

# Radar Principles For The Nonspecialist

**Radar Principles for the Non-Specialist**-John C. Toomay 2012-12-06 What This Book Is This book is about radar. It will teach you the essentials of radar, the underlying principles. It is not like an engineering handbook which provides detailed design equations without explaining either derivation or rationale. It is not like a graduate school textbook which may be abstruse and esoteric to the point of incomprehensibility. And it is not like an anthology of popular magazine articles which may be gaudy but superficial. It is an attempt to distill the very complex, rich technology of radar into its fundamentals, tying them to the laws of nature on one end and to the most modern and complex systems on the other. Who It's For If your work requires you to supervise or meet as coequals with radar systems engineers or designers, this book will allow you to understand them, to question them intelligently and perhaps to provide them with a perspective (a dispassionate yet competent view) that they lack. If you are trained in another discipline but have been made the manager of a radar project or a system program that has one or more radars as sub-systems, this book will provide you with the tools you need, not only to give your team members confidence, but also to make a substantive technical contribution yourself.

**Radar and Electronic Warfare Principles for the Non-Specialist**-Paul Hannen 2014 This book presents a comprehensive set of radar and electronic warfare principles including many of the latest applications in a clear and consistent manner. Following on from the 3rd edition of this book (2004) Radar and Electronic Warfare Principles for the Non-specialist, 4th Edition, remains true to the traditional strength of the book, providing radar principles for the non-specialist, and also now introducing EW principles. All radar-related material has been reviewed, revised and enhanced as necessary. New to this edition: Significant revisions to; target signal-to-noise ratio, target detection theory, array antennas, radar measurements and tracking, and target signatures The addition of new EW-related material addressing electronic support (ES), electronic attack (EA), and electronic protection (EP) The advanced radar concepts chapter has been revised, including the addition of a section on modern multi-function, -mode, -mission radar systems. Most of the chapters are stand-alone allowing the reader to be selective and still benefit from the content. Exercises at the end of each chapter are provided to reinforce the concepts presented and illustrate their applications, making this book ideal for academic learning, training courses or self-study. Topics covered include: electromagnetic propagation, target detection, antennas, measurements and tracking, radar cross section and system applications. By reading this book, you should expect to be able to conduct a respectable, first-order radar system design or analysis and perform a first-order EW system design or analysis. This book will also provide you with the skills to critique the designs or analysis of others.

**Radar Principles for the Non-Specialist**-J.C. Toomay 2004-06-30 This updated edition provides a solid understanding of radar fundamentals and applications with far less of the mathematical rigor and technical data presented in engineering books for specialists.

**Radar Principles for the Non-specialist**-John C. Toomay 2004 This leading book for basic radar training and self-study distills the complex technology of radar into its fundamentals, tying them to the laws of nature on one end and the most modern and complex systems on the other. It provides a solid understanding of radar fundamentals and applications with far less of the mathematical rigor and technical data presented in engineering books for specialists.

**Radar Principles for the Non-Specialist**-J.C. Toomay 2004 This updated edition provides a solid understanding of radar fundamentals and applications with far less of the mathematical rigor and technical data presented in engineering books for specialists.

**Understanding Communications Systems Principles – A Tutorial Approach**-Héctor J. De Los Santos 2021-06-07 Wireless communications and sensing systems are nowadays ubiquitous: cell phones and automotive radars typifying two of the most familiar examples. This book introduces the field by addressing its fundamental principles, proceeding from its very beginnings up to today's emerging technologies related to the fifth-generation wireless systems (5G), Multi-Input Multiple Output (MIMO) connectivity, and Aerospace/Electronic Warfare Radar. The tone is tutorial. Problems are included at the end of each chapter to facilitate the understanding and assimilation of the material to electrical engineering undergraduate/graduate students and beginning and non-specialist professionals. Free temporary access to Keysight's SystemVue system simulation is provided to further enhance reader learning through hands-on tutorial exercises. Chapter 1 introduces wireless communications and sensing and in particular how curiosity-driven scientific research led to the foundation of the field. Chapter 2 presents a brief introduction to the building blocks that make up wireless systems. Chapter 3 focuses on developing an understanding of the performance parameters that characterize a wireless system. Chapter 4 deals with circuit topologies for modulation and detection. In Chapter 5 we cover the fundamental transmitter and receiver systems architectures that enable the transmission of information at precise frequencies and their reception from among a rather large multitude of other signals present in space. Chapter 6 introduces 5G, its motivation, and its development and adoption challenges for providing unprecedented levels of highest speed wireless connectivity. Chapter 7 takes on the topic of MIMO, its justification and its various architectures. Chapter 8 addresses the topic of aerospace/electronic warfare radar and finally Chapter 9 presents three Tutorials utilizing the SystemVue simulation tool.

**Radar and Electronic Warfare Principles for the Non-specialist**-Paul J. Hannen 2013

**Ground Penetrating Radar, 2nd Edition**-David J. Daniels 2004-01-01 This book describes the key elements of the subject of surface penetrating radar, and in general terms the inter-relationship between those topics in electromagnetism, soil science, geophysics and signal processing which form part of its design.

**Communications, Radar and Electronic Warfare**-Adrian Graham 2011-01-04 A practical guide to the principles of radio communications for both civilian and military applications In this book, the author covers both the civilian and military uses of technology, focusing particularly on the applications of radio propagation and prediction. Divided into two parts, the author introduces the basic theory of radio prediction before providing a step-by-step explanation of how this theory can be translated into real-life applications. In addition, the book presents up-to-date systems and methods to illustrate how these applications work in practice. This includes systems working in the HF bands and SHF. Furthermore, the author examines the performance of these systems, and also the effects of noise, interference and deliberate jamming, as well as the performance of jamming, detection and intercept systems. Particular attention is paid to the problems caused by Radio Controlled Improvised Explosive Devices (RCIEDs). Key Features: A practical handbook on the topic of radio communications and propagation Written by an expert in both the civilian and military applications of the technology Focuses on methods such as radio and radar jamming, and radio-controlled improvised explosive devices (IEDs) Contains problems and solutions to clarify key topics

**An Introduction to Passive Radar**-Hugh D. Griffiths 2017-02-28 Developed by recognized experts in the field, this first-of-its-kind resource introduces the basic principles of passive radar technology and provides an overview of recent developments in this field and existing real passive radar systems. This book explains how passive radar works, how it differs from the active type, and demonstrates the benefits and drawbacks of this novel technology. Properties of illuminators, including ambiguity functions, digital vs. analog, digitally-coded waveforms, vertical-plane coverage, and satellite-borne and radar illuminators are explored. Readers find practical guidance on direct signal suppression, passive radar performance prediction, and detection and tracking. This book provides concrete examples of systems and results, including analog TV, FM radio, cell phone base stations, DVB-T and DAB, HF skywave transmissions, indoor WiFi, satellite-borne illuminators, and low-cost scientific remote sensing. Future developments and applications of passive radar are also presented.

**Introduction to Radar Target Recognition**-P. Tait 2005 This book text provides an overview of the radar target recognition process and covers the key techniques being developed for operational systems. It is based on the fundamental scientific principles of high resolution radar, and explains how the underlying techniques can be used in real systems, taking into account the characteristics of practical radar system designs and component limitations. It also addresses operational aspects, such as how high resolution modes would fit in with other functions such as detection and tracking.

**Blip, Ping, and Buzz**-Mark Denny 2007-10-16 With twenty years' experience explaining technical concepts to non-experts in the radar industry, Mark Denny is the perfect guide to understanding just how remote sensing -- radar or sonar -- works. Weaving together interesting history and simple science, Denny reveals the world of echolocation to the curious student, technology buff, and expert alike.

**Stimson's Introduction to Airborne Radar**-George W. Stimson 2013-06-30 This text has fully modernized coverage and maintained the unique original look and feel. Even the timeless principles and core fundamentals of general radar have been updated in wording and new graphics, while the more advanced concepts and applications in airborne radar have been brought into the digital age of radar signal processing and solid state electronics. This text is written specifically as an overview without going overboard on the math. Virtually anybody with a knowledge of high school algebra, trigonometry, and physics will be able to read and absorb the vast majority of the material. Living up to its moniker of Introduction, this book contains extensive fundamental materials and practical applications, using visual system exemplars to aid explanations. The full colour layout is enhanced with an immense number of illustrations, figures, tables, and photographs.

**Weather Radar**-Peter Meischner 2013-04-17 With their images practically ubiquitous in the daily media, weather radar systems provide data not only for understanding weather systems and improving forecasts (especially critical for severe weather), but also for hydrological applications, flood warnings and climate research in which ground verification is needed for global precipitation measurements by satellites. This book offers an accessible overview of advanced methods, applications and modern research from the European perspective. An extensive introductory chapter summarizes the principles of weather radars and discusses the potential of modern radar systems, including Doppler and polarisation techniques, data processing, and error-correction methods. Addressing both specialist researchers and nonspecialists from related areas, this book will also be useful for graduate students planning to specialize in this field

**Phased-Array Radar Design**-Tom Jeffrey 2009-01-01 Phased-Array Radar Design is a text-reference designed for electrical engineering graduate students in colleges and universities as well as for corporate in-house training programs for radar design engineers, especially systems engineers and analysts who would like to gain hands-on, practical knowledge and skills in radar design fundamentals, advanced radar concepts, trade-offs for radar design and radar performance analysis.

**Technical and Military Imperatives**-L Brown 1999-01-01 Technical and Military Imperatives: A Radar History of World War II is a

coherent account of the history of radar in the second World War. Although many books have been written on the early days of radar and its role in the war, this book is by far the most comprehensive, covering ground, air, and sea operations in all theatres of World War II. The author manages to synthesize a vast amount of material in a highly readable, informative, and enjoyable way. Of special interest is extensive new material about the development and use of radar by Germany, Japan, Russia, and Great British. The story is told without undue technical complexity, so that the book is accessible to specialists and nonspecialists alike.

**Introduction to Infrared and Electro-optical Systems**-Ronald G. Driggers 2012 This newly revised and updated edition of a classic Artech House book offers a current and complete and introduction to the analysis and design of Electro-Optical Systems (EO) imaging systems. The Second Edition provides numerous updates and brand new coverage of today's most important areas, including the integrated spatial frequency approach and a focus on the weapons of terrorists as objects of interest. This comprehensive reference details the principles and components of the Linear Shift-Invariant (LSI) infrared and electro-optical systems and shows you how to combine this approach with calculus and domain transformations to achieve a successful imaging system analysis. Ultimately, the steps described in this book lead to results in quantitative characterizations of performance metrics such as modulation transfer functions, minimum resolvable temperature difference, minimum resolvable contrast, and probability of object discrimination. The book includes an introduction to two-dimensional functions and mathematics which can be used to describe image transfer characteristics and imaging system components. You also learn diffraction concepts of coherent and incoherent imaging systems which show you the fundamental limits of their performance. By using the evaluation procedures contained in this desktop reference, you become capable of predicting both sensor test and field performance and quantifying the effects of component variations. This practical resource includes over 780 time-saving equations.

**GPS Declassified**-Richard D. Easton 2013-10-01 GPS Declassified examines the development of GPS from its secret, Cold War military roots to its emergence as a worldwide consumer industry. Drawing on previously unexplored documents, the authors examine how military rivalries influenced the creation of GPS and shaped public perceptions about its origin. Since the United States' first program to launch a satellite in the late 1950s, the nation has pursued dual paths into space—one military and secret, the other scientific and public. Among the many commercial spinoffs this approach has produced, GPS arguably boasts the greatest impact on our daily lives. Told by the son of a navy insider—whose work helped lay the foundations for the system—and a science and technology journalist, the story chronicles the research and technological advances required for the development of GPS. The authors peek behind the scenes at pivotal events in GPS history. They note how the technology moved from the laboratory to the battlefield to the dashboard and the smartphone, and they raise the specter of how this technology and its surrounding industry affect public policy. Insights into how the system works and how it fits into a long history of advances in navigation tie into discussions of the myriad applications for GPS.

**Introduction to Radar Systems**-Merrill I. Skolnik 1988

**Introduction to Airborne Radar**-George W. Stimson 1998-01-01 An introduction to the subject for non-specialists: engineers, technicians, pilots, and aerospace industry marketing, public relations, and customer support personnel. Also a reference for specialists in the field. The completely rewritten and revised Second Edition updates the original published by the Hughes Aircraft Company.

**I Am Radar**-Reif Larsen 2015-02-24 The Washington Post "[G]randly ambitious... another masterpiece... this genre includes some of the greatest novels of our time, from Pynchon's V. to David Foster Wallace's Infinite Jest. That's the troupe Larsen has decided to join, and I Am Radar is a dazzling performance." The moment just before Radar Radmanovic is born, all of the hospital's electricity mysteriously fails. The delivery takes place in total darkness. Lights back on, the staff sees a healthy baby boy—with pitch-black skin—born to the stunned white parents. No one understands the uncanny electrical event or the unexpected skin color. "A childbirth is an explosion," the ancient physician says by way of explanation. "Some shrapnel is inevitable, isn't it?" A kaleidoscopic novel both heartbreaking and dazzling, Reif Larsen's I Am Radar begins with Radar's perplexing birth but rapidly explodes outward, carrying readers across the globe and throughout history, as well as to unknown regions where radio waves and subatomic particles dance to their own design. Spanning this extraordinary range with grace and empathy, humor and courage, I Am Radar is the vessel where a century of conflict and art unite in a mesmerizing narrative whole. Deep in arctic Norway, a cadre of Norwegian schoolteachers is imprisoned during the Second World War. Founding a radical secret society that will hover on the margins of recorded history for decades to come, these schoolteachers steal radioactive material from a hidden Nazi nuclear reactor and use it to stage a surreal art performance on a frozen coastline. This strange society appears again in the aftermath of Cambodia's murderous Khmer Rouge regime, when another secret performance takes place but goes horrifically wrong. Echoes of this disaster can be heard during the Yugoslavian wars, when an avant-garde puppeteer finds himself trapped inside Belgrade while his brother serves in the genocidal militia that attacks Srebrenica. Decades later, in the war-torn Congo, a disfigured literature professor assembles the largest library in the world even as the country around him collapses. All of these stories are linked by Radar—now a gifted radio operator living in the New Jersey Meadowlands—who struggles with love, a set of hapless parents, and a terrible medical affliction that he has only just begun to comprehend. As I Am Radar accelerates toward its unforgettable conclusion, these divergent strands slowly begin to converge, revealing that beneath our apparent differences, unseen harmonies secretly unite our lives. Drawing on the furthest reaches of quantum physics, forgotten history, and mind-bending art, Larsen's I Am Radar is a triumph of storytelling at its most primal, elegant, and epic: a breathtaking journey through humanity's darkest hours only to arrive at a place of shocking wonder and redemption. Cleveland Plain-Dealer "Larsen's is an extraordinarily lush and verdant imagination, blooming wildly on the borders of the absurd and the riotous, the surreal and the ordinary...Quite unlike any [novel] I've read in a long time. One doesn't consume it; one enters it, as part of a literary enactment... Brilliant...The effort is well-rewarded: It is both maddening and marvelous...I can't wait to see what he pulls off next."

**Crystal Growth**-A.W. Vere 2013-06-29 This book is the second in a series of scientific textbooks designed to cover advances in selected research fields from a basic and general viewpoint, so that only limited knowledge is required to understand the significance of recent developments. Further assistance for the non-specialist is provided by the summary of abstracts in Part 2, which includes many of the major papers published in the research field. Crystal Growth of Semiconductor Materials has been the subject of numerous books and reviews and the fundamental principles are now well-established. We are concerned chiefly with the deposition of atoms onto a suitable surface - crystal growth - and the generation of faults in the atomic structure during growth and subsequent cooling to room temperature - crystal defect structure. In this book I have attempted to show that whilst the fundamentals of these processes are relatively simple, the complexities of the interactions involved and the individuality of different materials systems and growth processes have ensured that experimentally verifiable predictions from scientific principles have met with only limited success - good crystal growth remains an art. However, recent advances, which include the reduction of growth temperatures, the reduction or elimination of reactant transport variables and the use of better-controlled energy sources to promote specific reactions, are leading to simplified growth systems.

**Principles of Modern Radar**-James A. Scheer 2013-12-31 This series will appeal to radar practitioners within military or government. The first volume was written as a textbook for courses in radar systems and technology and the second volume is aimed at practicing radar engineers and graduate level students. The third volume is designed to serve as a self-contained reference for those aiming to become experts in an advanced technology or application area. POMR: Radar Applications Volume 3 includes concise descriptions of the purposes, principal issues and radar methods found in a wide variety of current radar types. POMR: Advanced Techniques Volume 2 is a professional reference for practicing engineers that provides a stepping stone to advanced practice. POMR: Basic Principles Volume 1 focuses on 4 key areas; basic concepts, radar signal phenomenology, major subsystems of modern radars and signal and data processing basics.

**System Engineering Analysis, Design, and Development**-Charles S. Wasson 2015-11-16 Praise for the first edition: "This excellent text will be useful to every system engineer (SE) regardless of the domain. It covers ALL relevant SE material and does so in a very clear, methodical fashion. The breadth and depth of the author's presentation of SE principles and practices is outstanding." -Philip Allen This textbook presents a comprehensive, step-by-step guide to System Engineering analysis, design, and development via an integrated set of concepts, principles, practices, and methodologies. The methods presented in this text apply to any type of human system -- small, medium, and large organizational systems and system development projects delivering engineered systems or services across multiple business sectors such as medical, transportation, financial, educational, governmental, aerospace and defense, utilities, political, and charity, among others. Provides a common focal point for "bridging the gap" between and unifying System Users, System Acquirers, multi-discipline System Engineering, and Project, Functional, and Executive Management education, knowledge, and decision-making for developing systems, products, or services Each chapter provides definitions of key terms, guiding principles, examples, author's notes, real-world examples, and exercises, which highlight and reinforce key SE&D concepts and practices Addresses concepts employed in Model-Based Systems Engineering (MBSE), Model-Driven Design (MDD), Unified Modeling Language (UML) / Systems Modeling Language (SysML), and Agile/Spiral/V-Model Development such as user needs, stories, and use cases analysis; specification development; system architecture development; User-Centric System Design (UCSD); interface definition & control; system integration & test; and Verification & Validation (V&V) Highlights/introduces a new 21st Century Systems Engineering & Development (SE&D) paradigm that is easy to understand and implement. Provides practices that are critical staging points for technical decision making such as Technical Strategy Development; Life Cycle requirements; Phases, Modes, & States; SE Process; Requirements Derivation; System Architecture Development, User-Centric System Design (UCSD); Engineering Standards, Coordinate Systems, and Conventions; et al. Thoroughly illustrated, with end-of-chapter exercises and numerous case studies and examples, Systems Engineering Analysis, Design, and Development, Second Edition is a primary textbook for multi-discipline, engineering, system analysis, and project management undergraduate/graduate level students and a valuable reference for professionals.

**MATLAB Simulations for Radar Systems Design**-Bassem R. Mahafza 2003-12-17 Simulation is integral to the successful design of modern radar systems, and there is arguably no better software for this purpose than MATLAB. But software and the ability to use it does not guarantee success. One must also: Understand radar operations and design philosophy Know how to select the radar parameters to meet the design req

**Reaching Down the Rabbit Hole**-Allan H. Ropper 2014-09-30 A top neurologist explains the difficulty of diagnosing brain diseases through such cases as a college quarterback who keeps calling the same play and a salesman who continuously drives around a traffic circle.

**Vertical GaN and SiC Power Devices**-Kazuhiro Mochizuki 2018-04-30 This unique new resource provides a comparative introduction to vertical Gallium Nitride (GaN) and Silicon Carbide (SiC) power devices using real commercial device data, computer, and physical models. This book uses commercial examples from recent years and presents the design features of various GaN and SiC power components and devices. Vertical versus lateral power semiconductor devices are explored, including those based on wide bandgap materials. The abstract concepts of solid state physics as they relate to solid state devices are explained with particular emphasis on power solid state devices. Details about the effects of photon recycling are presented, including an explanation of the phenomenon of the family tree of photon-recycling. This book offers in-depth coverage of bulk crystal growth of GaN, including hydride vapor-phase epitaxial (HVPE) growth, high-pressure nitrogen solution growth, sodium-flux growth, ammonothermal growth, and sublimation growth of SiC. The fabrication process, including ion implantation, diffusion, oxidation, metallization, and passivation is explained. The book provides details about metal-semiconductor contact, unipolar power diodes, and metal-insulator-semiconductor (MIS) capacitors. Bipolar power diodes, power switching devices, and edge terminations are also covered in this resource.

**Radio Frequency Transistors**-Helge Granberg 2013-10-22 Cellular telephones, satellite communications and radar systems are adding to the increasing demand for radio frequency circuit design principles. At the same time, several generations of digitally-oriented graduates are missing the essential RF skills. This book contains a wealth of valuable design information difficult to find elsewhere. It's a complete 'tool kit' for successful RF circuit design. Written by experienced RF design engineers from Motorola's semiconductors product section. Book covers design examples of circuits (e.g. amplifiers; oscillators; switches; pulsed power; modular systems; wiring state-of-the-art devices; design techniques).

**Sea Clutter**-Keith D. Ward 2006-06-21 Sea Clutter: Scattering, the K Distribution and Radar Performance examines the statistics of radar scattering from the sea surface in terms of their relevance to radar operating in a maritime environment; including remote sensing, surveillance and targeting applications. A lot of the work in the book is based on the compound Kdistribution model for the amplitude statistics of sea clutter. In addition, the book addresses the specification of performance required by customers and the measurement of performance of systems supplied to customers.

**Airborne Early Warning System Concepts, 3rd Edn**-Maurice Long 2004-01-01 Supported by 202 equations and 170 illustrations, Airborne Early Warning System Concepts is an invaluable reference tool for a wide audience. It will be a welcome library addition for the engineer, scientist, system integrator, user, designer, or manager with interest in AEW concepts. It is also suitable for students and professors of electrical and system engineering or military science. This comprehensive discussion of airborne early warning (AEW) system concepts encompasses a wide range of issues, including capabilities and limitations, developmental trends and opportunities for improvement. Consisting of contributions from experts in the field, the book is presented at varying levels of complexity, ranging from elementary to advanced. For the generalist, the text provides a fundamental understanding of the status of AEW concepts with the use of only elementary mathematics. For the specialist, there are separate chapters that emphasize key AEW radar issues.

**Testing of Concrete in Structures**-John H. Bungey 2014-04-21 Providing a comprehensive overview of the techniques involved in testing concrete in structures, Testing of Concrete in Structures discusses both established techniques and new methods, showing potential for future development, and documenting them with illustrative examples. Topics have been expanded where significant advances have taken place in the field, for example integrity assessment, sub-surface radar, corrosion assessment and localized dynamic response tests. This fourth edition also covers the new trends in equipment and procedures, such as the continuation of general moves to automate test methods and developments in digital technology and the growing importance of performance monitoring, and includes new and updated references to standards. The non-specialist civil engineer involved in assessment, repair or maintenance of concrete structures will find this a thorough update.

**They Thought They Were Free**-Milton Mayer 2017-11-28 "When this book was first published it received some attention from the critics but none at all from the public. Nazism was finished in the bunker in Berlin and its death warrant signed on the bench at Nuremberg." That's Milton Mayer, writing in a foreword to the 1966 edition of They Thought They Were Free. He's right about the critics: the book was a finalist for the National Book Award in 1956. General readers may have been slower to take notice, but over time they did—what we've seen over decades is that any time people, across the political spectrum, start to feel that freedom is threatened, the book experiences a ripple of word-of-mouth interest. And that interest has never been more prominent or potent than what we've seen in the past year. They Thought They Were Free is an eloquent and provocative examination of the development of fascism in Germany. Mayer's book is a study of ten Germans and their lives from 1933-45, based on interviews he conducted after the war when he lived in Germany. Mayer had a position as a research professor at the University of Frankfurt and lived in a nearby small Hessian town which he disguised with the name "Kronenberg." "These ten men were not men of distinction," Mayer noted, but they had been members of the Nazi Party; Mayer wanted to discover what had made them Nazis. His discussions with them of Nazism, the rise of the Reich, and mass complicity with evil became the backbone of this book, an indictment of the ordinary German that is all the more powerful for its refusal to let the rest of us pretend that our moment, our society, our country are fundamentally immune. A new foreword to this edition by eminent historian of the Reich Richard J. Evans puts the book in historical and contemporary context. We live in an age of fervid politics and hyperbolic rhetoric. They Thought They Were Free cuts through that, revealing instead the slow, quiet accretions of change, complicity, and abdication of moral authority that quietly mark the rise of evil.

**Decisive Force**-Richard G. Davis 1996-01-01 Examines the U.S. Air Force strategic bombing campaign of Iraq & Iraqi armed forces occupying Kuwait from January 17th through February 28th, 1991. Describes the aircraft & weapons, changes in technology & the reexamination & reapplication of traditional strategic bombing theory by USAF planning officers. Provides a chronological review of the campaign with an analysis of the results. Photos, maps, graphs & tables. Includes suggested readings.

**Routledge Handbook of Crime Science**-Richard Wortley 2018-11-13 Crime science is precisely what it says it is: the application of science to the phenomenon of crime. This handbook, intended as a crime science manifesto, showcases the scope of the crime science field and provides the reader with an understanding of the assumptions, aspirations and methods of crime science, as well as the variety of topics that fall within its purview. Crime science provides a distinctive approach to understanding and dealing with crime: one that is outcome-oriented, evidence-based and that crosses boundaries between disciplines. The central mission of crime science is to find new ways to cut crime and increase security. Beginning by setting out the case for crime science, the editors examine the roots of crime science in environmental criminology and describe its key features. The book is then divided into two sections. The first section comprises chapters by disciplinary specialists about the contributions their sciences can make or have already made to crime science. Chapter 12 of this book is freely available as a downloadable Open Access PDF under a Creative Commons Attribution-Non Commercial-No Derivatives 3.0 license.

**Doppler Radar Physiological Sensing**-Olga Boric-Lubecke 2015-12-15 Presents a comprehensive description of the theory and practical implementation of Doppler radar-based physiological monitoring This book includes an overview of current physiological monitoring techniques and explains the fundamental technology used in remote non-contact monitoring methods. Basic radio wave propagation and radar principles are introduced along with the fundamentals of physiological motion and measurement. Specific design and implementation considerations for physiological monitoring radar systems are then discussed in detail. The authors address current research and commercial development of Doppler radar based physiological monitoring for healthcare and other applications. Explains pros and cons of different Doppler radar architectures, including CW, FMCW, and pulsed Doppler radar Discusses nonlinear demodulation methods, explaining dc offset, dc information, center tracking, and demodulation enabled by dc cancellation Reviews advanced system architectures that address issues of dc offset, spectrum folding, motion interference, and range resolution Covers Doppler radar physiological measurements demonstrated to date, from basic cardiopulmonary rate extractions to more involved volume assessments Doppler Radar Physiological Sensing serves as a fundamental reference for radar, biomedical, and microwave engineers as well as healthcare professionals interested in remote physiological monitoring methods.

**The Fundamentals of Aircraft Combat Survivability Analysis and Design**-Robert E. Ball 2003 From infant car seats to the design of aircraft cargo bay structures that can withstand bomb blasts, the government is taking the lead in survivability standards. The extensively illustrated new edition of this book presents the fundamentals of the aircraft combat survivability design discipline as defined by the DoD military standards and acquisition processes.

**Deep Learning with PyTorch**-Luca Pietro Giovanni Antiga 2020-07-01 “We finally have the definitive treatise on PyTorch! It covers the basics and abstractions in great detail. I hope this book becomes your extended reference document.” —Soumith Chintala, co-creator of PyTorch Key Features Written by PyTorch’s creator and key contributors Develop deep learning models in a familiar Pythonic way Use PyTorch to build an image classifier for cancer detection Diagnose problems with your neural network and improve training with data augmentation Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About The Book Every other day we hear about new ways to put deep learning to good use: improved medical imaging, accurate credit card fraud detection, long range weather forecasting, and more. PyTorch puts these superpowers in your hands. Instantly familiar to anyone who knows Python data tools like NumPy and Scikit-learn, PyTorch simplifies deep learning without sacrificing advanced features. It’s great for building quick models, and it scales smoothly from laptop to enterprise. Deep Learning with PyTorch teaches you to create deep learning and neural network systems with PyTorch. This practical book gets you to work right away building a tumor image classifier from scratch. After covering the basics, you’ll learn best practices for the entire deep learning pipeline, tackling advanced projects as your PyTorch skills become more sophisticated. All code samples are easy to explore in downloadable Jupyter notebooks. What You Will Learn Understanding deep learning data structures such as tensors and neural networks Best practices for the PyTorch Tensor API, loading data in Python, and visualizing results Implementing modules and loss functions Utilizing pretrained models from PyTorch Hub Methods for training networks with limited inputs Sifting through unreliable results to diagnose and fix problems in your neural network Improve your results with augmented data, better model architecture, and fine tuning This Book Is Written For For Python programmers with an interest in machine learning. No experience with PyTorch or other deep learning frameworks is required. About The Authors Eli Stevens has worked in Silicon Valley for the past 15 years as a software engineer, and the past 7 years as Chief Technical Officer of a startup making medical device software. Luca Antiga is co-founder and CEO of an AI engineering company located in Bergamo, Italy, and a regular contributor to PyTorch. Thomas Viehmann is a Machine Learning and PyTorch speciality trainer and consultant based in Munich, Germany and a PyTorch core developer. Table of Contents PART 1 - CORE PYTORCH 1 Introducing deep learning and the PyTorch Library 2 Pretrained networks 3 It starts with a tensor 4 Real-world data representation using tensors 5 The mechanics of learning 6 Using a neural network to fit the data 7 Telling birds from airplanes: Learning from images 8 Using convolutions to generalize PART 2 - LEARNING FROM IMAGES IN THE REAL WORLD: EARLY DETECTION OF LUNG CANCER 9 Using PyTorch to fight cancer 10 Combining data sources into a unified dataset 11 Training a classification model to detect suspected tumors 12 Improving training with metrics and augmentation 13 Using segmentation to find suspected nodules 14 End-to-end nodule analysis, and where to go next PART 3 - DEPLOYMENT 15 Deploying to production

**The Worm Farmer’s Handbook**-Rhonda Sherman 2018-11-08 Choice Reviews, Outstanding Academic Title Techniques and systems for processing food scraps, manure, yard debris, paper, and more Turning waste into wealth sounds too good to be true, but many worm farmers are finding that vermicomposting is a reliable way to do just that. Vermicast—a biologically active, nutrient-rich mix of earthworm castings and decomposed organic matter—sells for \$400 or more per cubic yard. Compare that to regular compost, sold at about \$30 a cubic yard, and you’ll see why vermicomposting has taken root in most countries and on every continent but Antarctica. Vermicomposting is also one of the best sustainable solutions for organic waste management. Vermicomposting manure and crop wastes on farms improves crop yields while reducing demand for off-farm inputs. Vermicast has higher nutrient levels and lower soluble salt content than regular compost, and it improves soil aeration, porosity, and water retention. Plus, vermicast suppresses plant diseases and insect attacks. Municipalities, businesses, community gardens, schools, and universities can set up vermicomposting operations to process food residuals and other waste materials. The Worm Farmer’s Handbook details the ins and outs of vermicomposting for mid- to large-scale operations, including how to recycle organic materials ranging from food wastes and yard trimmings to manure and shredded office paper. Vermicomposting expert Rhonda Sherman shares what she has learned over twenty-five years working with commercial worm growers and researchers around the world. Her profiles of successful worm growers across the United States and from New Zealand to the Middle East and Europe describe their proven methods and systems. This book digs into all the details, including: Choosing the right production system Regulatory issues and developing a business and marketing plan Finding and managing feedstocks Pre-composting: why and how to do it Monitoring an active worm bed Harvesting, screening, testing, packaging, and storing vermicast Markets for earthworms and vermicast Food security: how vermicast benefits soils and plants Keys to success: avoiding common pitfalls

From livestock farms and restaurants to colleges, military bases, and prisons, Sherman details why and how commercial-scale vermicomposting is a fast-growing, sustainable solution for organic waste management. *The Worm Farmer's Handbook* is the first and only authoritative how-to guide that goes beyond small-scale operations and demystifies the science and logistics of the fascinating process that is vermicomposting.

**Laser Radar**-National Research Council 2014-03-14 In today's world, the range of technologies with the potential to threaten the security of U.S. military forces is extremely broad. These include developments in explosive materials, sensors, control systems, robotics, satellite systems, and computing power, to name just a few. Such technologies have not only enhanced the capabilities of U.S. military forces, but also offer enhanced offensive capabilities to potential adversaries - either directly through the development of more sophisticated weapons, or more indirectly through opportunities for interrupting the function of defensive U.S. military systems. Passive and active electro-optical (EO) sensing technologies are prime examples. Laser Radar considers the potential of active EO technologies to create surprise; i.e., systems that use a source of visible or infrared light to interrogate a target in combination with sensitive detectors and processors to analyze the returned light. The addition of an interrogating light source to the system adds rich new phenomenologies that enable new capabilities to be explored. This report evaluates the fundamental, physical limits to active EO sensor technologies with potential military utility; identifies key technologies that may help overcome the impediments within a 5-10 year timeframe; considers the pros and cons of implementing each existing or emerging technology; and evaluates the potential uses of active EO sensing technologies, including 3D mapping and multi-discriminate laser radar technologies.

**Star People Legacy**-Terry L Smith 2021-06-10 The day Captain Beth Castle put on the U.S. Marine Corps uniform, she made a vow to protect her country and its citizens. It was a vow she knew she'd uphold for life, but nothing prepared her for what she faced in the Tinajas Mountains east of Yuma, Arizona. While inspecting Aid Relief Stations along the Arizona/Mexico border, an ancient myth she'd learned growing up on the Navajo Reservation comes to life. A hostile encounter with a strange group of men triggers a change in her body and Spirit. When she goes to her family for help, Beth discovers the horrible truth -- the myths she'd learned were real...aliens were real. Now Beth's involved in an epic battle between good and evil -- a battle that could cost her everything she holds dear, including her family and the man she loves.

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