Introduction To Cyber Warfare A Multidisciplinary Approach

Introduction to Cyber Politics and Policy is a comprehensive introductory textbook for cyber politics and security courses, and the perfect addition to any International Relations or Intelligence course. Written by Mary Manjikian, an expert in the field and an instructor who has taught the course for ten years, it assumes no prior knowledge of technical concepts, legal concepts, military concepts or international relations theory. Instead, she aims to bridge the gaps between the intricacies of technology and the theories of political science. The book emphasizes the importance of collaboration and understanding between the two fields - students from both technology and political science backgrounds need to understand the implications of technology decisions and the policy questions that arise from them in order to make a meaningful contribution to ever-changing field.

Conflict in cyberspace is becoming more prevalent in all public and private sectors and is of concern on many levels. As a result, knowledge of the topic is becoming essential across most disciplines. This book reviews and explains the technologies that underlie offensive and defensive cyber operations, which are practiced by a range of cyber actors including state actors, criminal enterprises, activists, and individuals. It explains the processes and technologies that enable the full spectrum of cyber operations. Readers will learn how to use basic tools for cyber security and pen-testing, and also be able to quantitatively assess cyber risk to systems and environments and discern and categorize malicious activity. The book provides key concepts of information age conflict technical basics/fundamentals needed to understand more specific remedies and activities associated with all aspects of cyber operations. It explains techniques associated with offensive cyber operations, with careful distinctions made between cyber ISR, cyber exploitation, and cyber attack. It explores defensive cyber operations and includes case studies that provide practical information, making this book useful for both novice and advanced information warfare practitioners.

An essential, eye-opening book about cyberterrorism, cyber war, and the next great threat to our national security. “Cyber War may be the most important book about national security policy in the last several years.” –Slate Former presidential advisor and counter-terrorism expert Richard A. Clarke sounds a timely and chilling warning about America’s vulnerability in a terrifying new international conflict. Cyber War is a powerful book about technology, government, and military strategy; about criminals, spies, soldiers, and hackers. It explains clearly and convincingly what cyber war is, and how vulnerable we are as a nation and as individuals to the vast and looming web of cyber criminals. Every concerned American should read this startling and explosive book that offers an insider’s view of White House ‘Situation Room’ operations and carries the reader to the frontlines of our cyber defense. Cyber War exposes a virulent threat to our nation’s security.

Insights into the true history of cyber warfare, and the strategies, tactics, and cybersecurity tools that can be used to better defend yourself and your organization against cyber threat. Key Features Define and determine a cyber-defence strategy based on current and past real-life examples Understand how future technologies will impact cyber warfare campaigns and society Future-ready yourself and your business against any cyber threat Book Description The era of cyber warfare is now upon us. What we do now and how we determine what we will do in the future is the difference between whether our businesses live or die and whether our digital self survives the digital battlefield. Cyber Warfare – Truth, Tactics, and Strategies takes you on a journey through the myriad of cyber attacks and threats that are present in a world powered by AI, big data, autonomous vehicles, drones video, and social media. Dr. Chase Cunningham uses his military background to provide you with a unique perspective on cyber security and warfare. Moving away from a reactive stance to one that is forward-looking, he aims to prepare people and organizations to better defend themselves in a world where there are no borders or perimeters. He demonstrates how the cyber landscape is growing infinitely more complex and is continuously evolving at the speed of light. The book not only covers cyber warfare, but it also looks at the political, cultural, and geographical influences that pertain to these attack methods and helps you understand the motivation and impacts that are likely in each scenario. Cyber Warfare –

Truth, Tactics, and Strategies is as real-life and up-to-date as cyber can possibly be, with examples of actual attacks and defense techniques, tools. and strategies presented for you to learn how to think about defending your own systems and data. What you will learn Hacking at scale – how machine learning (ML) and artificial intelligence (AI) skew the battlefield Defending a boundaryless enterprise Using video and audio as weapons of influence Uncovering DeepFakes and their associated attack vectors Using voice augmentation for exploitation Defending when there is no perimeter Responding tactically to counter-campaign-based attacks Who this book is for This book is for any engineer, leader, or professional with either a responsibility for cyber security within their organizations, or an interest in working in this ever-growing field.
Cyber Mercenaries explores the secretive relationships between states and hackers. As cyberspace has emerged as the new frontier for geopolitics, states have become entrepreneurial in their sponsorship, deployment, and exploitation of hackers as proxies to project power. Such modern-day mercenaries and privateers can impose significant harm undermining global security, stability, and human rights. These state-hacker relationships therefore raise important questions about the control, authority, and use of offensive cyber capabilities. While different countries pursue different models for their proxy relationships, they face the common challenge of balancing the benefits of these relationships with their costs and the potential risks of escalation. This book examines case studies in the

United States, Iran, Syria, Russia, and China for the purpose of establishing a framework to better understand and manage the impact and risks of cyber proxies on global politics.

Cybersecurity is undoubtedly one of the fastest-growing fields. However, there is an acute shortage of skilled workforce. The cybersecurity beginners guide aims at teaching security enthusiasts all about organizational digital assets' security, give them an overview of how the field operates, applications of cybersecurity across sectors and industries, and skills and certifications one needs to build and scale up a career in this field.

Cyber security involves protecting organisations from cyber risks, the threats to organisations caused by digital technology. These risks can cause direct damage to revenues and profits as well as indirect damage through reduced efficiency, lower employee morale, and reputational damage. Cyber security is often thought to be the domain of specialist IT professionals however, cyber risks are found across and within organisations. Unfortunately, many managers outside IT feel they are ill equipped to deal with cyber risks and the use of jargon makes the subject especially hard to understand. For this reason cyber threats are worse than they really need to be. The reality is that the threat from cyber risks is constantly growing, thus non-technical managers need to understand and manage it. As well as offering practical advice, the author guides readers through the processes that will enable them to manage and mitigate such threats and protect their organisations.

This companion provides the most comprehensive and up-to-date comparative overview of the cyber-security strategies and doctrines of the major states and actors in Europe, North America, South America, Africa, and Asia. The volume offers an introduction to each nation's cyber-security strategy and policy, along with a list of resources in English that may be consulted for those wishing to go into greater depth. Each chapter is written by a leading academic or policy specialist, and contains the following sections: overview of national cyber-security strategy; concepts and definitions; exploration of cyber-security issues as they relate to international law and governance; critical examinations of cyber partners at home and abroad; legislative developments and processes; dimensions of cybercrime and cyberterrorism; implications of cyber-security policies and strategies. This book will be of much interest to students and practitioners in the fields of cyber-security, national security, strategic studies, foreign policy, and international relations.

The Basics of Cyber Warfare provides readers with fundamental knowledge of cyber war in both theoretical and practical aspects. This book explores the principles of cyber warfare, including military and cyber doctrine, social engineering, and offensive and defensive tools, tactics and procedures, including computer network exploitation (CNE), attack (CNA) and defense (CND). Readers learn the basics of how to defend against espionage, hacking, insider threats, state-sponsored attacks, and non-state actors (such as organized criminals and terrorists). Finally, the book looks ahead to emerging aspects of cyber security technology and trends, including cloud computing, mobile devices, biometrics and nanotechnology. The Basics of Cyber Warfare gives readers a concise overview of these threats and outlines the ethics, laws and consequences of cyber warfare. It is a valuable resource for policy makers, CEOs and CIOs, penetration testers, security administrators, and students and instructors in information security. Provides a sound understanding of the tools and tactics used in cyber warfare. Describes both offensive and defensive tactics from an insider's point of view. Presents doctrine and hands-on techniques to understand as cyber warfare evolves with technology.

Cyber Warfare Techniques, Tactics and Tools for Security Practitioners provides a comprehensive look at how and why digital warfare is waged. This book explores the participants, battlefields, and the tools and techniques used during today's digital conflicts. The concepts discussed will give students of information security a better idea of how cyber conflicts are carried out now, how they will change in the future, and how to detect and defend against espionage, hacktivism, insider threats and non-state actors such as organized criminals and terrorists. Every one of our systems is under attack from multiple vectors - our defenses must be ready all the time and our alert systems must detect the threats every time. This book provides concrete examples and real-world guidance on how to identify and defend a network against malicious attacks. It considers relevant technical and factual information from an insider's point of view, as well as the ethics, laws and consequences of cyber war and how computer criminal law may change as a result. Starting with a definition of cyber warfare, the book’s 15 chapters discuss the following topics: the cyberspace battlefield; cyber doctrine; cyber warriors; logical, physical, and psychological weapons; computer network exploitation; computer network attack and defense; non-state actors in computer network operations; legal system impacts; ethics in cyber warfare; cyberspace challenges; and the future of cyber war. This book is a valuable resource to those involved in cyber warfare activities, including policymakers, penetration testers, security professionals, network and systems administrators, and college instructors. The information provided on cyber tactics and attacks can also be used to assist in developing improved and more efficient procedures and technical defenses. Managers will find the text useful in improving the overall risk management strategies for their organizations. Provides concrete examples and real-world guidance on how to identify and defend your network against malicious attacks Dives deeply into relevant technical and factual information from an insider's point of view Details the ethics, laws and consequences of cyber war and how computer criminal law may change as a result

From North Korea's recent attacks on Sony to perpetual news reports of successful hackings and criminal theft, cyber conflict has emerged as a major topic of public concern. Yet even as attacks on military, civilian, and commercial targets have escalated, there is not yet a clear set of ethical guidelines that apply to cyber warfare. Indeed, like terrorism, cyber warfare is commonly believed to be a war without rules. Given the prevalence cyber warfare, developing a practical moral code for this new form of conflict is more important than ever. In Ethics and Cyber Warfare, internationally-respected ethicist George Lucas delves into the confounding realm of cyber conflict. Comparing "state-sponsored hacktivism" to the transformative impact of "irregular warfare" in conventional armed conflict, Lucas offers a critique of legal approaches to governance, and outlines a new approach to ethics and "just war" reasoning. Lucas draws upon the political philosophies of Alasdair MacIntyre, John Rawls, and Jurgen Habermas to provide a framework for understanding these newly-emerging standards for cyber conflict, and ultimately presents a professional code of ethics for a new generation of "cyber warriors." Lucas concludes with a discussion of whether preemptive self-defense efforts - such as the massive government surveillance programs revealed by Edward Snowden - can ever be justified, addressing controversial topics such as privacy, anonymity, and public trust. Well-reasoned and timely, Ethics and Cyber Warfare is a must-read for anyone with an interest in philosophy, ethics, or cybercrime. "

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Cyberspace, where information--and hence serious value--is stored and manipulated, is a tempting target. An attacker could be a person, group, or state and may disrupt or corrupt the systems from which cyberspace is built. When states are involved, it is tempting to compare fights to warfare, but there are important differences. The author addresses these differences and ways the United States protect itself in the face of attack.

Most introductory books on cyber security are either too technical for popular readers, or too casual for professional ones. This book, in contrast, is intended to reside somewhere in the middle. That is, while concepts are explained in a friendly manner for any educated adult, the book also necessarily includes network diagrams with the obligatory references to clouds, servers, and packets. But don't let this scare you. Anyone with an ounce of determination can get through every page of this book, and will come out better informed, not only on cyber security, but also on computing, networking, and software.

"This book reviews problems, issues, and presentations of the newest research in the field of cyberwarfare and cyberterrorism. While enormous efficiencies have been gained as a result of computers and telecommunications technologies, use of these systems and networks translates into a major concentration of information resources, createing a vulnerability to a host of attacks and exploitations"--Provided by publisher.

Stuxnet to Sunburst: 20 Years of Digital Exploitation and Cyberwarfare takes the reader on a journey from the terrorist attacks of 9/11 onwards and the massive insatiable appetite, focus and investment by the Five Eyes agencies, in particular the U.S., to build capability of digital eavesdropping and industrial espionage. With tens of trillions of dollars moving throughout hundreds of thousands of staff,and many contractors draining the country of intelligence and technical capability, the quest was simple and the outcome horrifying. No one in the world has connected the dots, until now. From digital eavesdropping and manipulation of the agencies to Stuxnet, this book covers how the world's first use of digital code and digital certificates for offensive purposes against the Iranians and their nuclear power facilities, caused collateral damage. Proceeding to today's SolarWinds attack, code-named Sunburst, the same methods of exploitation and manipulation originally used by the agencies are now being used against companies and governments with devastating effects. The solarWinds breach has caused knock-on breaches to thousands of client companies including the U.S. government and is estimated to cost more than one trillion dollars. The monster has truly been turned against its creator and due to the lack of security and defence, breaches are occurring daily at an alarming rate. The U.S. and UK governments have little to no answer. Teh book also contains a chapter on breaches within the COVID-19 sector from research to immunisation and the devastating December 2020 breach of SolarWinds.

The desire to steal the Intellectual Property (IP) of others be they creative individuals or the fruits of company teams working in patent pools to create new innovations remains the same. Political methods have become more sophisticated in terms of devaluing the output of creative humans by creating open source access which can be taken freely by all and sundry. What has changed is the new cyber based technology that allows increased theft of IP. Likewise, warfare for geo-political imperatives is not new but sophisticated cyber-based methods which can actually carry out infrastructural damage through cyberspace is new and accordingly termed cyberwarfare. How cyber strategies are used in IP theft and cyberwarfare in relation to new complex digital technology such as the Internet of Things is explored and in relation to particular essential sectors in the economy, marine, smart energy power grids and insurance. Country specific studies based on either being the recipient or perpetrator or both of cyberattacks are analysed in relation to Japan, China and North Korea, Russia, Europe (UK in particular), Iran and the USA.

Many people interpret and decide on what cybersecurity is, some see cybersecurity as a continuation of an evolved version of it-security, others view it as a completely new branch of security and still others see it as a mixture of the two. This course will give you the basics based on actual literature reviews, academic research, and personal experience in global projects and work in cybersecurity, focusing on cyber warfare, espionage, crime, and defenses as well as attacks used. This book is intended to reside somewhere in the middle. That is, while concepts are explained in a friendly manner for any educated adult, the book also necessarily includes network diagrams with the obligatory references to clouds, servers, and packets.

Cyberwarfare: Information Operations in a Connected World puts students on the real-world battlefield of cyberspace! It reviews the role that cyberwarfare plays in modern military operations–operations in which it has become almost impossible to separate cyberwarfare from traditional warfare.

This book features a wide spectrum of the latest computer science research relating to cyber warfare, including military and policy dimensions. It is the first book to explore the scientific foundation of cyber warfare and features research from the areas of artificial intelligence, game theory, programming languages, graph theory and more. The high-level approach and emphasis on scientific rigor provides insights on ways to improve cyber warfare defense worldwide. Cyber Warfare: Building the Scientific Foundation targets researchers and practitioners working in cyber security, especially government employees or contractors. Advanced-level students in computer science and electrical engineering with an interest in security will also find this content valuable as a secondary textbook or reference. What people are saying about Inside Cyber Warfare "The necessary handbook for the 21st century." --Lewis Shepherd, Chief Tech Officer and Senior Fellow, Microsoft Institute for Advanced Technology in Governments "A must-read for policy makers and leaders who need to understand the big-picture landscape of cyber war." --Jim Stogdill, CTO, Mission Services Accenture You may have heard about "cyber warfare" in the news, but do you really know what it is? This book provides fascinating and disturbing details on how nations, groups, and individuals throughout the world are using the Internet as an attack platform to gain military, political, and economic advantages over their adversaries. You'll learn how sophisticated hackers working on behalf of states or organized crime patiently play a high-stakes game that could target anyone, regardless of affiliation or nationality. Inside Cyber Warfare goes beyond the headlines of attention-grabbing DDoS attacks and takes a deep look inside multiple cyber-conflicts that occurred from 2002 through summer 2009. Learn how cyber attacks are waged in open conflicts, including recent hostilities between Russia and Georgia, and Israel and Palestine Discover why Twitter, Facebook, LiveJournal, Vkontakte, and other sites on the social web are mined by the intelligence services of many nations Read about China's commitment to penetrate the networks of its technologically superior adversaries as a matter of national survival Find out why many attacks originate from servers in the United States, and who's responsible Learn how hackers are "weaponizing" malware to attack vulnerabilities at the application level

An investigation into how the Pentagon, NSA, and other government agencies are uniting with corporations to fight in cyberspace, the next great theater of war.

Introduction to Cyber-Warfare: A Multidisciplinary Approach, written by experts on the front lines, gives you an insider's look into the world of cyber-warfare through the use of recent case studies. The book examines the issues related to cyber warfare not only from a computer science perspective but from military, sociological, and scientific perspectives as well. You'll learn how cyber-warfare has been performed in the past as well as why various actors rely on this new means of warfare and what steps can be taken to prevent it. Provides a multi-disciplinary approach to cyber-warfare, analyzing the information technology, military, policy, social, and scientific issues that are in play Presents detailed case studies of cyber-attack including inter-state cyber-conflict (Russia-Estonia), cyber-attack as an element of an information operations strategy (Israel-Hezbollah,) and cyber-attack as a tool against dissidents within a state (Russia, Iran) Explores cyber-attack conducted by large, powerful, non-state hacking organizations such as Anonymous and LulzSec Covers cyber-attacks directed against infrastructure, such as water treatment plants and power-grids, with a detailed account of Stuxent

Providing an invaluable introductory resource for students studying cyber warfare, this book highlights the evolution of cyber conflict in modern times through dozens of key primary source documents related to its development and implementation. This meticulously curated primary source collection is designed to offer a broad examination of key documents related to cyber warfare, covering the subject from multiple perspectives. The earliest documents date from the late 20th century, when the concept and possibility of cyber attacks became a reality, while the most recent documents are from 2019. Each document is accompanied by an introduction and analysis written by an expert in the field that provides the necessary context for readers to learn about the complexities of cyber warfare. The title's nearly 100 documents are drawn primarily but not exclusively from government sources and allow readers to understand how policy, strategy, doctrine, and tactics of cyber warfare are created and devised, particularly in the United States. Although the United States is the global leader in cyber capabilities and is largely driving the determination of norms within the cyber domain, the title additionally contains a small number of international documents. This invaluable work will serve as an excellent starting point for anyone seeking to understand the nature and character of international cyber warfare. Covers in detail one of the defining forms of conflict of the 21st century—cyber warfare will significantly impact virtually every American citizen over the next two decades Provides more than 90 primary source documents and matching analysis, allowing readers to investigate the underpinnings of cyber warfare Enables readers to see the development of different concepts of cyber warfare through its chronological organization Reflects the deep knowledge of an editor who is a noted expert in cyber warfare and has taught for the United States Air Force for more than a decade

Introduction to Cyber-WarfareA Multidisciplinary ApproachNewnes

In order to enable general understanding and to foster the implementation of necessary support measures in organizations, this book describes the fundamental and conceptual aspects of cyberspace abuse. These aspects are logically and reasonably discussed in the fields related to cybercrime and cyberwarfare. The book illustrates differences between the two fields, perpetrators’ activities, as well as the methods of investigating and fighting against attacks committed by perpetrators operating in cyberspace. The first chapter focuses on the understanding of cybercrime, i.e. the perpetrators, their motives and their organizations. Tools for implementing attacks are also briefly mentioned, however this book is not technical and does not intend to instruct readers about the technical aspects of cybercrime, but rather focuses on managerial views of cybercrime. Other sections of this chapter deal with the protection against attacks, fear, investigation and the cost of cybercrime. Relevant legislation and legal bodies, which are used in cybercrime, are briefly described at the end of the chapter. The second chapter deals with cyberwarfare and explains the difference between classic cybercrime and operations taking place in the modern inter-connected world. It tackles the following questions: who is committing cyberwarfare; who are the victims and who are the perpetrators? Countries which have an important role in cyberwarfare around the world, and the significant efforts being made to combat cyberwarfare on national and international levels, are mentioned. The common points of cybercrime and cyberwarfare, the methods used to protect against them and the vision of the future of cybercrime and cyberwarfare are briefly described at the end of the book.

Contents 1. Cybercrime. 2. Cyberwarfare. About the Authors Igor Bernik is Vice Dean for Academic Affairs and Head of the Information Security Lab at the University of Maribor, Slovenia. He has written and contributed towards over 150 scientific articles and conference papers, and co-authored 4 books. His current research interests concern information/cybersecurity, cybercrime, cyberwarfare and cyberterrorism.

Cyber weapons and the possibility of cyber conflict—including interference in foreign political campaigns, industrial sabotage, attacks on infrastructure, and combined military campaigns—require policymakers, scholars, and citizens to rethink twenty-first-century warfare. Yet because cyber capabilities are so new and continually developing, there is little agreement about how they will be deployed, how effective they can be, and how they can be managed. Written by leading scholars, the fourteen case studies in this volume will help policymakers, scholars, and students make sense of contemporary cyber conflict through historical analogies to past military-technological problems. The chapters are divided into three groups. The first—What Are Cyber Weapons Like?—examines the characteristics of cyber capabilities and how their use for intelligence gathering, signaling, and precision striking compares with earlier technologies for such missions. The second section—What Might Cyber Wars Be Like?—explores how lessons from several wars since the early nineteenth century, including the World Wars, could apply—or not—to cyber conflict in the twenty-first century. The final section—What Is Preventing and/or Managing Cyber

Conflict Like?—offers lessons from past cases of managing threatening actors and technologies.

Cyber weapons and cyber warfare have become one of the most dangerous innovations of recent years, and a significant threat to national security. Cyber weapons can imperil economic, political, and military systems by a single act, or by multifaceted orders of effect, with wide-ranging potential consequences. Unlike past forms of warfare circumscribed by centuries of just war tradition and Law of Armed Conflict prohibitions, cyber warfare occupies a particularly ambiguous status in the conventions of the laws of war. Furthermore, cyber attacks put immense pressure on conventional notions of sovereignty, and the moral and legal doctrines that were developed to regulate them. This book, written by an unrivalled set of experts, assists in proactively addressing the ethical and legal issues that surround cyber warfare by considering, first, whether the Laws of Armed Conflict apply to cyberspace just as they do to traditional warfare, and second, the ethical position of cyber warfare against the background of our generally recognized moral traditions in armed conflict. The book explores these moral and legal issues in three categories. First, it addresses foundational questions regarding cyber attacks. What are they and what does it mean to talk about a cyber war? The book presents alternative views concerning whether the laws of war should apply, or whether transnational criminal law or some other peacetime framework is more appropriate, or if there is a tipping point that enables the laws of war to be used. Secondly, it examines the key principles of jus in bello to determine how they might be applied to cyber-conflicts, in particular those of proportionality and necessity. It also investigates the distinction between civilian and combatant in this context, and studies the level of causation necessary to elicit a response, looking at the notion of a 'proximate cause'. Finally, it analyzes the specific operational realities implicated by particular regulatory regimes. This book is unmissable reading for anyone interested in the impact of cyber warfare on international law and the laws of war.

Introduction to Cyber Security is a handy guide to the world of Cyber Security. It can serve as a reference manual for those working in the Cyber Security domain. The book takes a dip in history to talk about the very first computer virus, and at the same time, discusses in detail about the latest cyber threats. There are around four chapters covering all the Cyber Security technologies used across the globe. The book throws light on the Cyber Security landscape and the methods used by cybercriminals. Starting with the history of the Internet, the book takes the reader through an interesting account of the Internet in India, the birth of computer viruses, and how the Internet evolved over time. The book also provides an insight into the various techniques used by Cyber Security professionals to defend against the common cyberattacks launched by cybercriminals. The readers will also get to know about the latest technologies that can be used by individuals to safeguard themselves from any cyberattacks, such as phishing scams, social engineering, online frauds, etc. The book will be helpful for those planning to make a career in the Cyber Security domain. It can serve as a guide to prepare for the interviews, exams and campus work.

The result of a three-year project, this manual addresses the entire spectrum of international legal issues raised by cyber warfare.

This book is a multi-disciplinary analysis of cyber warfare, featuring contributions by leading experts from a mixture of academic and professional backgrounds. Cyber warfare, meaning interstate cyber aggression, is an increasingly important emerging phenomenon in international relations, with state-orchestrated (or apparently state-orchestrated) computer network attacks occurring in Estonia (2007), Georgia (2008) and Iran (2010). This method of waging warfare – given its potential to, for example, make planes fall from the sky or cause nuclear power plants to melt down – has the capacity to be as devastating as any conventional means of conducting armed conflict. Every state in the world now has a cyber-defence programme and over 120 states also have a cyber-attack programme. While the amount of literature on cyber warfare is growing within disciplines, our understanding of the subject has been limited by a lack of cross-disciplinary engagement. In response, this book, drawn from the fields of computer science, military strategy, international law, political science and military ethics, provides a critical overview of cyber warfare for those approaching the topic from whatever angle. Chapters consider the emergence of the phenomena of cyber warfare in international affairs; what cyber-attacks are from a technological standpoint; the extent to which cyber-attacks can be attributed to state actors; the strategic value and danger posed by cyber conflict; the legal regulation of cyber-attacks, both as international uses of force and as part of an on-going armed conflict, and the ethical implications of cyber warfare. This book will be of great interest to students of cyber warfare, cyber security, military ethics, international law, security studies and IR in general. This book examines the shape, sources and dangers of information warfare (IW) as it pertains to military, diplomatic and civilian stakeholders. Cyber warfare and information warfare are different beasts. Both concern information, but where the former does so exclusively in its digitized and operationalized form, the latter does so in a much broader sense: with IW, information itself is the weapon. The present work aims to help scholars, analysts and policymakers understand IW within the context of cyber conflict. Specifically, the chapters in the volume address the shape of influence campaigns waged across digital infrastructure and in the psychology of democratic populations in recent years by belligerent state actors, from the Russian Federation to the Islamic Republic of Iran. In marshalling evidence on the shape and evolution of IW as a broad-scoped phenomenon aimed at societies writ large, the authors in this book present timely empirical investigations into the global landscape of influence operations, legal and strategic analyses of their role in international politics, and insightful examinations of the potential for democratic process to overcome pervasive foreign manipulation. This book will be of much interest to students of

cybersecurity, national security, strategic studies, defence studies and International Relations in general.
A practical guide to understanding and analyzing cyber attacks by advanced attackers, such as nation states. Cyber attacks are no longer the domain of petty criminals. Today, companies find themselves targeted by sophisticated nation state attackers armed with the resources to craft scarily effective campaigns. This book is a detailed guide to understanding the major players in these cyber wars, the techniques they use, and the process of analyzing their advanced attacks. Whether you're an individual researcher or part of a team within a Security Operations Center (SoC), you'll learn to approach, track, and attribute attacks to these advanced actors. The first part of the book is an overview of actual cyber attacks conducted by nation-state actors and other advanced organizations. It explores the geopolitical context in which the attacks took place, the patterns found in the attackers' techniques, and the supporting evidence analysts used to attribute such attacks. Dive into the mechanisms of: • North Korea's series of cyber attacks against financial institutions, which resulted in billions of dollars stolen • The world of targeted ransomware attacks, which have leveraged nation state tactics to cripple entire corporate enterprises with ransomware • Recent cyber attacks aimed at disrupting or influencing national elections globally

The book’s second part walks through how defenders can track and attribute future attacks. You’ll be provided with the tools, methods, and analytical guidance required to dissect and research each stage of an attack campaign. Here, Jon DiMaggio demonstrates some of the real techniques he has employed to uncover crucial information about the 2021 Colonial Pipeline attacks, among many other advanced threats. He now offers his experience to train the next generation of expert analysts.

This textbook offers an accessible introduction to the historical, technical, and strategic context of cyber conflict. The international relations, policy, doctrine, strategy, and operational issues associated with computer network attack, computer network exploitation, and computer network defense are collectively referred to as cyber warfare. This new textbook provides students with a comprehensive perspective on the technical, strategic, and policy issues associated with cyber conflict as well as an introduction to key state and non-state actors. Specifically, the book provides a comprehensive overview of these key issue areas: the historical emergence and evolution of cyber warfare, including the basic characteristics and methods of computer network attack, exploitation, and defense; a theoretical set of perspectives on conflict in the digital age from the point of view of international relations (IR) and the security studies field; the current national perspectives, policies, doctrines, and strategies relevant to cyber warfare; and an examination of key challenges in international law, norm development, and the potential impact of cyber warfare on future international conflicts. This book will be of much interest to students of cyber conflict and other forms of digital warfare, security studies, strategic studies, defense policy, and, most broadly, international relations.

Stories of cyberattacks dominate the headlines. Whether it is theft of massive amounts of personally identifiable information or the latest intrusion of foreign governments in U.S. government and industrial sites, cyberattacks are now important. For professionals and the public, knowing how the attacks are launched and succeed is vital to ensuring cyber security. The book provides a concise summary in a historical context of the major global cyber security attacks since 1980. Each attack covered contains an overview of the incident in layman terms, followed by a technical details section, and culminating in a lessons learned and recommendations section.

Cyberwarfare, like the seismic shift of policy with nuclear warfare, is modifying warfare into non-war warfare. A few distinctive characteristics of cyberwar emerge. Cyberwarfare has blurred the distinction between adversary and ally. Cyber probes continuously occur between allies and enemies alike, causing cyberespionage to merge with warfare. Espionage, as old as war itself, has technologically merged with acts of cyberwar as states threaten each other with prepositioned malware in each other's cyberespionage probed infrastructure. These two cyber shifts to warfare are agreed upon and followed by the US, Russia and China. What is not agreed upon in this shifting era of warfare are the policies upon which cyberwarfare is based. This book charts the policies in three key actors and navigates the futures of policy on an international stage. Essential reading for students of war studies and security professionals alike.

The World Economic Forum regards the threat of cyber attack as one of the top five global risks confronting nations of the world today. Cyber attacks are increasingly targeting the core functions of the economies in nations throughout the world. The threat to attack critical infrastructures, disrupt critical services, and induce a wide range of dam

"Introduction to Cyber Security" is a book for all ages, irrespective of gender, but without the common technical jargon. The objective of this book is to provide the essentials regarding what Cyber security is really about and not the perception of it being related purely to hacking activity.It will provide the fundamental considerations for those who are interested in, or thinking of changing career into the field of Cyber Security. It will also improve a reader's understanding of key terminology commonly used, nowadays, surrounding internet issues as they arise Through the rise of big data and the internet of things, terrorist organizations have been freed from geographic and logistical confines and now have more power than ever before to strike the average citizen directly at home. This, coupled with the inherently asymmetrical nature of cyberwarfare, which grants great advantage to the attacker, has created an unprecedented national security risk that both governments and their citizens are woefully ill-prepared to face. Examining cyber warfare and terrorism through a critical and academic perspective can lead to a better understanding of its foundations and implications. Cyber Warfare and Terrorism: Concepts, Methodologies, Tools, and Applications is an essential reference for the latest research on the utilization of online tools by terrorist organizations to communicate with and recruit potential extremists and examines effective countermeasures employed by law enforcement agencies to defend against such threats. Highlighting a range of topics such as cyber threats, digital intelligence, and counterterrorism, this multi-volume book is ideally designed for law enforcement, government officials, lawmakers, security analysts, IT specialists, software developers, intelligence and security practitioners, students, educators, and researchers.

Dependence on computers has had a transformative effect on human society. Cybernetics is now woven into the core functions of virtually every basic institution, including our oldest ones. War is one such institution, and the digital revolution's impact on it has been profound. The American military, which has no peer, is almost completely reliant on high-tech computer systems. Given the Internet's potential for full-spectrum surveillance and information disruption, the marshaling of computer networks represents the next stage of cyberwar. Indeed, it is upon us already. The recent Stuxnet episode, in which Israel fed a malignant computer virus into Iran's nuclear facilities, is one such example. Penetration into US government computer systems by Chinese hackers-presumably sponsored by the Chinese government-is another. Together, they point to a new era in the evolution of human conflict. In Cybersecurity and Cyerbwar: What Everyone Needs to Know, noted experts Peter W. Singer and Allan Friedman lay out how the revolution in military cybernetics occurred and explain where it is headed. They begin with an explanation of what cyberspace is before moving on to discussions of how it can be exploited and why it is so hard to defend. Throughout, they discuss the latest developments in military and security technology. Singer and Friedman close with a discussion of how people and governments can protect themselves. In sum, Cybersecurity and Cyerbwar is the definitive account on the subject for the educated general reader who wants to know more about the nature of war, conflict, and security in the twenty-first century.