White Paper Wannacry Ransomware Analysis

THE INSTANT NEW YORK TIMES BESTSELLER SHORTLISTED FOR THE FT & McKINSEY BUSINESS BOOK OF THE YEAR AWARD 2021 'An intricately detailed, deeply sourced and reported history of the origins and growth of the cyberweapons market . . . Hot, propulsive . . . Sets out from the start to scare us out of our complacency' New York Times 'A terrifying exposé' The Times 'Part John le Carré and more parts Michael Crichton . . . Spellbinding' New Yorker Zero day: a software bug that allows a hacker to break in and scamper through the world's computer networks invisibly until discovered. One of the most coveted tools in a spy's arsenal, a zero day has the power to tap into any iPhone, dismantle safety controls at a chemical plant and shut down the power in an entire nation – just ask the Ukraine. Zero days are the blood diamonds of the security trade, pursued by nation states, defense contractors, cybercriminals, and security defenders alike. In this market, governments aren't regulators; they are clients – paying huge sums to hackers willing to turn over gaps in the Internet, and stay silent about them. This Is How They Tell Me the World Ends is cybersecurity reporter Nicole Perlroth's discovery, unpacked. A intrepid journalist unravels an opaque, code-driven market from the outside in – encountering spies, hackers, arms dealers, mercenaries and a few unsung heroes along the way. As the stakes get higher and higher in the rush to push the world's critical infrastructure online, This Is How They Tell Me the World Ends is the urgent and alarming discovery of one of the world's most extreme threats.

This collection explores organized crime and terror networks and the points at which they intersect. It analyses the close relationships between these criminalities, the prevalence and ambiguity of this nexus, the technological elements facilitating it, and the financial aspects embedded in this criminal partnership. Organized Crime and Terrorist Networks is the outcome of empirical research, seminars, workshops and interviews carried out by a multinational consortium of researchers within ‘TAKEDOWN’, a Horizon 2020 project funded by the European Commission. The consortium’s objective was to examine the perspectives, requirements and misgivings of front-line practitioners operating in the areas of organized crime and terrorism. The chapters collected in this volume are the outcome of such analytical efforts. The topics addressed include the role of Information and Communication Technology in contemporary criminal organizations, terrorism financing, online transnational criminality, identity crime, the crime-terror nexus and tackling the nexus at supranational level. This book offers a compelling contribution to scholarship on organized crime and terrorism, and considers possible directions for future research. It will be of much interest to students and researchers engaged in studies of criminology, criminal justice, crime control and prevention, organized crime, terrorism, political violence, and cybercrime.

This report presents an open source analysis of North Korea’s cyber operations capabilities and its strategic implications for the United States and South Korea. The purpose is to mitigate the current knowledge gap among various academic and policy communities on the topic by synthesizing authoritative and comprehensive open source reference material. The report is divided into three chapters, the first chapter examining North Korea’s cyber strategy. The authors then provide an assessment of North Korea’s cyber operations capabilities by examining the organizational structure, history, and functions of North Korea’s cyber units, their supporting educational training and technology base, and past cyber attacks widely attributed to North Korea. This assessment is followed by a discussion on policy implications for U.S. and ROK policymakers and the larger security community.

In today’s modernized market, many fields are utilizing internet technologies in their everyday methods of operation. The industrial sector is no different as these technological solutions have provided several benefits including reduction of costs, scalability, and efficiency improvements. Despite this, cyber security remains a crucial risk factor in industrial control systems. The same public and corporate solutions do not apply to this specific district because these security issues are more complex and intensive. Research is needed that explores new risk assessment methods and security mechanisms that professionals can apply to their modern technological procedures. Cyber Security of Industrial Control Systems in the Future Internet Environment is a pivotal reference source that provides vital research on current security risks in critical infrastructure schemes with the implementation of information and communication technologies. While highlighting topics such as intrusion detection systems, forensic challenges, and smart grids, this publication explores specific security solutions within industrial sectors that have begun applying internet technologies to their current methods of operation. This book is ideally designed for researchers, system engineers, managers, networkers, IT professionals, analysts, academicians, and students seeking a better understanding of the key issues within securing industrial control systems that utilize internet technologies.

This updated and expanded edition of Cyberspace in Peace and War by Martin C. Libicki presents a comprehensive understanding of cybersecurity, cyberwar, and cyber-terrorism. From basic concepts to advanced principles, Libicki examines the sources and consequences of system compromises, addresses strategic aspects of cyberwar, and defines cybersecurity in the context of military operations while highlighting unique aspects of the digital battleground and strategic uses of cyberwar. This new edition provides updated analysis on cyberespionage, including the enigmatic behavior of Russian actors, making this volume a timely and necessary addition to the cyber-practitioner's library. Cyberspace in Peace and War guides readers through the complexities of cybersecurity and cyberwar and challenges them to understand the topics in new ways. Libicki provides the technical and geopolitical foundations of cyberwar necessary to understand the policies, operations, and strategies required for safeguarding an increasingly online infrastructure.

Covers issues arising out of advancing computer technology such as violations of personal privacy, difficulties in prosecution and legal entanglements, computer intimidation, and considers the future of white-collar crime

This book presents high-quality research on the concepts and developments in the field of information and communication technologies, and their applications. It features 134 rigorously selected papers (including 10 poster papers) from the Future of Information and Communication Conference 2020 (FICC 2020), held in San Francisco, USA, from March 5 to 6, 2020, addressing state-of-the-art intelligent methods and techniques for solving real-world problems along with a vision of future research Discussing various aspects of communication, data science, ambient intelligence, networking, computing, security and Internet of Things, the book offers researchers, scientists, industrial engineers and students valuable insights into the current research and next generation information science and communication technologies.

This book aims to provide the latest research developments and results in the domain of AI techniques for smart cyber ecosystems. It presents a holistic insight into AI-enabled theoretic approaches and methodology in IoT networking, security analytics using AI tools and network automation, which ultimately enable intelligent cyber space. This book will be a valuable resource for students, researchers, engineers and policy makers working in various areas related to cybersecurity and privacy for Smart Cities. This book includes chapters titled "An Overview of the Artificial Intelligence Evolution and Its Fundamental Concepts, and Their Relationship with IoT Security", "Smart City: Evolution and Fundamental Concepts", "Advances in AI-Based Security for Internet of Things in Wireless Virtualization Environment", "A Conceptual Model for Optimal Resource Sharing of Networked Microgrids Focusing Uncertainty: Paving Path to Eco-friendly Smart Cities", "A Novel Framework for a Cyber Secure Smart City", "Contemplating Security Challenges and Threats for Smart Cities", "Self-Monitoring Obfuscated IoT Network", "Introduction to Side Channel Attacks and Investigation of Power Analysis and Fault Injection Attack Techniques", "Collaborative Digital Forensic Investigations Model for Law Enforcement: Oman as a Case Study", "Understanding Security Requirements and Challenges in the Industrial Internet of Things: A Review", "5G Security and the Internet of Things", "The Problem of Deepfake Videos and How to Counteract Them in Smart Cities", "The Rise of Ransomware Aided by Vulnerable IoT Devices", "Security Issues in Self-Driving Cars within Smart Cities", and "Trust-Aware Crowd Associated Network-Based Approach for Optimal Waste Management in Smart Cities".

This book provides state-of-the-art research results and discusses current issues, challenges, solutions and recent trends related to security and organization within IoT and Smart Cities. We expect this book to be of significant importance not only to researchers and practitioners in academia, government agencies and industries, but also for policy makers and system managers. We anticipate this book to be a valuable resource for all those working in this new and exciting area, and a "must have" for all university libraries.

This book focuses on how advances in ICT have brought about a sea change in the way people work, live and share while also making them vulnerable. These advances exhibit a fundamentally reformed global context for development that has not just been restricted to the civilian domain but has simultaneously impacted the military domain. The exponential pace of advances in the field of Artificial Intelligence (AI), robotics, big data, quantum computing or IoT (Internet of Things) pioneers a significantly different vision of work and society. The current trends in warfighting present a very blurred picture of the future operating environment, but they give some shape to its likely direction. Military forces are trying to become much more flexible and have been adapting to these changes while emphasizing the importance of innovation and improvisation in order to counter challenges emanating from future scenarios. In this context, the book highlights the changing military strategies and tactics across nations vis-à-vis the hanging and emerging ICT technologies. It also highlights the importance of looking at present institutions, legal frameworks and principles as well as at the restraining factors inherent in realpolitik in order to understand if nation states are ready. Please note: Taylor & Francis does not sell or distribute the Hardback in India, Pakistan, Nepal, Bhutan, Bangladesh and Sri Lanka

Cyber risk is an emerging source of systemic risk in the financial sector, and possibly a macro-critical risk too. It is therefore important to integrate it into financial sector surveillance. This paper offers a range of analytical approaches to assess and monitor cyber risk to the financial sector, including various approaches to stress testing. The paper illustrates these techniques by applying them to Singapore. As an advanced economy with a complex financial system and rapid adoption of fintech, Singapore serves as a good case study. We place our results in the context of recent cybersecurity developments in the public and private sectors, which can be a reference for surveillance work.

This book examines the requirements, risks, and solutions to improve the security and quality of complex cyber-physical systems (C-CPS), such as production systems, power plants, and airplanes, in order to ascertain whether it is possible to protect engineering organizations against cyber threats and to ensure engineering project quality. The book consists of three parts that logically build upon each other. Part I "Product Engineering of Complex Cyber-Physical Systems" discusses the structure and behavior of engineering organizations producing complex cyber-physical systems, providing insights into processes and engineering activities, and highlighting the requirements and border conditions for secure and high-quality engineering. Part II "Engineering Quality Improvement" addresses quality improvements with a focus on engineering data generation, exchange, aggregation, and use within an engineering organization, and the need for proper data modeling and engineering-result validation. Lastly, Part III "Engineering Security Improvement" considers security aspects concerning C-CPS engineering, including engineering organizations' security assessments and engineering data management, security concepts and technologies that may be leveraged to mitigate the manipulation of engineering data, as well as design and run-time aspects of secure complex cyber-physical systems. The book is intended for several target groups: it enables computer scientists to identify research issues related to the development of new methods, architectures, and technologies for improving quality and security in multi-disciplinary engineering, pushing forward the current state of the art. It also allows researchers involved in the engineering of C-CPS to gain a better understanding of the challenges and requirements of multi-disciplinary engineering that will guide them in their future research and development activities. Lastly, it offers practicing engineers and managers with engineering backgrounds insights into the benefits and limitations of applicable methods, architectures, and technologies for selected use cases.

Gain basic skills in network forensics and learn how to apply them effectively Key Features Investigate network threats with ease Practice forensics tasks such as intrusion detection, network analysis, and scanning Learn forensics investigation at the network level Book Description Network forensics is a subset of digital forensics that deals with network attacks and their investigation. In the era of network attacks and malware threat, it's now more important than ever to have skills to investigate network attacks and vulnerabilities. Hands-On Network Forensics starts with the core concepts within network forensics, including coding, networking, forensics tools, and methodologies for forensic investigations. You'll then explore the tools used for network forensics, followed by understanding how to apply those tools to a PCAP file and write the accompanying report. In addition to this, you will understand how statistical flow analysis, network enumeration, tunneling and encryption, and malware detection can be used to investigate your network. Towards the end of this book, you will discover how network correlation works and how to bring all the information from different types of network devices together. By the end of this book, you will have gained hands-on experience of performing forensics analysis tasks. What you will learn Discover and interpret encrypted traffic Learn about various protocols Understand the malware language over wire Gain insights into the most widely used malware Correlate data collected from attacks Develop tools and custom scripts for network forensics automation Who this book is for The book targets incident responders, network engineers, analysts, forensic engineers and network administrators who want to extend their knowledge from the surface to the deep levels of understanding the science behind network protocols, critical indicators in an incident and conducting a forensic search over the wire.

This book constitutes the refereed proceedings of the First International Conference on Intelligent, Secure, and Dependable Systems in Distributed and Cloud Environments, ISDDC 2017, held in Vancouver, BC, Canada, in October 2017.The 12 full papers presented together with 1 short paper were carefully reviewed and selected from 43 submissions. This book also contains 3 keynote talks and 2 tutorials. The contributions included in this proceedings cover many aspects of theory and application of effective and efficient paradigms, approaches, and tools for building, maintaining, and managing secure and dependable systems and infrastructures, such as botnet detection, secure cloud computing and cryptosystems, IoT security, sensor and social network security, behavioral systems and data science, and mobile computing.

This two-volume set (CCIS 1045 and CCIS 1046) constitutes the refereed proceedings of the Third International Conference on Advances in Computing and Data Sciences, ICACDS 2019, held in Ghaziabad, India, in April 2019. The 112 full papers were carefully reviewed and selected from 621 submissions. The papers are centered around topics like advanced computing, data sciences, distributed systems organizing principles, development frameworks and environments, software verification and validation, computational complexity and cryptography, machine learning theory, database theory, probabilistic representations.

Malgré l'impact qu'a eu l'informatisation de la société sur le crime, les connaissances sur le cybercrime n'abondent pas. Ce livre se veut une contribution à la synthèse des connaissances sur différents cybercrimes, notamment par l'examen des enjeux qu'ils soulèvent. Il étudie de façon approfondie quatorze phénomènes liés aux cybercrimes, allant des pratiques policières sur les médias sociaux à l'exploitation sexuelle des enfants sur Internet, en passant par la cyberintimidation, le piratage, les fraudes et l'utilisation des nouvelles technologies à des fins de propagande. Selon le sujet, les chapitres adoptent l'une de deux structures : les chapitres de type synthèse proposent une analyse des dernières connaissances criminologiques, sociologiques, juridiques et technologiques relatives à un cybercrime donné tandis que les chapitres de type nouvelle recherche présentent les résultats d'une recherche récente. Dans tous les cas, les expériences professionnelles et universitaires des auteurs, à l'instar de la diversité de leur provenance géographique au sein de la Francophonie (Canada, Suisse, France), viennent enrichir le contenu. Cet ouvrage, qui s'adresse aussi bien à l'étudiant, au chercheur ou à l'intervenant du milieu de la justice qu'au citoyen, peut se lire d'une couverture à l'autre ou un chapitre - voire une section - à la fois.

A comprehensive analysis of the international law applicable to cyber operations, including a systematic study of attribution, lawfulness and remedies.

This book includes innovative research work presented at ICO’2018, the 1st International Conference on Intelligent Computing and Optimization, held in Pattaya, Thailand on October 4–5, 2018. The conference presented topics ranging from power quality, reliability, security assurance, cloud computing, smart cities, renewable energy, agro-engineering, smart vehicles, deep learning, block chain, power systems, AI, machine learning, manufacturing systems, and big-data analytics. This volume focuses on subjects related to innovative computing, uncertainty management and optimization approaches to real-world problems in big-data, smart cities, sustainability, meta-heuristics, cyber-security, IoTs, economics and finance, renewable energy, energy and electricity systems, and block chain. Presenting cutting-edge methodologies with real-world application problems and their solutions, the book is useful for researchers, managers, executives, students, academicians, practicing scientists, and decision makers from all around the globe. It offers the academic and the applied communities a compendium and a research resource with significant insights and inspiration for innovative scientific education, investigation and collaboration, to overcome “hard problems” among the emerging challenges today and in the future.

IOT: Security and Privacy Paradigm covers the evolution of security and privacy issues in the Internet of Things (IoT). It focuses on bringing all security and privacy related technologies into one source, so that students, researchers, and practitioners can refer to this book for easy understanding of IoT security and privacy issues. This edited book uses 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 the security issues in IoT-enabled technologies and how it can be applied in various aspects. It walks readers through engaging with security challenges and builds a safe infrastructure for IoT devices. The book helps readers gain an understand of security architecture through IoT and describes the state of the art of 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, WSNs, in IoT. This book aims to provide the concepts of related technologies and novel findings of the researchers through its chapter organization. The primary audience includes specialists, researchers, graduate students, designers, experts and engineers who are focused on research and security related issues. Souvik Pal, PhD, has worked as Assistant Professor in Nalanda Institute of Technology, Bhubaneswar, and JIS College of Engineering, Kolkata (NAAC "A" Accredited College). He is the organizing Chair and Plenary Speaker of RICE Conference in Vietnam; and organizing co-convener of ICICIT, Tunisia. He has served in many conferences as chair, keynote speaker, and he also chaired international conference sessions and presented session talks internationally. His research area includes Cloud Computing, Big Data, Wireless Sensor Network (WSN), Internet of Things, and Data Analytics. Vicente García-Díaz, PhD, is an Associate Professor in the Department of Computer Science at the University of Oviedo (Languages and Computer Systems area). He is also the editor of several special issues in prestigious journals such as Scientific Programming and International Journal of Interactive Multimedia and Artificial Intelligence. His research interests include eLearning, machine learning and the use of domain specific languages in different areas. Dac-Nhuong Le, PhD, is Deputy-Head of Faculty of Information Technology, and Vice-Director of Information Technology Apply and Foreign Language Training Center, Haiphong University, Vietnam. His area of research includes: evaluation computing and approximate algorithms, network communication, security and vulnerability, network performance analysis and simulation, cloud computing, IoT and image processing in biomedical. Presently, he is serving on the editorial board of several international journals and has authored nine computer science books published by Springer, Wiley, CRC Press, Lambert Publication, and Scholar Press.

This book provides readers with up-to-date research of emerging cyber threats and defensive mechanisms, which are timely and essential. It covers cyber threat intelligence concepts against a range of threat actors and threat tools (i.e. ransomware) in cutting-edge technologies, i.e., Internet of Things (IoT), Cloud computing and mobile devices. This book also provides the technical information on cyber-threat detection methods required for the researcher and digital forensics experts, in order to build intelligent automated systems to fight against advanced cybercrimes. The ever increasing number of cyber-attacks requires the cyber security and forensic specialists to detect, analyze and defend against the cyber threats in almost real-time, and with such a large number of attacks is not possible without deeply perusing the attack features and taking corresponding intelligent defensive actions – this in essence defines cyber threat intelligence notion. However, such intelligence would not be possible without the aid of artificial intelligence, machine learning and advanced data mining techniques to collect, analyze, and interpret cyber-attack campaigns which is covered in this book. This book will focus on cutting-edge research from both academia and industry, with a particular emphasis on providing wider knowledge of the field, novelty of approaches, combination of tools and so forth to perceive reason, learn and act on a wide range of data collected from different cyber security and forensics solutions. This book introduces the notion of cyber threat intelligence and analytics and presents different attempts in utilizing machine learning and data mining techniques to create threat feeds for a range of consumers. Moreover, this book sheds light on existing and emerging trends in the field which could pave the way for future works. The inter-disciplinary nature of this book, makes it suitable for a wide range of audiences with backgrounds in artificial intelligence, cyber security, forensics, big data and data mining, distributed systems and computer networks. This would include industry professionals, advanced-level students and researchers that work within these related fields.

This book revises the strategic objectives of Information Warfare, interpreting them according to the modern canons of information age, focusing on the fabric of society, the economy, and critical Infrastructures. The authors build plausible detailed real-world scenarios for each entity, showing the related possible threats from the Information Warfare point of view. In addition, the authors dive into the description of the still open problems, especially when it comes to critical infrastructures, and the countermeasures that can be implemented, possibly inspiring further research in the domain.

This book intends to provide a conceptual framework and a methodological guide, enriched with vivid and compelling use cases for the readers (e.g. technologists, academicians, military, government) interested in what Information Warfare really means, when its lenses are applied to current technology. Without sacrificing accuracy, rigor and, most importantly, the big picture of Information Warfare, this book dives into several relevant and up-to-date critical domains. The authors illustrate how finance (an always green target of Information Warfare) is intertwined with Social Media, and how an opponent could exploit these latter ones to reach its objectives. Also, how cryptocurrencies are going to reshape the economy, and the risks involved by this paradigm shift. Even more compelling is how the very fabric of society is going to be reshaped by technology, for instance how our democratic elections are exposed to risks that are even greater than what appears in the current public discussions. Not to mention how our Critical Infrastructure is becoming exposed to a series of novel threats, ranging from state-supported malware to drones. A detailed discussion of possible countermeasures and what the open issues are for each of the highlighted threats complete this book. This book targets a widespread audience that includes researchers and advanced level students studying and working in computer science with a focus on security. Military officers, government officials and professionals working in this field will also find this book useful as a reference.

The 4-volume set LNCS 11632 until LNCS 11635 constitutes the refereed proceedings of the 5th International Conference on Artificial Intelligence and Security, ICAIS 2019, which was held in New York, USA, in July 2019. The conference was formerly called “International Conference on Cloud Computing and Security” with the acronym ICCCS. The total of 230 full papers presented in this 4-volume proceedings was carefully reviewed and selected from 1529 submissions. The papers were organized in topical sections as follows: Part I: cloud computing; Part II: artificial intelligence; big data; and cloud computing and security; Part III: cloud computing and security; information hiding; IoT security; multimedia forensics; and encryption and cybersecurity; Part IV: encryption and cybersecurity.

Tallinn Manual 2.0 expands on the highly influential first edition by extending its coverage of the international law governing cyber operations to peacetime legal regimes. The product of a three-year follow-on project by a new group of twenty renowned international law experts, it addresses such topics as sovereignty, state responsibility, human rights, and the law of air, space, and the sea. Tallinn Manual 2.0 identifies 154 'black letter' rules governing cyber operations and provides extensive commentary on each rule. Although Tallinn Manual 2.0 represents the views of the experts in their personal capacity, the project benefitted from the unofficial input of many states and over fifty peer reviewers.

Advances in Computing and Data SciencesThird International Conference, ICACDS 2019, Ghaziabad, India, April 12–13, 2019, Revised Selected PapersSpringer

This professional guide and reference examines the challenges of assessing security vulnerabilities in computing infrastructure. Various aspects of vulnerability assessment are covered in detail, including recent advancements in reducing the requirement for expert knowledge through novel applications of artificial intelligence. The work also offers a series of case studies on how to develop and perform vulnerability assessment techniques using start-of-the-art intelligent mechanisms. Topics and features: provides tutorial activities and thought-provoking questions in each chapter, together with numerous case studies; introduces the fundamentals of vulnerability assessment, and reviews the state of the art of research in this area; discusses vulnerability assessment frameworks, including frameworks for industrial control and cloud systems; examines a range of applications that make use of artificial intelligence to enhance the vulnerability assessment processes; presents visualisation techniques that can be used to assist the vulnerability assessment process. In addition to serving the needs of security practitioners and researchers, this accessible volume is also ideal for students and instructors seeking a primer on artificial intelligence for vulnerability assessment, or a supplementary text for courses on computer security, networking, and artificial intelligence.

The non-technical handbook for cyber security risk management Solving Cyber Risk distills a decade of research into a practical framework for cyber security. Blending statistical data and cost information with research into the culture, psychology, and business models of the hacker community, this book provides business executives, policy-makers, and individuals with a deeper understanding of existing future threats, and an action plan for safeguarding their organizations. Key Risk Indicators reveal vulnerabilities based on organization type, IT infrastructure and existing security measures, while expert discussion from leading cyber risk specialists details practical, real-world methods of risk reduction and mitigation. By the nature of the business, your organization’s customer database is packed with highly sensitive information that is essentially hacker-bait, and even a minor flaw in security protocol could spell disaster. This book takes you deep into the cyber threat landscape to show you how to keep your data secure. Understand who is carrying out cyber-attacks, and why Identify your organization’s risk of attack and vulnerability to damage Learn the most cost-effective risk reduction measures Adopt a new cyber risk assessment and quantification framework based on techniques used by the insurance industry By applying risk management principles to cyber security, non-technical leadership gains a greater understanding of the types of threat, level of threat, and level of investment needed to fortify the organization against attack. Just because you have not been hit does not mean your data is safe, and hackers rely on their targets’ complacence to help maximize their haul. Solving Cyber Risk gives you a concrete action plan for implementing top-notch preventative measures before you’re forced to implement damage control.

This book constitutes the refereed proceedings of the 12th International Conference on Detection of Intrusions and Malware, and Vulnerability Assessment, DIMVA 2015, held in Milan, Italy, in July 2015. The 17 revised full papers presented were carefully reviewed and selected from 75 submissions. The papers are organized in topical sections on attacks, attack detection, binary analysis and mobile malware protection, social networks and large-scale attacks, Web and mobile security, and provenance and data sharing.

This open access book provides the first comprehensive collection of papers that provide an integrative view on cybersecurity. It discusses theories, problems and solutions on the relevant ethical issues involved. This work is sorely needed in a world where cybersecurity has become indispensable to protect trust and confidence in the digital infrastructure whilst respecting fundamental values like equality, fairness, freedom, or privacy. The book has a strong practical focus as it includes case studies outlining ethical issues in cybersecurity and presenting guidelines and other measures to tackle those issues. It is thus not only relevant for academics but also for practitioners in cybersecurity such as providers of security software, governmental CERTs or Chief Security Officers in companies.

Translational Bioinformatics in Healthcare and Medicine offers an overview of main principles of bioinformatics, biological databases, clinical informatics, health informatics, viroinformatics and real-case applications of translational bioinformatics in healthcare. Written by experts from both technology and clinical sides, the content brings together essential knowledge to make the best of recent advancements of the field. The book discusses topics such as next generation sequence analysis, genomics in clinical care, IoT applications, blockchain technology, patient centered interoperability of EHR, health data mining, and translational bioinformatics methods for drug discovery and drug repurposing. In addition, it discusses the role of bioinformatics in cancer research and viroinformatics approaches to counter viral diseases through informatics. This is a valuable resource for bioinformaticians, clinicians, healthcare professionals, graduate students and several members of biomedical field who are interested in learning more about how bioinformatics can impact in their research and practice. Covers recent advancements in translational bioinformatics and its healthcare applications Discusses integrative and multidisciplinary approaches to U-healthcare systems development and management Bridges the gap among various knowledge domains in the field, integrating both technological and clinical knowledge into practical content

Malware analysis is big business, and attacks can cost a company dearly. When malware breaches your defenses, you need to act quickly to cure current infections and prevent future ones from occurring. For those who want to stay ahead of the latest malware, Practical Malware Analysis will teach you the tools and techniques used by professional analysts. With this book as your guide, you'll be able to safely analyze, debug, and disassemble any malicious software that comes your way. You'll learn how to: –Set up a safe virtual environment to analyze malware –Quickly extract network signatures and host-based indicators –Use key analysis tools like IDA Pro, OllyDbg, and WinDbg –Overcome malware tricks like obfuscation, anti-disassembly, anti-debugging, and anti-virtual machine techniques –Use your newfound knowledge of Windows internals for malware analysis –Develop a methodology for unpacking malware and get practical experience with five of the most popular packers –Analyze special cases of malware with shellcode, C++, and 64-bit code Hands-on labs throughout the book challenge you to practice and synthesize your skills as you dissect real malware samples, and pages of detailed dissections offer an over-the-shoulder look at how the pros do it. You'll learn how to crack open malware to see how it really works, determine what damage it has done, thoroughly clean your network, and ensure that the malware never comes back. Malware analysis is a cat-and-mouse game with rules that are constantly changing, so make sure you have the fundamentals. Whether you're tasked with securing one network or a thousand networks, or you're making a living as a malware analyst, you'll find what you need to succeed in Practical Malware Analysis.

The threat landscape is evolving with tremendous speed. We are facing an extremely fast-growing attack surface with a diversity of attack vectors, a clear asymmetry between attackers and defenders, billions of connected IoT devices, mostly reactive detection and mitigation approaches, and finally big data challenges. The clear asymmetry of attacks and the enormous amount of data are additional arguments to make it necessary to rethink cybersecurity approaches in terms of reducing the attack surface, to make the attack surface dynamic, to automate the detection, risk assessment, and mitigation, and to investigate the prediction and prevention of attacks with the utilization of emerging technologies like blockchain, artificial intelligence and machine learning. This book contains eleven chapters dealing with different Cybersecurity Issues in Emerging Technologies. The issues that are discussed and analyzed include smart connected cars, unmanned ships, 5G/6G connectivity, blockchain, agile incident response, hardware assisted security, ransomware attacks, hybrid threats and cyber skills gap. Both theoretical analysis and experimental evaluation of state-of-the-art techniques are presented and discussed. Prospective readers can be benefitted in understanding the future implications of novel technologies and proposed security solutions and techniques. Graduate and postgraduate students, research scholars, academics, cybersecurity professionals, and business leaders will find this book useful, which is planned to enlighten both beginners and experienced readers.

This book constitutes the refereed proceedings of the 23rd European Conference on Applications of Evolutionary Computation, EvoApplications 2020, held as part of Evo*2020, in Seville, Spain, in April 2020, co-located with the Evo*2020 events EuroGP, EvoMUSART and EvoCOP. The 44 full papers presented in this book were carefully reviewed and selected from 62 submissions. The papers cover a wide spectrum of topics, ranging from applications of bio-inspired techniques on social networks, evolutionary computation in digital healthcare and personalized medicine, soft-computing applied to games, applications of deep-bioinspired algorithms, parallel and distributed systems, and evolutionary machine learning.?

This open access book constitutes the refereed proceedings of the 15th International Annual Conference on Cyber Security, CNCERT 2018, held in Beijing, China, in August 2018. The 14 full papers presented were carefully reviewed and selected from 53 submissions. The papers cover the following topics: emergency response, mobile internet security, IoT security, cloud security, threat intelligence analysis, vulnerability, artificial intelligence security, IPv6 risk research, cybersecurity policy and regulation research, big data analysis and industrial security.

Top cybersecurity journalist Kim Zetter tells the story behind the virus that sabotaged Iran’s nuclear efforts and shows how its existence has ushered in a new age of warfare—one in which a digital attack can have the same destructive capability as a megaton bomb. In January 2010, inspectors with the International Atomic Energy Agency noticed that centrifuges at an Iranian uranium enrichment plant were failing at an unprecedented rate. The cause was a complete mystery—apparently as much to the technicians replacing the centrifuges as to the inspectors observing them. Then, five months later, a seemingly unrelated event occurred: A computer security firm in Belarus was called in to troubleshoot some computers in Iran that were crashing and rebooting repeatedly. At first, the firm's programmers believed the malicious code on the machines was a simple, routine piece of malware. But as they and other experts around the world investigated, they discovered a mysterious virus of unparalleled complexity. They had, they soon learned, stumbled upon the world's first digital weapon. For Stuxnet, as it came to be known, was unlike any other virus or worm built before: Rather than simply hijacking targeted computers or stealing information from them, it escaped the digital realm to wreak actual, physical destruction on a nuclear facility. In these pages, Wired journalist Kim Zetter draws on her extensive sources and expertise to tell the story behind Stuxnet's planning, execution, and discovery, covering its genesis in the corridors of Bush's White House and its unleashing on systems in Iran—and telling the spectacular, unlikely tale of the security geeks who managed to unravel a sabotage campaign years in the making. But Countdown to Zero Day ranges far beyond Stuxnet itself. Here, Zetter shows us how digital warfare developed in the US. She takes us inside today's flourishing zero-day “grey markets,” in which intelligence agencies and militaries pay huge sums for the malicious code they need to carry out infiltrations and attacks. She reveals just how vulnerable many of our own critical systems are to Stuxnet-like strikes, from nation-state adversaries and anonymous hackers alike—and shows us just what might happen should our infrastructure be targeted by such an attack. Propelled by Zetter's unique knowledge and access, and filled with eye-opening explanations of the technologies involved, Countdown to Zero Day is a comprehensive and prescient portrait of a world at the edge of a new kind of war.

Examines the governance challenges of cybersecurity through twelve, real-world case studies Through twelve detailed case studies, this superb collection provides an overview of the ways in which government officials and corporate leaders across the globe are responding to the challenges of cybersecurity. Drawing perspectives from industry, government, and academia, the book incisively analyzes the actual issues, and provides a guide to the continually evolving cybersecurity ecosystem. It charts the role that corporations, policymakers, and technologists are playing in defining the contours of our digital world. Rewired: Cybersecurity Governance places great emphasis on the interconnection of law, policy, and technology in cyberspace. It examines some of the competing organizational efforts and institutions that are attempting to secure cyberspace and considers the broader implications of the in-place and unfolding efforts—tracing how different notions of cybersecurity are deployed and built into stable routines and practices. Ultimately, the book explores the core tensions that sit at the center of cybersecurity efforts, highlighting the ways in which debates about cybersecurity are often inevitably about much more. Introduces the legal and policy dimensions of cybersecurity Collects contributions from an international collection of scholars and practitioners Provides a detailed "map" of the emerging cybersecurity ecosystem, covering the role that corporations, policymakers, and technologists play Uses accessible case studies to provide a non-technical description of key terms and technologies Rewired: Cybersecurity Governance is an excellent guide for all policymakers, corporate leaders, academics, students, and IT professionals responding to and engaging with ongoing cybersecurity challenges.

This volume presents a collection of peer-reviewed, scientific articles from the 15th International Conference on Information Technology – New Generations, held at Las Vegas. The collection addresses critical areas of Machine Learning, Networking and Wireless Communications, Cybersecurity, Data Mining, Software Engineering, High Performance Computing Architectures, Computer Vision, Health, Bioinformatics, and Education.

This book explores the genesis of ransomware and how the parallel emergence of encryption technologies has elevated ransomware to become the most prodigious cyber threat that enterprises are confronting. It also investigates the driving forces behind what has been dubbed the 'ransomware revolution' after a series of major attacks beginning in 2013, and how the advent of cryptocurrencies provided the catalyst for the development and increased profitability of ransomware, sparking a phenomenal rise in the number and complexity of ransomware attacks. This book analyzes why the speed of technology adoption has been a fundamental factor in the continued success of financially motivated cybercrime, and how the ease of public access to advanced encryption techniques has allowed malicious actors to continue to operate with increased anonymity across the internet. This anonymity has enabled increased collaboration between attackers, which has aided the development of new ransomware attacks, and led to an increasing level of technical complexity in ransomware attacks. This book highlights that the continuous expansion and early adoption of emerging technologies may be beyond the capacity of conventional risk managers and risk management frameworks. Researchers and advanced level students studying or working in computer science, business or criminology will find this book useful as a reference or secondary text. Professionals working in cybersecurity, cryptography, information technology, financial crime (and other related topics) will also welcome this book as a reference.

Global events involving cybersecurity breaches have highlighted the ever-growing dependence on interconnected online systems in international business. The increasing societal dependence on information technology has pushed cybersecurity to the forefront as one of the most urgent challenges facing the global community today. Poor cybersecurity is the primary reason hackers are able to penetrate safeguards in business computers and other networks, and the growing global skills gap in cybersecurity simply exacerbates the problem. Global Cyber Security Labor Shortage and International Business Risk provides emerging research exploring the theoretical and practical aspects of protecting computer systems against online threats as well as transformative business models to ensure sustainability and longevity. Featuring coverage on a broad range of topics such as cybercrime, technology security training, and labor market understanding, this book is ideally designed for professionals, managers, IT consultants, programmers, academicians, and students seeking current research on cyber security's influence on business, education, and social networks.

Know how to mitigate and handle ransomware attacks via the essential cybersecurity training in this book so you can stop attacks before they happen. Learn the types of ransomware, distribution methods, internal structure, families (variants), defense strategies, recovery methods, and legal issues related to reporting ransomware incidents to authorities and other affected parties. This book also teaches you how to develop a ransomware incident response plan to minimize ransomware damage and recover normal operations quickly. Ransomware is a category of malware that can encrypt your computer and mobile device files until you pay a ransom to unlock them. Ransomware attacks are considered the most prevalent cybersecurity threats today—the number of new ransomware variants has grown 30-fold since 2015 and they currently account for roughly 40% of all spam messages. Attacks have increased in occurrence from one every 40 seconds to one every 14 seconds. Government and private corporations are targets. Despite the security controls set by organizations to protect their digital assets, ransomware is still dominating the world of security and will continue to do so in the future. Ransomware Revealed discusses the steps to follow if a ransomware infection occurs, such as how to pay the ransom through anonymous payment methods, perform a backup and restore your affected files, and search online to find a decryption tool to unlock (decrypt) your files for free. Mitigation steps are discussed in depth for both endpoint devices and network systems. What You Will Learn Be aware of how ransomware infects your system Comprehend ransomware components in simple terms Recognize the different types of ransomware families Identify the attack vectors employed by ransomware to infect computer systems Know how to prevent ransomware attacks from successfully comprising your system and network (i.e., mitigation strategies) Know what to do if a successful ransomware infection takes place Understand how to pay the ransom as well as the pros and cons of paying Set up a ransomware response plan to recover from such attacks Who This Book Is For Those who do not specialize in the cybersecurity field (but have adequate IT skills) and want to fully understand the anatomy of ransomware threats. Although most of the book's content will be understood by ordinary computer users, it will also prove useful for experienced IT users aiming to understand the ins and outs of ransomware threats without diving deep into the technical jargon of the internal structure of ransomware.

Analyzing how hacks are done, so as to stop them in thefuture Reverse engineering is the process of analyzing hardware orsoftware and understanding it, without having access to the sourcecode or design documents. Hackers are able to reverse engineersystems and exploit what they find with scary results. Now the goodguys can use the same tools to thwart these threats. PracticalReverse Engineering goes under the hood of reverse engineeringfor security analysts, security engineers, and system programmers,so they can learn how to use these same processes to stop hackersin their tracks. The book covers x86, x64, and ARM (the first book to cover allthree); Windows kernel-mode code rootkits and drivers; virtualmachine protection techniques; and much more. Best of all, itoffers a systematic approach to the material, with plenty ofhands-on exercises and real-world examples. Offers a systematic approach to understanding reverseengineering, with hands-on exercises and real-world examples Covers x86, x64, and advanced RISC machine (ARM) architecturesas well as deobfuscation and virtual machine protectiontechniques Provides special coverage of Windows kernel-mode code(rootkits/drivers), a topic not often covered elsewhere, andexplains how to analyze drivers step by step Demystifies topics that have a steep learning curve Includes a bonus chapter on reverse engineering tools Practical Reverse Engineering: Using x86, x64, ARM, WindowsKernel, and Reversing Tools provides crucial, up-to-dateguidance for a broad range of IT professionals.

Your one-stop guide to know digital extortion and it's prevention. Key Features A complete guide to how ransomware works Build a security mechanism to prevent digital extortion. A practical approach to knowing about, and responding to, ransomware. Book Description Ransomware has turned out to be the most aggressive malware and has affected numerous organizations in the recent past. The current need is to have a defensive mechanism in place for workstations and servers under one organization. This book starts by explaining the basics of malware, specifically ransomware. The book provides some quick tips on malware analysis and how you can identify different kinds of malware. We will also take a look at different types of ransomware, and how it reaches your system, spreads in your organization, and hijacks your computer. We will then move on to how the ransom is paid and the negative effects of doing so. You will learn how to respond quickly to ransomware attacks and how to protect yourself. The book gives a brief overview of the internals of security software and Windows features that can be helpful in ransomware prevention for administrators. You will also look at practical use cases in each stage of the ransomware phenomenon. The book talks in detail about the latest ransomware attacks involving WannaCry, Petya, and BadRabbit. By the end of this book, you will have end-to-end knowledge of the trending malware in the tech industry at present. What you will learn Understand malware types and malware techniques with examples Obtain a quick malware analysis Understand ransomware techniques, their distribution, and their payment mechanism Case studies of famous ransomware attacks Discover detection technologies for complex malware and ransomware Configure security software to protect against ransomware Handle ransomware infections Who this book is for This book is targeted towards security administrator, security analysts, or any stakeholders in the security sector who want to learn about the most trending malware in the current market: ransomware.