimization schemes, blockchain, machine learning, orthogonal frequency division multiplexing, etc., are also discussed in the context of cognitive IoT. The volume considers the uses of IoT in agriculture, discussing challenges along with solutions with the help of the latest technical smart tools to uplift the farming community, specifically IoT applications for information gathering to improve yield productivity, food and crop quality and sustainability, monitoring toxic substances and soil properties, etc. The book also covers a broad spectrum of IoT applications in the educational industry along with the challenges associated with them and how to facilitate the use of smart classroom technology. A chapter on IoT in the healthcare industry presents an IoT-based GPS-enabled smart jacket design to monitor heart rate, sugar level, blood pressure, fever, and stress level. The authors also present an IoT-based Peltier air conditioner design that overcomes the limitations of existing HVAC framework, a review of various energy harvesting techniques to generate electrical power from non-conventional power sources with their merits and demerits, and much more.

Europe and MENA Cooperation Advances in Information and Communication Technologies -

Álvaro Rocha 2016-09-25

This book contains a selection of articles from The Europe, Middle East and North Africa Conference on Technology and Security to Support Learning 2016 (EMENA-TSSL'16), held between the 3th and 5th of October at Saidia, Oujda, Morocco. EMENA-TSSL'16 is a global forum for researchers and practitioners to

present and discuss recent results and innovations, current trends, professional experiences and challenges in Information & Communication Technologies, and Security to support Learning. The main topics covered are: A) Online Education; B) Emerging Technologies in Education; C) Artificial Intelligence in Education; D) Gamification and Serious games; E) Network & Web Technologies Applications; F) Online experimentation and Virtual Laboratories; G) Multimedia Systems and Applications; H) Security and Privacy; I) Multimedia, Computer Vision and Image Processing; J) Cloud, Big Data Analytics and Applications; K) Human-Computer Interaction; L) Software Systems, Architectures, Applications and Tools; M) Online Languages and Natural Language Processing N) E-content Development, Assessment and Plagiarism; O) Secure E-Learning Development and Auditing; P) Internet of Things and Wireless Sensor Networks.

Computational Intelligence for Multimedia Big Data on the Cloud with Engineering Applications - Arun Kumar Sangaiah 2018-08-21

Computational Intelligence for Multimedia Big Data on the Cloud with Engineering Applications covers timely topics, including the neural network (NN), particle swarm optimization (PSO), evolutionary algorithm (GA), fuzzy sets (FS) and rough sets (RS), etc. Furthermore, the book highlights recent research on representative techniques to elaborate how a data-centric system formed a powerful platform for the processing of cloud hosted multimedia big data and how it could be analyzed, processed and characterized by CI. The book also provides a view on how techniques in CI can offer solutions in modeling, relationship pattern recognition, clustering and other problems in bioengineering. It is written for domain experts and developers who want to understand and explore the application of computational intelligence aspects (opportunities and challenges) for design and development of a data-centric system in the context of multimedia cloud, big data era and its related applications, such as smarter healthcare, homeland security, traffic control trading analysis and telecom, etc. Researchers and PhD students exploring the significance of data centric systems in the next paradigm of computing will find this book extremely useful. Presents a brief overview of computational intelligence paradigms and its significant role in application domains Illustrates the state-of-the-art and recent developments in the new theories and applications of CI approaches Familiarizes the reader with computational intelligence concepts and technologies that are successfully used in the implementation of cloud-centric multimedia services in massive data processing Provides new advances in the fields of CI for bio-engineering application