Security And Privacy In Internet Of Things Iots Models Algorithms And Implementations

Securing Privacy in the Internet Age contains cutting-edge analyses of Internet privacy and security from some of the nation's leading legal practitioners and academics.

Smart Cities Cybersecurity and Privacy examines the latest research developments and their outcomes for safe, secure, and trusting smart cities residents. Smart cities improve the quality of life of citizens in their energy and water usage, healthcare, environmental impact, transportation needs, and many other critical city services. Recent advances in hardware and software, have fueled the rapid growth and deployment of ubiquitous connectivity between a city’s physical and cyber components. This connectivity however also opens up many security vulnerabilities that must be mitigated. Smart Cities Cybersecurity and Privacy helps researchers, engineers, and city planners develop adaptive, robust, scalable, and reliable security and privacy smart city applications that can mitigate the negative implications associated with cyber-attacks and potential privacy invasion. It provides insights into networking and security architectures, designs, and models for the secure operation of smart city applications. Consolidates in one place state-of-the-art academic and industry research Provides a holistic and systematic framework for design, evaluating, and deploying the latest security solutions for smart cities Improves understanding and collaboration among all smart city stakeholders to develop more secure smart city architectures

Provides the authoritative and up-to-date information required for securing IoT architecture and applications The vast amount of data generated by the Internet of Things (IoT) has made information security vital for not only personal privacy, but also for the sustainability of the IoT itself. Security and Privacy in the Internet of Things brings together high-quality research on IoT information security models, architectures, techniques, and application domains. This concise yet comprehensive volume explores state-of-the-art mitigations in IoT security while addressing important privacy challenges across different IoT layers. Divided into three parts, the book provides timely coverage of IoT architecture, security technologies and mechanisms, and applications. The authors outline emerging trends in IoT security and privacy with a focus on areas such as smart homes and cities, e-health, critical infrastructure, and industrial applications. Topics include authentication and access control, the use of blockchains for IoT transactions, attack detection and prevention, energy-efficient management of IoT objects, and secure integration of IoT and Cloud computing. Presenting the current body of knowledge in a single volume, Security and Privacy in the Internet of Things: Discusses a broad range of IoT architectures and applications Covers both the logical and physical security of IoT devices Examines IoT security and privacy standards, protocols, and approaches Addresses the secure integration of IoT and social networks Describes privacy preserving techniques, intrusion detection systems, and threat and vulnerability analyses Security and Privacy in the Internet of Things: Architectures, Techniques, and Applications is essential reading for researchers, industry practitioners, and students involved in IoT development and deployment.

Distributed and peer-to-peer (P2P) applications are increasing daily, and cyberattacks are constantly adopting new mechanisms to threaten the security and privacy of users in these Internet of Things (IoT) environments. Blockchain, a decentralized cryptographic-based technology, is a promising element for IoT security in manufacturing, finance, healthcare, supply chain, identity management, e-governance, defence, education, banking, and trading. Blockchain has the potential to secure IoT through repetition, changeless capacity, and encryption. Blockchain for Information Security and Privacy provides essential knowledge of blockchain usage in the mainstream areas of security, trust, and privacy in decentralized domains. This book is a source of technical information regarding blockchain-oriented software

and applications. It provides tools to researchers and developers in both computing and software engineering to develop solutions and automated systems that can promote security, trust, and privacy in cyberspace. FEATURES Applying blockchain-based secured data management in confidential cyberdefense applications Securing online voting systems using blockchain Safeguarding electronic healthcare record (EHR) management using blockchain Impacting security and privacy in digital identity management Using blockchain-based security and privacy for smart contracts By providing an overview of blockchain technology application domains in IoT (e.g., vehicle web, power web, cloud internet, and edge computing), this book features side-by-side comparisons of modern methods toward secure and privacy-preserving blockchain technology. It also examines safety objectives, efficiency, limitations, computational complexity, and communication overhead of various applications using blockchain. This book also addresses the combination of blockchain and industrial IoT. It explores novel various-levels of information sharing systems.

Understanding, appreciating and taking corrective steps to maintain and enhance social and ethical responsibility in the information age is important not only because of our increased dependence on information and communication technologies, but also because information and communication technologies pose complex challenges. Ethical Issues of Information Systems strives to address these pertinent issues. This scholarly and academic book provides insight on many topics of debate and discussion in the field and lends the most recent research in the field of IT ethics and social responsibility.

Discusses Web browsing, cookies, anti-virus software, e-mail attachments, Web servers, public key infrastructure, secure remote access, virtual private networks, and cybercrime.

Securing the Internet of Things provides network and cybersecurity researchers and practitioners with both the theoretical and practical knowledge they need to know regarding security in the Internet of Things (IoT). This booming field, moving from strictly research to the marketplace, is advancing rapidly, yet security issues abound. This book explains the fundamental concepts of IoT security, describing practical solutions that account for resource limitations at IoT end-node, hybrid network architecture, communication protocols, and application characteristics. Highlighting the most important potential IoT security risks and threats, the book covers both the general theory and practical implications for people working in security in the Internet of Things. Helps researchers and practitioners understand the security architecture in IoT and the state-of-the-art in IoT security countermeasures Explores how the threats in IoT are different from traditional ad hoc or infrastructural networks Provides a comprehensive discussion on the security challenges and solutions in RFID, WSNs, and IoT Contributed material by Dr. Imed Romdhani

A brand-new edition of the popular introductory textbook that explores how computer hardware, software, and networks work Computers are everywhere. Some are highly visible, in laptops, tablets, cell phones, and smart watches. But most are invisible, like those in appliances, cars, medical equipment, transportation systems, power grids, and weapons. We never see the myriad computers that quietly collect, share, and sometimes leak personal data about us. Governments and companies increasingly use computers to monitor what we do. Social networks and advertisers know more about us than we should be comfortable with. Criminals have all-too-easy access to our data. Do we truly understand the power of computers in our world? In this updated edition of Understanding the Digital World, Brian Kernighan explains how computer hardware, software, and networks work. Topics include how computers are built and how they compute; what programming is; how the Internet and web operate; and how all of these affect security, privacy, property, and other important social, political, and economic issues. Kernighan touches on fundamental ideas from computer science and some of the inherent limitations of computers, and new sections in the book explore Python programming, big data, machine learning, and much more. Numerous color

illustrations, notes on sources for further exploration, and a glossary explaining technical terms and buzzwords are included. Understanding the Digital World is a must-read for readers of all backgrounds who want to know more about computers and communications.

A Beginner's Guide to Internet of Things Security focuses on security issues and developments in the Internet of Things (IoT) environment. The wide-ranging applications of IoT, including home appliances, transportation, logistics, healthcare, and smart cities, necessitate security applications that can be applied to every domain with minimal cost. IoT contains three layers: application layer, middleware layer, and perception layer. The security problems of each layer are analyzed separately to identify solutions, along with the integration and scalability issues with the cross-layer architecture of IoT. The book discusses the state-of-the-art authentication-based security schemes, which can secure radio frequency identification (RFID) tags, along with some security models that are used to verify whether an authentication scheme is secure against any potential security risks. It also looks at existing authentication schemes and security models with their strengths and weaknesses. The book uses statistical and analytical data and explains its impact on the IoT field, as well as an extensive literature survey focusing on trust and privacy problems. The open challenges and future research direction discussed in this book will help to further academic researchers and industry professionals in the domain of security. Dr. Brij B. Gupta is an assistant professor in the Department of Computer Engineering, National Institute of Technology, Kurukshetra, India. Ms. Aakanksha Tewari is a PhD Scholar in the Department of Computer Engineering, National Institute of Technology, Kurukshetra, India.

Mobile Security and Privacy: Advances, Challenges and Future Research Directions provides the first truly holistic view of leading edge mobile security research from Dr. Man Ho Au and Dr. Raymond Choo—leading researchers in mobile security. Mobile devices and apps have become part of everyday life in both developed and developing countries. As with most evolving technologies, mobile devices and mobile apps can be used for criminal exploitation. Along with the increased use of mobile devices and apps to access and store sensitive, personally identifiable information (PII) has come an increasing need for the community to have a better understanding of the associated security and privacy risks. Drawing upon the expertise of world-renowned researchers and experts, this volume comprehensively discusses a range of mobile security and privacy topics from research, applied, and international perspectives, while aligning technical security implementations with the most recent developments in government, legal, and international environments. The book does not focus on vendor-specific solutions, instead providing a complete presentation of forward-looking research in all areas of mobile security. The book will enable practitioners to learn about upcoming trends, scientists to share new directions in research, and government and industry decision-makers to prepare for major strategic decisions regarding implementation of mobile technology security and privacy. In

addition to the state-of-the-art research advances, this book also discusses prospective future research topics and open challenges. Presents the most current and leading edge research on mobile security and privacy, featuring a panel of top experts in the field Provides a strategic and international overview of the security issues surrounding mobile technologies Covers key technical topics and provides readers with a complete understanding of the most current research findings along with future research directions and challenges Enables practitioners to learn about upcoming trends, scientists to share new directions in research, and government and industry decision-makers to prepare for major strategic decisions regarding the implementation of mobile technology security and privacy initiatives

The Internet of Things (IoT), with its technological advancements and massive innovations, is building the idea of inter-connectivity among everyday life objects. With an explosive growth in the number of Internet-connected devices, the implications of the idea of IoT on enterprises, individuals, and society are huge. IoT is getting attention from both academia and industry due to its powerful real-time applications that raise demands to understand the entire spectrum of the field. However, due to increasing security issues, safeguarding the IoT ecosystem has become an important concern. With devices and information becoming more exposed and leading to increased attack possibilities, adequate security measures are required to leverage the benefits of this emerging concept. Internet of Things Security: Principles, Applications, Attacks, and Countermeasures is an extensive source that aims at establishing an understanding of the core concepts of IoT among its readers and the challenges and corresponding countermeasures in the field. Key features: Containment of theoretical aspects, as well as recent empirical findings associated with the underlying technologies Exploration of various challenges and trade-offs associated with the field and approaches to ensure security, privacy, safety, and trust across its key elements Vision of exciting areas for future research in the field to enhance the overall productivity This book is suitable for industrial professionals and practitioners, researchers, faculty members, and students across universities who aim to carry out research and development in the field of IoT security.

This book, written by leaders in the protection field of critical infrastructures, provides an extended overview of the technological and operative advantages together with the security problems and challenges of the new paradigm of the Internet of Things in today’s industry, also known as the Industry Internet of Things (IIoT). The incorporation of the new embedded technologies and the interconnected networking advances in the automation and monitoring processes, certainly multiplies the functional complexities of the underlying control system, whilst increasing security and privacy risks. The critical nature of the application context and its relevance for the well-being of citizens and their economy, attracts the attention of multiple, advanced attackers, with stealthy

abilities to evade security policies, ex-filter information or exploit vulnerabilities. Some real-life events and registers in CERTs have already clearly demonstrated how the control industry can become vulnerable to multiple types of advanced threats whose focus consists in hitting the safety and security of the control processes. This book, therefore, comprises a detailed spectrum of research papers with highly analytical content and actuation procedures to cover the relevant security and privacy issues such as data protection, awareness, response and resilience, all of them working at optimal times. Readers will be able to comprehend the construction problems of the fourth industrial revolution and are introduced to effective, lightweight protection solutions which can be integrated as part of the new IIoT-based monitoring ecosystem.

In recent years, the rising complexity of Internet of Things (IoT) systems has increased their potential vulnerabilities and introduced new cybersecurity challenges. In this context, state of the art methods and technologies for security risk assessment have prominent limitations when it comes to large scale, cyber-physical and interconnected IoT systems. Risk assessments for modern IoT systems must be frequent, dynamic and driven by knowledge about both cyber and physical assets. Furthermore, they should be more proactive, more automated, and able to leverage information shared across IoT value chains. This book introduces a set of novel risk assessment techniques and their role in the IoT Security risk management process. Specifically, it presents architectures and platforms for end-to-end security, including their implementation based on the edge/fog computing paradigm. It also highlights machine learning techniques that boost the automation and proactiveness of IoT security risk assessments. Furthermore, blockchain solutions for open and transparent sharing of IoT security information across the supply chain are introduced. Frameworks for privacy awareness, along with technical measures that enable privacy risk assessment and boost GDPR compliance are also presented. Likewise, the book illustrates novel solutions for security certification of IoT systems, along with techniques for IoT security interoperability. In the coming years, IoT security will be a challenging, yet very exciting journey for IoT stakeholders, including security experts, consultants, security research organizations and IoT solution providers. The book provides knowledge and insights about where we stand on this journey. It also attempts to develop a vision for the future and to help readers start their IoT Security efforts on the right foot.

A compelling argument that the Internet of things threatens human rights and security "Sobering and important."--Financial Times, "Best Books of 2020: Technology" The Internet has leapt from human-facing display screens into the material objects all around us. In this so-called Internet of things--connecting everything from cars to cardiac monitors to home appliances--there is no longer a meaningful distinction between physical and virtual worlds. Everything is connected. The social and economic benefits are tremendous, but there is a downside: an outage in cyberspace can result not only in loss of communication

but also potentially in loss of life. Control of this infrastructure has become a proxy for political power, since countries can easily reach across borders to disrupt real-world systems. Laura DeNardis argues that the diffusion of the Internet into the physical world radically escalates governance concerns around privacy, discrimination, human safety, democracy, and national security, and she offers new cyber-policy solutions. In her discussion, she makes visible the sinews of power already embedded in our technology and explores how hidden technical governance arrangements will become the constitution of our future.

This book provides a concise yet comprehensive overview of computer and Internet security, suitable for a one-term introductory course for junior/senior undergrad or first-year graduate students. It is also suitable for self-study by anyone seeking a solid footing in security – including software developers and computing professionals, technical managers and government staff. An overriding focus is on brevity, without sacrificing breadth of core topics or technical detail within them. The aim is to enable a broad understanding in roughly 350 pages. Further prioritization is supported by designating as optional selected content within this. Fundamental academic concepts are reinforced by specifics and examples, and related to applied problems and real-world incidents. The first chapter provides a gentle overview and 20 design principles for security. The ten chapters that follow provide a framework for understanding computer and Internet security. They regularly refer back to the principles, with supporting examples. These principles are the conceptual counterparts of security-related error patterns that have been recurring in software and system designs for over 50 years. The book is “elementary” in that it assumes no background in security, but unlike “soft” high-level texts it does not avoid low-level details, instead it selectively dives into fine points for exemplary topics to concretely illustrate concepts and principles. The book is rigorous in the sense of being technically sound, but avoids both mathematical proofs and lengthy source-code examples that typically make books inaccessible to general audiences. Knowledge of elementary operating system and networking concepts is helpful, but review sections summarize the essential background. For graduate students, inline exercises and supplemental references provided in per-chapter endnotes provide a bridge to further topics and a springboard to the research literature; for those in industry and government, pointers are provided to helpful surveys and relevant standards, e.g., documents from the Internet Engineering Task Force (IETF), and the U.S. National Institute of Standards and Technology.

Security and Privacy in the Internet of ThingsCRC Press

Most of the devices in the Internet of Things will be battery powered sensor devices. All the operations done on battery powered devices require minimum computation. Secure algorithms like RSA become useless in the Internet of Things environment. Elliptic curve based cryptography emerges as a best solution for this problem because it provides higher security in smaller key size compare to RSA. This book focuses on the use of Elliptic Curve Cryptography with different authentication architectures and authentication schemes using various security algorithms. It also includes a review of the math required for security and understanding Elliptic

Curve Cryptography.

This book provides an overview of the most recent developments in Internet of Things (IoT) security and data protection. It presents the results of several international research projects addressing this topic from complementary angles. It starts by analyzing the main privacy and security threats on IoT, as well as the evolution of data protection norms, such as the European General Data Protection Regulation (GDPR), and their impact on IoT. Through a comprehensive and systematic approach, the contributors present new perspectives on IoT & Cloud Computing security requirements. They discuss the most recent approach to support trusted IoT, including new models of privacy risk assessment, labeling and certification, and contractual tools (such as Privacy PACT). Practical implementations, such as in the European Large Scale Pilots on IoT for Smart Cities (Synchronicity), are presented, explaining how they address security, privacy and data protection. Finally, innovative models to secure IoT systems are presented for the network and end-nodes security, including network threats analysis.

The Handbook of Privacy Studies is the first book in the world that brings together several disciplinary perspectives on privacy, such as the legal, ethical, medical, informatics and anthropological perspective. Privacy is in the news almost every day: mass surveillance by intelligence agencies, the use of social media data for commercial profit and political microtargeting, password hacks and identity theft, new data protection regimes, questionable reuse of medical data, and concerns about how algorithms shape the way we think and decide. This book offers interdisciplinary background information about these developments and how to understand and properly evaluate them. The book is set up for use in interdisciplinary educational programmes. Each chapter provides a structured analysis of the role of privacy within that discipline, its characteristics, themes and debates, as well as current challenges. Disciplinary approaches are presented in such a way that students and researchers from every scientific background can follow the argumentation and enrich their own understanding of privacy issues.

This book provides a comprehensive study of the security and privacy research advancements in Internet of Things (IoT). The book lays the context for discussion by introducing the vulnerable intrinsic features of IoT. By providing a comprehensive discussion of the vulnerable features, the book highlights the problem areas of IoT related to security and privacy. • Covers all aspects of security • Algorithms, protocols and technologies used in IoT have been explained and the security flaws in them analyzed with solutions • Discusses ways for achieving better access control and trust in the IoT ecosystem • Contributes exhaustive strategic plans to deal with security issues of IoT • Gathers contributions from leading-edge researchers from academia and industry Graduates, researchers, people from the industry and security professionals who want to explore the IoT security field will find this book useful. The book will give an in-depth insight in to what has happened, what new is happening and what opportunities exist in the field.

The Internet of Things (IoT) has attracted strong interest from both academia and industry. Unfortunately, it has also attracted the attention of hackers. Security and Privacy in Internet of Things (IoTs): Models, Algorithms, and Implementations brings together some of the top IoT security experts from around the world who contribute their knowledg

In this edited book, the authors delineate the challenges of building accountability into the Internet of Things and solutions for delivering on this critical societal challenge. They explain how the accountability principle impacts IoT development by presenting empirical studies of accountability in action.

Fully updated and revised, this leading guide on Internet privacy, anonymity and security contains all the practical information you need to inform and protect yourself. In this comprehensive yet easy-to-read guide for Windows users, you will quickly learn how to: stop search engines, social media and other powerful Internet players from tracking and profiling

your online activities gain unrestricted access to all the content and downloads the Internet has to offer use social media to stay connected with friends in ways that don't compromise your privacy or safety keep hackers, identity thieves and adversaries from gaining access to your computer use the best (and often free!) privacy, anonymity and security apps that really work mask your IP address with a proxy, The Onion Router (Tor) or a virtual private network (VPN) use encryption to keep your digital items, downloads and personal information completely hidden and safe prevent surveillance and the monitoring of your activities by Internet service providers (ISP), governments, adversaries and other unwelcome snoops enjoy all the benefits (and downloads) of torrent file-sharing and Usenet newsgroups while staying protected and anonymous get rid of trace and hidden data on your computer that exposes your private activities conduct checks on how private your online activities and devices really are From your small investment in this book, you will benefit for years to come. After all, your privacy and security are priceless.

IoT is empowered by various technologies used to detect, gather, store, act, process, transmit, oversee, and examine information. The combination of emergent technologies for information processing and distributed security, such as Cloud computing, Artificial intelligence, and Blockchain, brings new challenges in addressing distributed security methods that form the foundation of improved and eventually entirely new products and services. As systems interact with each other, it is essential to have an agreed interoperability standard, which is safe and valid. This book aims at providing an introduction by illustrating state-of-the-art security challenges and threats in IoT and the latest developments in IoT with Cloud, AI, and Blockchain security challenges. Various application case studies from domains such as science, engineering, and healthcare are introduced, along with their architecture and how they leverage various technologies Cloud, AI, and Blockchain. This book provides a comprehensive guide to researchers and students to design IoT integrated AI, Cloud, and Blockchain projects and to have an overview of the next generation challenges that may arise in the coming years.

In this mind-altering romp—where the term “Metaverse” was first coined—you’ll experience a future America so bizarre, so outrageous, you’ll recognize it immediately • One of Time’s 100 best English-language novels Only once in a great while does a writer come along who defies comparison—a writer so original he redefines the way we look at the world. Neal Stephenson is such a writer and Snow Crash is such a novel, weaving virtual reality, Sumerian myth, and just about everything in between with a cool, hip cybersensibility to bring us the gigathriller of the information age. In reality, Hiro Protagonist delivers pizza for Uncle Enzo’s CosoNostra Pizza Inc., but in the Metaverse he’s a warrior prince. Plunging headlong into the enigma of a new computer virus that’s striking down hackers everywhere, he races along the neon-lit streets on a search-and-destroy mission for the shadowy virtual villain threatening to bring about infocalypse. Praise for Snow Crash “[Snow Crash is] a cross between Neuromancer and Thomas Pynchon’s Vineland. This is no mere hyperbole.”—The San Francisco Bay Guardian “Fast-forward free-style mall mythology for the twenty-first century.”—William Gibson “Brilliantly realized . . . Stephenson turns out to be an engaging guide to an onrushing tomorrow.”—The New York Times Book Review

The purpose of this edited book is to present and showcase the basic fundamentals, applications, and integration of both IoT and Blockchain. The trend of applying Blockchain to IoT is rapidly growing because it helps to overcome various challenges faced by IoT, from smart manufacturing to unmanned aerial vehicles. Thise book aims to showcase the basics of both IoT and Blockchain as well as the integration and challenges for existing practitioners. Thise book initiates conversations among

technologists, engineers, scientists, and clinicians to synergize their efforts in producing low-cost, high-performance, highly efficient, deployable IoT systems. Thise book is theory-based and is useful for engineers from various disciplines, including industrial engineering, computer science, electronics, telecommunications, electrical, agricultural, and cybersecurity, along with researchers, professionals, and students.

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.

The Internet of Things (IoT) can be defined as any network of things capable of generating, storing and exchanging data, and in some cases acting on it. This new form of seamless connectivity has many applications: smart cities, smart grids for energy management, intelligent transport, environmental monitoring, healthcare systems, etc. and EU policymakers were quick to realize that machine-to-machine communication and the IoT were going to be vital to economic development. It was also clear that the security of such systems would be of paramount importance and, following the European Commission’s Cybersecurity Strategy of the European Union in 2013, the EU’s Horizon 2020 programme was set up to explore available options and possible approaches to addressing the security and privacy issues of the IoT. This book presents 10 papers which have emerged from the research of the Horizon 2020 and CHIST-ERA programmes, and which address a wide cross-section of projects ranging from the secure management of personal data and the specific challenges of the IoT with respect to the GDPR, through access control within a highly dynamic IoT environment and increasing trust with distributed ledger technologies, to new cryptographic approaches as a counter-measure for side-channel attacks and the vulnerabilities of IoT-based ambient assisted living systems. The security and safety of the Internet of Things will remain high on the agenda of policymakers for the foreseeable future, and this book provides an overview for all those with an interest in the field.

How the enabling technologies in 5G as an integral or as a part can seamlessly fuel the

IoT revolution is still very challenging. This book presents the state-of-the-art solutions to the theoretical and practical challenges stemming from the integration of 5G enabling technologies into IoTs in support of a smart 5G-enabled IoT paradigm, in terms of network design, operation, management, optimization, privacy and security, and applications. In particular, the technical focus covers a comprehensive understanding of 5G-enabled IoT architectures, converged access networks, privacy and security, and emerging applications of 5G-eabled IoT.

Security and Privacy Issues in IoT Devices and Sensor Networks investigates security breach issues in IoT and sensor networks, exploring various solutions. The book follows a two-fold approach, first focusing on the fundamentals and theory surrounding sensor networks and IoT security. It then explores practical solutions that can be implemented to develop security for these elements, providing case studies to enhance understanding. Machine learning techniques are covered, as well as other security paradigms, such as cloud security and cryptocurrency technologies. The book highlights how these techniques can be applied to identify attacks and vulnerabilities, preserve privacy, and enhance data security. This in-depth reference is ideal for industry professionals dealing with WSN and IoT systems who want to enhance the security of these systems. Additionally, researchers, material developers and technology specialists dealing with the multifarious aspects of data privacy and security enhancement will benefit from the book's comprehensive information. Provides insights into the latest research trends and theory in the field of sensor networks and IoT security Presents machine learning-based solutions for data security enhancement Discusses the challenges to implement various security techniques Informs on how analytics can be used in security and privacy

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.

This book mainly concentrates on protecting data security and privacy when participants communicate with each other in the Internet of Things (IoT). Technically, this book categorizes and introduces a collection of secure and privacy-preserving data communication schemes/protocols in three traditional scenarios of IoT: wireless sensor networks, smart grid and vehicular ad-hoc networks recently. This book presents three advantages which will appeal to readers. Firstly, it broadens reader’s horizon in IoT by touching on three interesting and complementary topics: data aggregation, privacy protection, and key agreement and management. Secondly, various cryptographic schemes/protocols used to protect data confidentiality and integrity is presented. Finally, this book will illustrate how to design practical systems to implement the algorithms in the context of IoT communication. In summary, readers can simply learn and directly apply the new technologies to communicate data in IoT after reading this book.

With the proliferation of devices connected to the internet and connected to each other, the volume of data collected, stored, and processed is increasing every day, which brings new challenges in terms of information security. As big data expands with the help of public clouds, traditional security solutions tailored to private computing infrastructures and confined to a well-defined security perimeter, such as firewalls and demilitarized zones (DMZs), are no longer effective. New security functions are required to work over the heterogenous composition of diverse hardware, operating systems, and network domains. Security, Privacy, and Forensics Issues in Big Data is an essential research book that examines recent advancements in big data and the impact that these advancements have on information security and privacy measures needed for these networks. Highlighting a range of topics including cryptography, data analytics, and threat detection, this is an excellent reference source for students, software developers and engineers, security analysts, IT consultants, academicians, researchers, and professionals.

This annual report is a call to action to recognize the things that are having an impact on the internet today, and to embrace the notion that we as humans can change how we make money, govern societies, and interact with one another online. We invite you to participate in setting an agenda for how we can work together to create an internet that truly puts people first. This book is neither a country-level index nor a doomsday clock. Our intention is to show that while the worldwide consequences of getting things wrong with the internet could be huge - for peace and security, for political and individual freedoms, for human equality - the problems are never so great that nothing can be done. More people than you imagine are working to make the internet healthier by applying their skills, creativity, and personal bravery to business, technology, activism, policy and regulation, education, and community development.

Security, privacy, and trust in the Internet of Things (IoT) and CPS (Cyber-Physical Systems) are different from conventional security as concerns revolve around the collection and aggregation of data or transmission of data over the network. Analysis of cyber-attack vectors and the provision of appropriate mitigation techniques are essential research areas for these systems. Adoption of best practices and maintaining a balance between ease of use and security are, again, crucial for the effective performance of these systems. Recent Advances in Security, Privacy and Trust for Internet of Things (IoT) and Cyber-Physical Systems (CPS) discusses and presents techniques and methodologies, as well as a wide range of examples and illustrations, to effectively show the principles, algorithms, challenges, and applications of security, privacy, and trust for IoT and CPS. Book features: Introduces new directions for research, development, and engineering security, privacy, and trust of IoT and CPS Includes a wealth of examples and illustrations to effectively demonstrate the principles, algorithms, challenges, and applications Covers most of the important security aspects and current trends not present in other reference books This book will also serve as an excellent reference in security, privacy, and trust of IoT and CPS for professionals in this fast-evolving and critical field. The chapters present high-quality contributions from researchers, academics, and practitioners from various national and international organizations and universities.

IoT security refers to the safeguarding of connected devices and networks in the Internet of Things (IoT). This book covers the critical models, algorithms and implementations in security and privacy designs of IoTs. It specifically covers the following topics: (1) the attack models of IoTs, (2) the security designs in sensors and devices that are linked into IoTs, (3) new IoT network protocols for security, (4) IoT back-end security issues, (5) privacy preservation schemes and (6) current IoT security products.

This book discusses the evolution of security and privacy issues in the Internet of Things (IoT). The book focuses on assembling all security- and privacy-related technologies into a single source so that students, researchers, academics, and those in the industry can easily

understand the IoT security and privacy issues. This edited book discusses the use of security engineering and privacy-by-design principles to design a secure IoT ecosystem and to implement cyber-security solutions. This book takes the readers on a journey that begins with understanding security issues in IoT-enabled technologies and how these can be applied in various sectors. It walks readers through engaging with security challenges and building a safe infrastructure for IoT devices. The book helps researchers and practitioners understand the security architecture of IoT and the state-of-the-art in IoT countermeasures. It also differentiates security threats in IoT-enabled infrastructure from traditional ad hoc or infrastructural networks, and provides a comprehensive discussion on the security challenges and solutions in RFID and WSNs in IoT. This book aims to highlight the concepts of related technologies and novel findings by researchers through its chapter organization. The primary audience comprises specialists, researchers, graduate students, designers, experts, and engineers undertaking research on security-related issues.

In the Internet of Things (IoT) era, online activities are no longer limited to desktop or laptop computers, smartphones and tablets. Instead, these activities now include ordinary tasks, such as using an internet-connected refrigerator or washing machine. At the same time, the IoT provides unlimited opportunities for household objects to serve as surveillance devices that continually monitor, collect and process vast quantities of our data. In this work, Stacy-Ann Elvy critically examines the consumer ramifications of the IoT through the lens of commercial law and privacy and security law. The book provides concrete legal solutions to remedy inadequacies in the law that will help usher in a more robust commercial law of privacy and security that protects consumer interests.