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Computed Tomography-Jiang Hsieh 2003
Provides an overview of the evolution of CT, the mathematical and physical aspects of the technology, and the fundamentals of image reconstruction using algorithms. Image display is examined from traditional methods through the most recent advancements. Key performance indices, theories behind the measurement methodologies, and different measurement phantoms in image quality are discussed. The CT scanner is broken down into components to provide the reader with an understanding of their function, their latest advances, and their impact on the CT system. General descriptions and different categories of artifacts, their causes, and their corrections are considered at length.

Computed Tomography-Jiang Hsieh
2009-01-01 X-ray computed tomography (CT) continues to experience rapid growth, both in basic technology and new clinical applications. Seven years after its first edition, Computed Tomography: Principles, Design, Artifacts, and Recent Advancements, Second Edition, provides an overview of the evolution of CT, the mathematical and physical aspects of the technology, and the fundamentals of image reconstruction algorithms. Image display is examined from traditional methods used through the most recent advancements. Key performance indices, theories behind the measurement methodologies, and different measurement phantoms in image quality are discussed. The CT scanner is broken down into components to provide the reader with an understanding of their function, their latest advances, and their impact on the CT system. General descriptions and different categories of artifacts, their causes, and their corrections are considered at length. Given the high visibility and public awareness of the impact of x-ray radiation, the second edition features a new chapter on x-ray dose and presents different dose reduction techniques ranging from patient handling, optimal data acquisition, image reconstruction, and post-process. Based on the advancements over the past five years, the second edition added new sections on cone beam reconstruction algorithms, nonconventional helical acquisition and reconstruction, new reconstruction approaches, and dual-energy CT. Finally, new to this edition is a set of problems for each chapter, providing opportunities to enhance reader comprehension and practice the application of covered material.

Computed Tomography Principles, Design, Artifacts, and Recent Advances-Jiang Hsieh
2009-07-20 Six years after its first edition, Computed Tomography: Principles, Design, Artifacts, and Recent Advances, Second Edition provides and updated overview of the evolution of CT, the mathematical and physical aspects of the technology, and the fundamentals of image reconstruction algorithms. Based on the advancements over the past six years, the second edition includes new sections on cone beam reconstruction algorithms, nonconventional helical acquisition and reconstruction, new reconstruction approaches, and dual-energy CT. Finally, new to this edition is a set of problems for each chapter, providing opportunities to enhance reader comprehension and practice the
Computed Tomography - Willi A. Kalender
2011-07-07 The book offers a comprehensive and user-oriented description of the theoretical and technical system fundamentals of computed tomography (CT) for a wide readership, from conventional single-slice acquisitions to volume acquisition with multi-slice and cone-beam spiral CT. It covers in detail all characteristic parameters relevant for image quality and all performance features significant for clinical application. Readers will thus be informed how to use a CT system to an optimum depending on the different diagnostic requirements. This includes a detailed discussion about the dose required and about dose measurements as well as how to reduce dose in CT. All considerations pay special attention to spiral CT and to new developments towards advanced multi-slice and cone-beam CT. For the third edition most of the contents have been updated and latest topics like dual source CT, dual energy CT, flat detector CT and interventional CT have been added. The enclosed CD-ROM again offers copies of all figures in the book and attractive case studies, including many examples from the most recent 64-slice acquisitions, and interactive exercises for image viewing and manipulation. This book is intended for all those who work daily, regularly or even only occasionally with CT: physicians, radiographers, engineers, technicians and physicists. A glossary describes all the important technical terms in alphabetical order. The enclosed DVD again offers attractive case studies, including many examples from the most recent 64-slice acquisitions, and interactive exercises for image viewing and manipulation. This book is intended for all those who work daily, regularly or even only occasionally with CT: physicians, radiographers, engineers, technicians and physicists. A glossary describes all the important technical terms in alphabetical order.

Principles of Computerized Tomographic Imaging - Aninash C. Kak 2001-01-01 A comprehensive, tutorial-style introduction to the algorithms necessary for tomographic imaging.

Veterinary Computed Tomography - Tobias Schwarz 2011-07-26 This practical and highly illustrated guide is an essential resource for veterinarians seeking to improve their understanding and use of computed tomography (CT) in practice. It provides a thorough grounding in CT technology, describing the underlying physical principles as well as the different types of scanners. The book also includes principles of CT examination such as guidance on positioning and how to achieve a good image quality. Written by specialists from twelve countries, this book offers a broad range of expertise in veterinary computed tomography, and is the first book to describe the technology, methodology, interpretation principles and CT features of different diseases for most species treated in veterinary practice. Key features • An essential guide for veterinarians using CT in practice • Includes basic principles of CT as well as guidelines on how to carry out an effective examination • Describes CT features of different diseases for most species treated in practice • Written by a range of international leaders in the field • Illustrated with high quality photographs and diagrams throughout.

Micro-computed Tomography (micro-CT) in Medicine and Engineering - Kaan Orhan 2019-07-25 This book focuses on applications of micro CT, CBCT and CT in medicine and engineering, comprehensively explaining the basic principles of these techniques in detail, and describing their increasing use in the imaging field. It particularly highlights the scanning procedure, which represents the most crucial step in micro CT, and discusses in detail the reconstruction process and the artifacts related to the scanning processes, as well as the imaging software used in analysis. Written by international experts, the book illustrates the application of micro CT in different areas, such as dentistry, medicine, tissue engineering, aerospace engineering, geology, material engineering, civil engineering and additive manufacturing. Covering different areas of application, the book is of interest not only to specialists in the respective fields, but also to broader audience of professionals working in the fields of imaging and analysis, as well as to students of the different disciplines.

Computed Tomography - E-Book - Euclid Seeram 2015-09-02 Build the foundation necessary for the practice of CT scanning with Computed Tomography: Physical Principles, Clinical Applications, and Quality Control, 4th
Edition. Written to meet the varied requirements of radiography students and practitioners, this two-color text provides comprehensive coverage of the physical principles of CT and its clinical applications. Its clear, straightforward approach is designed to improve your understanding of sectional anatomic images as they relate to CT — and facilitate communication between CT technologists and other medical personnel. Comprehensively covers CT at just the right depth for technologists — going beyond superficial treatment to accommodate all the major advances in CT. One complete CT resource covers what you need to know! The latest information on advances in CT imaging, including: advances in volume CT scanning; CT fluoroscopy; multi-slice applications like 3-D imaging, CT angiography, and virtual reality imaging (endoscopy) — all with excellent coverage of state-of-the-art principles, instrumentation, clinical applications, and quality control. More than 600 photos and line drawings help students understand and visualize concepts. Chapter outlines show you what is most important in every chapter. Strong ancillary package on Evolve facilitates instructor preparation and provides a full complement of support for teaching and learning with the text NEW! Highlights recent technical developments in CT, such as: the iterative reconstruction; detector updates; x-ray tube innovations; radiation dose optimization; hardware and software developments; and the introduction of a new scanner from Toshiba. NEW! Learning Objectives and Key Terms at the beginning of every chapter and a Glossary at the end of the book help you organize and focus on key information. NEW! End-of-Chapter Questions provide opportunity for review and greater challenge. NEW! An added second color aids in helping you read and retain pertinent information

Industrial X-Ray Computed Tomography-Simone Carmignato 2017-10-18 X-ray computed tomography has been used for several decades as a tool for measuring the three-dimensional geometry of the internal organs in medicine. However, in recent years, we have seen a move in manufacturing industries for the use of X-ray computed tomography; first to give qualitative information about the internal geometry and defects in a component, and more recently, as a fully-quantitative technique for dimensional and materials analysis. This trend is primarily due to the ability of X-ray computed tomography to give a high-density and multi-scale representation of both the external and internal geometry of a component, in a non-destructive, non-contact and relatively fast way. But, due to the complexity of X-ray computed tomography, there are remaining metrological issues to solve and the specification standards are still under development. This book will act as a one-stop-shop resource for students and users of X-ray computed tomography in both academia and industry. It presents the fundamental principles of the technique, detailed descriptions of the various components (hardware and software), current developments in calibration and performance verification and a wealth of example applications. The book will also highlight where there is still work to do, in the perspective that X-ray computed tomography will be an essential part of Industry 4.0.

Computed Tomography for Technologists-Lois E. Romans 2010-02-01 Leveraging the organization and focus on exam preparation found in the comprehensive text, this Exam Review will help any student to successfully complete the ARRT General Radiography and Computed Tomography exams. The book includes a bulleted format review of content, Registry-style questions with answers and rationales, and a mock exam following the ARRT format. The companion website offers an online testing simulation engine.

Medical Image Reconstruction-Gengsheng Zeng 2010-12-28 "Medical Image Reconstruction: A Conceptual Tutorial" introduces the classical and modern image reconstruction technologies, such as two-dimensional (2D) parallel-beam and fan-beam imaging, three-dimensional (3D) parallel ray, parallel plane, and cone-beam imaging. This book presents both analytical and iterative methods of these technologies and their applications in X-ray CT (computed tomography), SPECT (single photon emission computed tomography), PET (positron emission tomography), and MRI (magnetic resonance imaging). Contemporary research results in exact region-of-interest (ROI) reconstruction with truncated projections, Katsevich's cone-beam filtered backprojection algorithm, and reconstruction with highly undersampled data with l0-minimization are also included. This book is written for engineers and researchers in the field of biomedical engineering specializing in medical imaging and image processing with
Computed Tomography

Ahmet Mesrur Halefoğlu 2017-08-09 The advent and rapid diffusion of advanced multidetector-row scanner technology offers comprehensive evaluation of different anatomic structures in daily practice. The aim of this book is to introduce the applications of CT imaging in not only general medicine but also in different fields especially in veterinary medicine, dentistry, and engineering. Recent developments in CT technology have led to a widening of its applications on many areas like material testing in engineering, 3D evaluation of teeth, and the vascular and cardiac evaluations of small animals.

Mathematics and Physics of Emerging Biomedical Imaging

National Research Council 1996-02-28 This cross-disciplinary book documents the key research challenges in the mathematical sciences and physics that could enable the economical development of novel biomedical imaging devices. It is hoped that the infusion of new insights from mathematical scientists and physicists will accelerate progress in imaging. Incorporating input from dozens of biomedical researchers who described what they perceived as key open problems of imaging that are amenable to attack by mathematical scientists and physicists, this book introduces the frontiers of biomedical imaging, especially the imaging of dynamic physiological functions, to the educated nonspecialist. Ten imaging modalities are covered, from the well-established (e.g., CAT scanning, MRI) to the more speculative (e.g., electrical and magnetic source imaging). For each modality, mathematics and physics research challenges are identified and a short list of suggested reading offered. Two additional chapters offer visions of the next generation of surgical and interventional techniques and of image processing. A final chapter provides an overview of mathematical issues that cut across the various modalities.

Atlas of Non-Invasive Coronary Angiography by Multidetector Computed Tomography

Guillem Pons-Llado 2007-03-06 This atlas presents over 160 illustrations, with 116 in color, and illustrates the capacity of multidetector CT for the analysis of the anatomy of the coronary arteries. The multidetector CT scanner speeds diagnosis and treatment of patients. One of its many uses is to perform CT coronary angiography. Multidetector CT provides clear pictures and takes less time than other non-invasive techniques. The book is written by cardiologists and radiologists.

Specification and Acceptance Testing of Computed Tomography Scanners

American Association of Physicists in Medicine. Diagnostic X-Ray Imaging Committee 1993

Spectral Computed Tomography

Björn J. Heismann 2012-01-01 Computed tomography (CT) is a widely used x-ray scanning technique. In its prominent use as a medical imaging device, CT serves as a workhorse in many clinical settings throughout the world. It provides answers to urgent diagnostic tasks such as oncology tumor staging, acute stroke analysis, or radiation therapy planning. Spectral Computed Tomography provides a concise, practical coverage of this important medical tool. The first chapter considers the main clinical motivations for spectral CT applications. In Chapter 2, the measurement properties of spectral CT systems are described. Chapter 3 provides an overview of the current state of research on spectral CT algorithms. Based on this overview, the technical realization of spectral CT systems is evaluated in Chapter 4. Device approaches such as DSCT, kV switching, and energy-resolving detectors are compared. Finally, Chapter 5 summarizes various algorithms for spectral CT reconstructions and spectral CT image postprocessing, and links these algorithms to clinical use cases.

Positron Emission Tomography

Sandro Misciagna 2013-12-18 Positron Emission Tomography is a nuclear medicine technique first used to study the brain. Several decades ago, PET scanners design and performance have improved considerably: number of detectors has increased from 20 to 20,000, axial field of view from 2 to 20 cm, spatial resolution has improved from 25 to 5 mm, sensitivity has increased of about 1000 fold. At the same time, clinical applications have grown dramatically. In the first section of this book the authors review some of
developments in PET instrumentation, with emphasis on data acquisition, processing and image formation. In the second section authors expose examples of applications in human research. In the last section authors describe applications in assessment and prediction of oncological treatment response.

**Machine Learning for Tomographic Imaging**
Ge Wang 2019-12-30 Machine learning represents a paradigm shift in tomographic imaging, and image reconstruction is a new frontier of machine learning. This book will meet the needs of those who want to catch the wave of smart imaging. The book targets graduate students and researchers in the imaging community. Open network software, working datasets, and multimedia will be included. The first of its kind in the emerging field of deep reconstruction and deep imaging, Machine Learning for Tomographic Imaging presents the most essential elements, latest progresses and an in-depth perspective on this important topic.

**Diffuse Optical Tomography**
Huabei Jiang 2018-09-03 Written by an authority involved in the field since its nascent stages, Diffuse Optical Tomography: Principles and Applications is a long-awaited profile of a revolutionary imaging method. Diffuse Optical Tomography (DOT) provides spatial distributions of intrinsic tissue optical properties or molecular contrast agents through model-based reconstruction algorithms using NIR measurements along or near the boundary of tissue. Despite the practical value of DOT, many engineers from electrical or applied mathematics backgrounds do not have a sufficient understanding of its vast clinical applications and portability value, or its uncommon advantages as a tool for obtaining functional, cellular, and molecular parameters. A collection of the author’s research and experience, this book fuses historical perspective and experiential anecdotes with fundamental principles and vital technical information needed to successfully apply this technology—particularly in medical imaging. This reference finally outlines how to use DOT to create experimental image systems and adapt the results of laboratory studies for use in clinical applications including: Early-stage detection of breast tumors and prostate cancer "Real-time" functional brain imaging Joint imaging to treat progressive diseases such as arthritis Monitoring of tumor response New contrast mechanisms and multimodality methods This book covers almost every aspect of DOT—including reconstruction algorithms based on nonlinear iterative Newton methods, instrumentation and calibration methods in both continuous-wave and frequency domains, and important issues of imaging contrast and spatial resolution. It also addresses phantom experiments and the development of various image-enhancing schemes, and it describes reconstruction methods based on contrast agents and fluorescence DOT. Offering a concise description of the particular problems involved in optical tomography, this reference illustrates DOT’s fundamental foundations and the principle of image reconstruction. It thoroughly explores computational methods, forward mathematical models, and inverse strategies, clearly illustrating solutions to key equations.

**Computed Tomography**
Thorsten M. Buzug 2008-05-20 This volume provides an overview of X-ray technology and the historical development of modern CT systems. The main focus of the book is a detailed derivation of reconstruction algorithms in 2D and modern 3D cone-beam systems. A thorough analysis of CT artifacts and a discussion of practical issues such as dose considerations give further insight into current CT systems. Although written mainly for graduate students, practitioners will also benefit from this book.

**Spiral and Multislice Computed Tomography of the Body**
Mathias Prokop 2011-01-01 Whole body computed tomography has developed at a rapid pace in the past decade, spurred on by the introduction of spiral and multislice scanning. These new technologies have not only improved diagnostic accuracy, but also made new applications possible that were previously accessible only through more complex or invasive techniques. This new book expertly fills a gap in the literature by combining the practically relevant technical background with the clinical information required for correctly performing and interpreting CT examinations. The book presents the state-of-the-art capabilities and requirements of CT as a key diagnostic and interventional tool, with special emphasis on the role of spiral and multi-slice CT. You will find a thorough introduction to CT technology from scanner design to 3D image reconstruction,
useful practical hints on how to optimize your examination protocols and how to keep the radiation exposure of your patients to a minimum, as well as an extensive clinical section in which symptoms, pathology and CT morphology are integrated to provide you with the basis for subtle interpretation of CT findings using the most modern CT techniques. Highlights include: - Full coverage of single-slice, 4-slice and 16-slice scanning techniques - Introduction to extended CT applications including cardiac CT, CT fluoroscopy, and 3D image processing - Organ-specific protocols for scanning and contrast administration - Practical guidelines for maximizing image quality and minimizing radiation exposure - Useful suggestions for image interpretation and for avoiding pitfalls and errors - Convenient format by organ system and disease entity - Full discussion of organ-specific pathology and CT morphology - CT indications integrated with other imaging modalities At a time when CT examinations are becoming more technically demanding and complex, with an increasing number of scan parameters and advances in 3D reconstructions, this book is an essential professional tool. Experienced practitioners will find their diagnostic and technical skills improved by reading the book, and beginners will enjoy the clear, systematic approach that will help them use the technique with confidence.

Medical Imaging Systems - Andreas Maier 2018-08-02 This open access book gives a complete and comprehensive introduction to the fields of medical imaging systems, as designed for a broad range of applications. The authors of the book first explain the foundations of system theory and image processing, before highlighting several modalities in a dedicated chapter. The initial focus is on modalities that are closely related to traditional camera systems such as endoscopy and microscopy. This is followed by more complex image formation processes: magnetic resonance imaging, X-ray projection imaging, computed tomography, X-ray phase-contrast imaging, nuclear imaging, ultrasound, and optical coherence tomography.

CT Colonography: A Guide for Clinical Practice - Thomas Mang 2013-06-12 Highly effective as a minimally invasive diagnostic and screening tool, CT colonography (CTC) is an important part of today's clinical armamentarium. In this concise, step-by-step guidebook, written by specialists who also run training courses in CT colonography, readers will find a wealth of information for everyday practice. From examination methods and image interpretation, to screening and reporting issues, to common mistakes and pitfalls to avoid, this compact book is all-inclusive, ideal for both beginners and more experienced examiners who want to deepen their knowledge of this powerful technique. Special Features: Full discussion of how to begin, including indications and contraindications, patient preparation, CT examination techniques, and patient risk profile Strategies for data analysis and clinical interpretation, including 2D and 3D applications (virtual visualization), polyp measurement, and computer-assisted detection of polyps Informative, point-by-point sections on clinical findings, starting with normal anatomy of the colon and moving on to common diseases, postoperative conditions, pitfalls and artifacts, and incidental extracolonic findings More than 500 top-quality, fully labeled illustrations (245 in full color), including normal CT scans and 2D and 3D reconstructions that demonstrate diagnostic criteria, possible differential diagnoses, and disease states Guidelines for standardizing reports and documenting findings Tips on how to train for CT colonography in your clinical practice With all methods and techniques following current international guidelines and consensus statements, this book offers easy-to-implement, standardized clinical protocols that can be applied in both the clinic and the outpatient setting. It is essential for all radiologists and gastroenterologists who are interested in learning about the fundamentals of CT colonography and how to interpret and report findings, as well as for physicians who need a reliable overview of this robust and useful detection and screening tool.

Cone Beam Computed Tomography - David Sarment 2013-10-18 Written for the clinician, Cone Beam Computed Tomography helps the reader understand how CBCT machines operate, perform advanced diagnosis using CT data, have a working knowledge of CBCT-related treatment planning for specific clinical tasks, and integrate these new technologies in daily practice. This comprehensive text lays the foundation of CBCT technologies, explains how to interpret the data, recognize main pathologies, and utilize CBCT for diagnosis, treatment planning, and execution.
Dr. Sarment first addresses technology and principles, radiobiologic risks, and CBCT for head and neck anatomy. The bulk of the text discusses diagnosis of pathologies and uses of CBCT technology in maxillofacial surgical planning, orthodontic and orthognathic planning, implant surgical site preparation, CAD/CAM surgical guidance, surgical navigation, endodontics airway measurements, and periodontal disease.

**MDCT: A Practical Approach**
S. Saini  
2007-03-14 This book describes current examination techniques and advanced clinical applications of state-of-the-art multidetector computed tomography (MDCT) scanners. There are contributions from several distinguished radiologists and clinicians. Each chapter is written from a practical perspective, so that radiologists, residents, medical physicists, and radiology technologists can obtain relevant information about MDCT applications.

**Modern Diagnostic X-Ray Sources**  
Rolf Behling 2015-06-26 Modern Diagnostic X-ray Sources: Technology, Manufacturing, Reliability gives an up-to-date summary of X-ray source design for applications in modern diagnostic medical imaging. It lays a sound groundwork for education and advanced training in the physics of X-ray production and X-ray interactions with matter. The book begins with a historical overview of X-ray tube and generator development, including key achievements leading up to the current technological and economic state of the field. The book covers the physics of X-ray generation, including the process of constructing X-ray source devices. The stand-alone chapters can be read continuously or in selections. They take you inside diagnostic X-ray tubes, illustrating their design, functions, metrics for validation, and interfaces. The detailed descriptions enable objective comparison and benchmarking. This detailed presentation of X-ray tube creation and functions enables you to understand how to optimize tube efficiency, particularly with consideration for economics and the environment. It also simplifies fault finding. Along with covering the past and current state of the field, the book assesses the future regarding developing new X-ray sources that can enhance performance and yield greater benefits to the scientific community and to the public.

**Comprehensive Biomedical Physics**  
2014-07-25 Comprehensive Biomedical Physics is a new reference work that provides the first point of entry to the literature for all scientists interested in biomedical physics. It is of particular use for graduate and postgraduate students in the areas of medical biophysics. This Work is indispensable to all serious readers in this interdisciplinary area where physics is applied in medicine and biology. Written by leading scientists who have evaluated and summarized the most important methods, principles, technologies and data within the field, Comprehensive Biomedical Physics is a vital addition to the reference libraries of those working within the areas of medical imaging, radiation sources, detectors, biology, safety and therapy, physiology, and pharmacology as well as in the treatment of different clinical conditions and bioinformatics. This Work will be valuable to students working in all aspect of medical biophysics, including medical imaging and biomedical radiation science and therapy, physiology, pharmacology and treatment of clinical conditions and bioinformatics. The most comprehensive work on biomedical physics ever published Covers one of the fastest growing areas in the physical sciences, including interdisciplinary areas ranging from advanced nuclear physics and quantum mechanics through mathematics to molecular biology and medicine. Contains 1800 illustrations, all in full color.

**Principles and Practice of Image-Guided Radiation Therapy of Lung Cancer**  
Jing Cai 2017-09-18 This book gives a comprehensive overview on the use of image-guided radiation therapy (IGRT) in the treatment of lung cancer, covering step-by-step guidelines for clinical implementations, fundamental principles and key technical advances. It covers benefits and limitations of techniques as well as quality and safety issues related to IGRT practice. Addresses imaging simulation, treatment planning, verification, and delivery Discusses important quality assurance issues Describes current methods using specialized machines and technologies Jing Cai, PhD, is an Associate Professor of Radiation Oncology at Duke University Medical Center. Joe Y. Chang, MD, PhD, is Professor in the Department of Radiation Oncology at The University of Texas MD Anderson Cancer Center in Houston. Fang-Fang Yin, PhD, is Chief of the Division of Radiation
Physics, Professor of Radiation Oncology, and Director of the Medical Physics program at Duke University.

**Handbook of MRI Pulse Sequences**-Matt A. Bernstein 2004-09-21 Magnetic Resonance Imaging (MRI) is among the most important medical imaging techniques available today. There is an installed base of approximately 15,000 MRI scanners worldwide. Each of these scanners is capable of running many different "pulse sequences", which are governed by physics and engineering principles, and implemented by software programs that control the MRI hardware. To utilize an MRI scanner to the fullest extent, a conceptual understanding of its pulse sequences is crucial. Handbook of MRI Pulse Sequences offers a complete guide that can help the scientists, engineers, clinicians, and technologists in the field of MRI understand and better employ their scanner. Explains pulse sequences, their components, and the associated image reconstruction methods commonly used in MRI Provides self-contained sections for individual techniques Can be used as a quick reference guide or as a resource for deeper study Includes both non-mathematical and mathematical descriptions Contains numerous figures, tables, references, and worked example problems

**Coronary Radiology**-Matthijs Oudkerk 2013-06-29 This is the first monograph to focus exclusively on coronary radiology. It is particularly timely, given that the emergence of computed tomography and magnetic resonance imaging, coupled with improvements in both hard- and software, has made reproducible non-invasive coronary imaging a practical reality. A wide range of topics is addressed, including: quantitative angiography, intravascular and quantitative ultrasound, multislice and electron beam computed tomography, magnetic resonance coronary angiography and use of the coronary calcium score as an independent risk factor. All of the latest developments, such as non-invasive intracoronary thrombus imaging, are covered. Particular care has been taken to consider the common questions confronted in asymptomatic patients. The text is supported by high-quality color images of the coronary and cardiac anatomy.

**PET in Oncology**-Stefan Dresel 2009-04-20 At last, here is a comprehensive compilation of the accumulated knowledge on PET and PET/CT in oncology. It covers the entire spectrum from solidly documented indications, such as staging and monitoring of lung and colorectal cancer, to the application of PET/CT in head and neck surgery, gynecology, radiation therapy, urology, pediatrics and others. The chapters are supplemented by an introduction into the underlying techniques of both imaging devices and radiopharmacy.

**Advances in Paleoimaging**-Gerald J. Conlogue 2020-08-10 Advances in Paleoimaging: Applications for Paleoanthropology, Bioarchaeology, Forensics, and Cultural Artifacts builds on the research and advances in technology since the writing of the authors’ first book, Paleoimaging: Field Applications for Cultural Remains and Artifacts (ISBN: 978-1-4200-9071-0). Since Paleoimaging was published in 2009, additional research settings for the application of advanced imaging technologies have been identified. Practices are now more widespread and standardized with the capabilities and utilization of imaging methodologies increasing dramatically. Given the numerous advances in paleoimaging technique and technology, this book chronicles the evolution that has taken place in all the imaging modalities. Chapters include the coverage of magnetic resonance imaging, computed tomography, plane and digital radiography, endoscopy, and applications of x-ray fluorescence, as well as the principles of industrial radiography. While the book focuses on a multimodal imaging approach to anthropological and archaeological research, the authors and contributing authors have vast experience in other areas and present coverage of biological applications as well. The multidisciplinary chapters provide a foundation to understand the application of various imaging modalities in archaeological, anthropological, bioanthropological, and forensic settings. As such, Advances in Paleoimaging will serve as an essential reference for conservators, museum archivists, forensic anthropologists, paleopathologists, and archaeologists, who perform non-destructive research on historical or culturally significant artifacts, remains, or material from a forensic investigation. The concepts and methods presented in this text are supported with case presentations of the authors'
**Cardiovascular Computed Tomography**-James Stirrup 2020-01-02 Recent years have seen a marked increase in cardiovascular computed tomography (CT) imaging, with the technique now integrated into many imaging guidelines, such as those published by ESC and NICE. Rapid clinical and technological progress has created a need for guidance on the practical aspects of CT image acquisition, analysis and interpretation. The Oxford Specialist Handbook of Cardiovascular CT, now revised for the second edition by practising international experts with many years of hands-on experience, is designed to fulfil this need. The Handbook is a practical guide on performing, analysing and interpreting cardiovascular CT scans, covering all aspects from patient safety to optimal image acquisition to differential diagnoses of tricky images. It takes an international approach to both accreditation and certification, highlighting British, European, and American examinations and courses. The format is designed to be accessible and is laid out in easy to navigate sections. It is meant as a quick-reference guide, to live near the CT scanner, workstation, or on the office shelf. The Handbook is aimed at all cardiovascular CT users (Cardiologists, Radiologists and Radiographers), particularly those new to cardiovascular CT, although even the advanced user should find useful tips and tricks within.

**Clinical PET-CT in Radiology**-Paul Shreve 2010-12-14 This book is specifically designed to meet the needs of practicing radiologists by offering a practical, unified approach to PET-CT. It details how to effectively apply PET-CT in patient management. Written by radiologists who fully appreciate and understand both PET and CT, the book details an integrated understanding of PET-CT as a combined modality. Clinical topics include PET-CT of thoracic malignancies, melanoma, and breast cancer. In addition, the book reinforces fundamental concepts, such as the role of imaging diagnosis in disease management.

**Introduction to Biomedical Imaging**-Andrew G. Webb 2017-11-20 An integrated, comprehensive survey of biomedical imaging modalities An important component of the recent expansion in bioengineering is the area of biomedical imaging. This book provides in-depth coverage of the field of biomedical imaging, with particular attention to an engineering viewpoint. Suitable as both a professional reference and as a text for a one-semester course for biomedical engineers or medical technology students, Introduction to Biomedical Imaging covers the fundamentals and applications of four primary medical imaging techniques: magnetic resonance imaging, ultrasound, nuclear medicine, and X-ray/Computed tomography. Taking an accessible approach that includes any necessary mathematics and transform methods, this book provides rigorous discussions of: The physical principles, instrumental design, data acquisition strategies, image reconstruction techniques, and clinical applications of each modality Recent developments such as multi-slice spiral computed tomography, harmonic and sub-harmonic ultrasonic imaging, multi-slice PET scanning, and functional magnetic resonance imaging General image characteristics such as spatial resolution and signal-to-noise, common to all of the imaging modalities

**Cone Beam Computed Tomography in Endodontics**-Shanon Patel 2019-09-16 In recent years, cone beam computed tomography (CBCT) has become much more widely available and utilised in all aspects of dentistry, including endodontics. Cone Beam Computed Tomography in Endodontics is designed to inform readers about the appropriate use of CBCT in endodontics, and enhance their clinical practice with this exciting imaging modality.

**Radiation Dose from Multidetector CT**-Denis Tack 2012-06-05 Computed tomography (CT) is a powerful technique providing precise and confident diagnoses. The burgeoning use of CT has resulted in an exponential increase in collective radiation dose to the population. Despite investigations supporting the use of lower radiation doses, surveys highlight the lack of proper understanding of CT parameters that affect radiation dose. Dynamic advances in CT technology also make it important to explain the latest dose-saving strategies in an easy-to-comprehend manner. This book aims to review all aspects of the radiation dose from CT and to provide simple rules and tricks for radiologists.
and radiographers that will assist in the appropriate use of CT technique. The second edition includes a number of new chapters on the most up-to-date strategies and technologies for radiation dose reduction while updating the outstanding contents of the first edition. Vendor perspectives are included, and an online image gallery will also be available to readers.

Handbook of Medical Imaging-Jacob Beutel 2000 This volume describes concurrent engineering developments that affect or are expected to influence future development of digital diagnostic imaging. It also covers current developments in Picture Archiving and Communications System (PACS) technology, with particular emphasis on integration of emerging imaging technologies into the hospital environment.

Introduction to Computed Tomography-Lois E. Romans 1995 Takes technical process of CT scanning and breaks it down to digestible components. Provides technical detail essential to understanding the modality.

Multi-slice and Dual-source CT in Cardiac Imaging-Bernd M. Ohnesorge 2006-12-15 This book discusses the state-of-the-art developments in multi-slice CT for cardiac imaging as well as those that can be anticipated in the future. It is a comprehensive work covering all aspects of this technology from the technical fundamentals to clinical indications and protocol recommendations. This second edition draws on the most recent clinical experience obtained with 16- and 64-slice CT scanners by world-leading experts. The book also has chapters on area-detector CT and the brand new dual-source CT.