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Fundamentals of Medical Imaging Machine Learning and Medical Imaging **The History of Radiology Deep Learning in Medical Image Analysis** X-Ray Vision **Introduction to the Science of Medical Imaging** Naked to the Bone *Principles of Medical Imaging for Engineers Encyclopaedia of Medical Imaging* **Handbook of Biomedical Imaging** Physical Principles of Medical Imaging **Foundations of Medical Imaging Medical Image Processing** The Essential Physics of Medical Imaging **Webb's Physics of Medical Imaging, Second Edition** *The Practice of Radiology Education* **Physics and Engineering of Medical Imaging Medical Imaging and Augmented Reality The Physics of Medical Imaging 3D Imaging in Medicine, Second Edition Encyclopaedia of Medical Imaging** *Wörterbuch der bildgebenden Verfahren/Dictionary of Medical Imaging* **Machine Learning and Medical Imaging** *Medical Image Processing, Reconstruction and Analysis* **Clinical Imaging Physics Oxford Handbook of Medical Imaging** *The Encyclopaedia of Medical Imaging* **Picture Archiving and Communication Systems (PACS) in Medicine** *Medical Image Reconstruction 3D Imaging in Medicine* **Medical Imaging** *The Transparent Body* **Information Processing in Medical Imaging Medical Imaging Systems Technology: Methods in diagnosis optimization** *Medical Imaging and Radiation Protection for Medical Students and Clinical Staff* **Medical Imaging Research for Medical Imaging and Radiation Sciences Carvers' Medical Imaging Medical Imaging of the Spleen** Encyclopaedia of Medical Physics

X-ray Vision weaves together some of the most fascinating images and accounts in science and medicine. It is the first book to combine stories from the history of medical imaging, the remarkable ways in which it illuminates our lives and the world in which we live, and the lives of real patients whose medical care it has enriched. This book addresses essential principles of research according to the scientific method for medical imaging technology research. The scope of this book covers the nature of scientific research; quantitative and qualitative approaches essentials; research planning; literature review fundamentals; research methods; data collection, analysis, and interpretation; and communicating research findings. The book meets the educational requirements on Research Principles and Concepts (for entry to practice) of the following professional radiologic technology associations: the American Society of Radiologic Technologists (ASRT), the Canadian Association of Medical Radiation Technologists (CAMRT), the College of Radiographers in the United Kingdom, and radiography societies and associations in Asia, Australia, Europe, and Africa. This is an ideal book for radiologic technologists, nuclear medicine technologists, and radiation therapists seeking to get started in research in their profession. Additionally, biomedical imaging engineering technologists, radiologists, and medical imaging physicists may use this as a “guiding principles” textbook. Since the publication of the best-selling, highly acclaimed first edition, the technology and clinical applications of medical imaging have changed significantly. Gathering these developments into one volume, Webb’s Physics of Medical Imaging, Second Edition presents a thorough update of the basic physics, modern technology and many examples of clinical application across all the modalities of medical imaging. New to the Second Edition Extensive updates to all original chapters Coverage of state-of-the-art detector technology and computer processing used in medical imaging 11 new contributors in addition to the original team of authors Two new chapters on medical image processing and multimodality imaging More than 50 percent new examples and over 80 percent new figures Glossary of abbreviations, color insert and contents lists at the beginning of each chapter Keeping the material accessible to graduate students, this well-illustrated book reviews the basic physics underpinning imaging in medicine. It covers the major techniques of x-radiology, computerised tomography, nuclear medicine, ultrasound and magnetic resonance imaging, in addition to infrared, electrical impedance and optical imaging. The text also describes the mathematics of medical imaging, image processing, image perception, computational requirements and multimodality imaging. This volume provides a much-needed update on imaging of the spleen, a subject that has witnessed a revival of interest in recent years owing to new insights into physiology and pathophysiology and the application of modern noninvasive imaging modalities. Introductory chapters discuss the normal anatomy and radiological appearances. Thereafter individual chapters document the imaging findings in a wide range of hematological, immunological, oncological, infectious, vascular, and systemic disorders. Splenic pathology in infancy and childhood is considered separately, and there is a chapter on interventional procedures. Informative differential diagnostic tables are also provided. This well-illustrated book will serve as an invaluable source of easily accessible information for both clinicians and radiologists. Machine Learning and Medical Imaging presents state-of- the-art machine learning methods in medical image analysis. It first summarizes cutting-edge machine learning algorithms in medical imaging, including not only classical probabilistic modeling and learning methods, but also recent breakthroughs in deep learning, sparse representation/coding, and big data hashing. In the second part leading research groups around the world present a wide spectrum of machine learning methods with application to different medical imaging modalities, clinical domains, and organs. The biomedical imaging modalities include ultrasound, magnetic resonance imaging (MRI), computed tomography (CT), histology, and microscopy images. The targeted organs span the lung, liver, brain, and prostate, while there is also a treatment of examining genetic associations. Machine Learning and Medical Imaging is an ideal reference for medical imaging researchers, industry scientists and engineers, advanced undergraduate and graduate students, and clinicians. This introduction to medical imaging introduces all of the major medical imaging techniques in wide use in both medical practice and medical research, including Computed Tomography, Ultrasound, Positron Emission Tomography, Single Photon Emission Tomography and Magnetic Resonance Imaging. Principles of Medical Imaging for Engineers introduces fundamental concepts related to why we image and what we are seeking to achieve to get good images, such as the meaning of ‘contrast’ in the context of medical imaging. This introductory text separates the principles by which ‘signals’ are generated and the subsequent ‘reconstruction’ processes, to help illustrate that these are separate concepts and also highlight areas in which apparently different medical imaging methods share common theoretical principles. Exercises are provided in every chapter, so the student reader can test their knowledge and check against worked solutions and examples. The text considers firstly the underlying physical principles by which information about tissues within the body can be extracted in the form of signals, considering the major principles used: transmission, reflection, emission and resonance. Then, it goes on to explain how these signals can be converted into images, i.e., full 3D volumes, where appropriate showing how common methods of ‘reconstruction’ are shared by some imaging methods despite relying on different physics to generate the ‘signals’. Finally, it examines how medical imaging can be used to generate more than just pictures, but genuine quantitative measurements, and increasingly measurements of physiological processes, at every point within the 3D volume by methods such as the use of tracers and advanced dynamic acquisitions. Principles of Medical Imaging for Engineers will be of use to engineering and physical science students and graduate students with an interest in biomedical engineering, and to their lecturers. As medical imaging plays an increasingly important role in the diagnosis and treatment of patients, it has become vital for medical practitioners to have a thorough understanding of the many complicated techniques available. The Oxford Handbook of Medical Imaging is a practical quick-reference guide to all the modalities and techniques of imaging for medical and surgical conditions. Practical and easy to use, the handbook covers all common diagnoses, symptoms, and conditions. Medical and surgical emergencies are covered, along with explanations of the rationale behind each imaging techinque and the common questions likely to be asked. Fully illustrated throughout with example images from real cases, the indications, merits, and drawbacks of all the various modalities are explained in quick bullet points for ease of understanding and quick reference. Each chapter (where appropriate) is split into handy sections on differential diagnosis, presenting symptoms, and common conditions, so you will always have the most relevant information at your fingertips. This handbook is sure to be a constant companion for all radiographers and students, junior doctors, clinicians, and anyone who works with medical imaging. The History of Radiology is an authoritative and engaging history of medical developments within radiology which will appeal to a wide audience including radiologists, medical physicists, medical historians, radiographers, medical students and doctors. This revision of a bestselling textbook will include the addition of ten new chapters including six chapters on MRI, two on digital imaging, and new chapters on Doppler ultrasound and SPECT and PET imaging. This book constitutes the refereed proceedings of the 4th International Workshop on Medical Imaging and Augmented Reality, MIAR 2008, held in Tokyo, Japan, in August 2008. The 44 revised full papers presented together with 3 invited papers were carefully reviewed and selected from 90 submissions. The papers are organized in topical sections on surgical planning and simulation, medical image computing, image analysis, shape modeling and morphometry, image-guided robotics, image-guided intervention, interventional imaging, image registration, augmented reality, and image segmentation. This handbook of medical imaging relates all concepts to electronic engineering. It provides an understanding of applied physics and its principles in order to allow for the design, transmittal and interpretation of electronic imaging signals and systems. This book presents cutting-edge research and applications of deep learning in a broad range of medical imaging scenarios, such as computer-aided diagnosis, image

segmentation, tissue recognition and classification, and other areas of medical and healthcare problems. Each of its chapters covers a topic in depth, ranging from medical image synthesis and techniques for muskuloskeletal analysis to diagnostic tools for breast lesions on digital mammograms and glaucoma on retinal fundus images. It also provides an overview of deep learning in medical image analysis and highlights issues and challenges encountered by researchers and clinicians, surveying and discussing practical approaches in general and in the context of specific problems. Academics, clinical and industry researchers, as well as young researchers and graduate students in medical imaging, computer-aided-diagnosis, biomedical engineering and computer vision will find this book a great reference and very useful learning resource. Machine Learning and Medical Imaging presents state-of- the-art machine learning methods in medical image analysis. It first summarizes cutting-edge machine learning algorithms in medical imaging, including not only classical probabilistic modeling and learning methods, but also recent breakthroughs in deep learning, sparse representation/coding, and big data hashing. In the second part leading research groups around the world present a wide spectrum of machine learning methods with application to different medical imaging modalities, clinical domains, and organs. The biomedical imaging modalities include ultrasound, magnetic resonance imaging (MRI), computed tomography (CT), histology, and microscopy images. The targeted organs span the lung, liver, brain, and prostate, while there is also a treatment of examining genetic associations. Machine Learning and Medical Imaging is an ideal reference for medical imaging researchers, industry scientists and engineers, advanced undergraduate and graduate students, and clinicians. Demonstrates the application of cutting-edge machine learning techniques to medical imaging problems Covers an array of medical imaging applications including computer assisted diagnosis, image guided radiation therapy, landmark detection, imaging genomics, and brain connectomics Features self-contained chapters with a thorough literature review Assesses the development of future machine learning techniques and the further application of existing techniques Differently oriented specialists and students involved in image processing and analysis need to have a firm grasp of concepts and methods used in this now widely utilized area. This book aims at being a single-source reference providing such foundations in the form of theoretical yet clear and easy to follow explanations of underlying generic concepts. Medical Image Processing, Reconstruction and Analysis – Concepts and Methods explains the general principles and methods of image processing and analysis, focusing namely on applications used in medical imaging. The content of this book is divided into three parts: Part I – Images as Multidimensional Signals provides the introduction to basic image processing theory, explaining it for both analogue and digital image representations. Part II – Imaging Systems as Data Sources offers a non-traditional view on imaging modalities, explaining their principles influencing properties of the obtained images that are to be subsequently processed by methods described in this book. Newly, principles of novel modalities, as spectral CT, functional MRI, ultrafast planar-wave ultrasonography and optical coherence tomography are included. Part III – Image Processing and Analysis focuses on tomographic image reconstruction, image fusion and methods of image enhancement and restoration; further it explains concepts of low-level image analysis as texture analysis, image segmentation and morphological transforms. A new chapter deals with selected areas of higher-level analysis, as principal and independent component analysis and particularly the novel analytic approach based on deep learning. Briefly, also the medical image-processing environment is treated, including processes for image archiving and communication. Features Presents a theoretically exact yet understandable explanation of image processing and analysis concepts and methods Offers practical interpretations of all theoretical conclusions, as derived in the consistent explanation Provides a concise treatment of a wide variety of medical imaging modalities including novel ones, with respect to properties of provided image data An up-to-date, concise, profound and generously illustrated survey of the complete field of medical imaging and image computing. Several distinct medical imaging perspectives such as cutting-edge imaging methods, data analysis, better correlation with neurocognitive function, as well as detailed examples and summaries of disease monitoring, may help convey the methodological, technical, and developmental information of medical imaging principles and applications. The aim of this book is to provide beginners and experts in the medical imaging field with general pictures and detailed descriptions of imaging principles and clinical applications. With forefront applications and up-to-date analytical methods, this book will hopefully capture the interests of colleagues in the medical imaging research field. Precise illustrations and thorough reviews in many research topics such as neuroimaging quantification and correlation, as well as cancer diagnoses, are the advantages of this book. This is the latest addition to the Oxford Core Text series for medical undergraduates. As reliance on imaging techniques increases it is essential that medical students understand the role of radiology in clinical practice and develop a mechanism for choosing appropriate investigations. Medical Imaging provides concise and practical coverage of imaging for students in clinical medicine. Written in a clear and easy-to-use way, this book is designed to help the student to interpret basic radiographs and to use Xray and other images to solve clinical problems. Section A explains how to look at common radiographs and recognise the presence and nature of abnormalities. Section B discusses investigation of clinical problems and helps resolve them. This section also includes information about the different modalities and the appearance of important disorders. Section C contains information about the role of radiology, safety, care of the patient and interventional radiology. Including numerous illustrations, summary boxes and further reading, Medical Imaging encourages students to develop the ability to read normal and abnormal films, an appreciation of radiology as the imaging of pathology, the integration of radiology with other clinical specialties, an appropriate use of resources in imaging, a clear understanding of the underlying medical physics, as well as an insight into decision-making and uncertainty. Dr Peter Scally is Clinical Senior Lecturer in Radiology at the University of Queensland, has experience of teaching clinical medical students and residents and writes authoritatively. This book offers a unique guide to the entire chain of biomedical imaging, explaining how image formation is done, and how the most appropriate algorithms are used to address demands and diagnoses. It is an exceptional tool for radiologists, research scientists, senior undergraduate and graduate students in health sciences and engineering, and university professors. Revolutionary advances in imaging technology that provide high resolution, 3-D, non-invasive imaging of biological subjects have made biomedical imaging an essential tool in clinical medicine and biomedical research. Key technological advances include MRI, positron emission tomography (PET) and multidetector X-ray CT scanners. Common to all contemporary imaging modalities is the creation of digital data and pictures. The evolution from analog to digital image data is driving the rapidly expanding field of digital image analysis. Scientists from numerous disciplines now require in-depth knowledge of these complex imaging modalities. Introduction to the Science of Medical Imaging presents scientific imaging principles, introduces the major biomedical imaging modalities, reviews the basics of human and computer image analysis and provides examples of major clinical and research applications. Written by one of the world's most innovative and highly respected neuroradiologists, Introduction to the Science of Medical Imaging is a landmark text on image acquisition and interpretation. The practice of radiology education: challenges and trends will provide truly helpful gu- ance for those of you involved in teaching and training in radiology. The goal of this book is ultimately to improve patient care. As a companion piece to the first book radiology education: the scholarship of teaching and learning, this book focuses on applying the concepts at a practical level that can be applied flexibly within educational programs for radiology residents and fellows in any medical imaging learning environment. This book focuses on the application of scholarship in terms of the “dissemination of useful, testable and reproducible information to others. ” It links educational theory with practice and for those of you who wish to explore educational practice further, a number of chapters s- gest additional readings and resources. The publication is timely and congruent with one of the most important twenty-first century trends in medical education: the move from amateurism to professionalism in teaching. In the past, medical schools and other health professions’ training institutions have been criticized for their resistance to the adoption of the science of medical edu- tion. Very few of us learned how to teach as medical students and most of us have our teaching responsibilities thrust on us with little preparation. The award of a basic medical degree was assumed to carry with it basic teaching expertise, unfortunately an unw- ranted assumption in some cases. The ability to visualize, non-invasively, human internal organs in their true from and shape has intrigued mankind for centuries. While the recent inventions of medical imaging modalities such as computerized tomography and magnetic resonance imaging have revolutionized radiology, the development of three-dimensional (3D) imaging has brought us closer to the age-old quest of non-invasive visualization. The ability to not only visualize but to manipulate and analyze 3D structures from captured multidimensional image data, is vital to a number of diagnostic and therapeutic applications. 3D Imaging in Medicine, Second Edition, unique in its contents, covers both the technical aspects and the actual medical applications of the process in a single source. The value of this technology is obvious. For example, three dimensional imaging allows a radiologist to accurately target the positioning and dosage of chemotherapy as well as to make more accurate diagnoses by showing more pathology; it allows the vascular surgeon to study the flow of blood through clogged arteries; it allows the orthopedist to find all the pieces of a compound fracture; and, it allows oncologists to perform less invasive biopsies. In fact, one of the most important uses of 3D Imaging is in computer-assisted surgery. For example, in cancer surgery, computer images show the surgeon the extent of the tumor so that only the diseased tissue is removed. In short, 3D imaging provides clinicians with information that saves time and money. 3D Imaging in Medicine, Second Edition provides a ready reference on the fundamental science of 3D imaging and its medical applications. The chapters have been written by experts in the field, and the technical aspects are covered in a tutorial fashion, describing the basic principles and algorithms in an easily understandable way. The application areas covered include: surgical planning, neuro-surgery, orthopedics, prosthesis design, brain imaging, analysis of cardio-pulmonary structures,

and the assessment of clinical efficacy. The book is designed to provide a quick and systematic understanding of the principles of biomedical visualization to students, scientists and researchers, and to act as a source of information to medical practitioners on a wide variety of clinical applications of 3D imaging. The visualization of human anatomy for diagnostic, therapeutic, and educational pur poses has long been a challenge for scientists and artists. In vivo medical imaging could not be introduced until the discovery of X-rays by Wilhelm Conrad ROntgen in 1895. With the early medical imaging techniques which are still in use today, the three-dimensional reality of the human body can only be visualized in two-dimensional projections or cross-sections. Recently, biomedical engineering and computer science have begun to offer the potential of producing natural three-dimensional views of the human anatomy of living subjects. For a broad application of such technology, many scientific and engineering problems still have to be solved. In order to stimulate progress, the NATO Advanced Research Workshop in Travemiinde, West Germany, from June 25 to 29 was organized. It brought together approximately 50 experts in 3D-medical imaging from allover the world. Among the list of topics image acquisition was addressed first, since its quality decisively influences the quality of the 3D-images. For 3D-image generation - in distinction to 2D imaging - a decision has to be made as to which objects contained in the data set are to be visualized. Therefore special emphasis was laid on methods of object definition. For the final visualization of the segmented objects a large variety of visualization algorithms have been proposed in the past. The meeting assessed these techniques. The nineteenth biennial International Conference on Information Processing in Medical Imaging (IPMI) was held July 11–15, 2005 in Glenwood Springs, CO, USA on the Spring Valley campus of the Colorado Mountain College. Following the successful meeting in beautiful Ambleside in England, this year’s conference addressed important recent developments in a broad range of topics related to the acquisition, analysis and application of biomedical images. Interest in IPMI has been steadily growing over the last decade. This is p- tially due to the increased number of researchers entering the ?eld of medical imagingasaresultoftheWhitakerFoundationandtherecentlyformedNational Institute of Biomedical Imaging and Bioengineering. This year, there were 245 full manuscripts submitted to the conference which was twice the number s- mitted in 2003 and almost four times the number of submissions in 2001. Of these papers, 27 were accepted as oral presentations, and 36 excellent subm- sions that could not be accommodated as oral presentations were presented as posters. Selection of the papers for presentation was a di?cult task as we were unable to accommodate many of the excellent papers submitted this year. All accepted manuscripts were allocated 12 pages in these proceedings. A fascinating discussion of the cultural context and social impact of medical imaging practices. This renowned work is derived from the authors' acclaimed national review course ("Physics of Medical Imaging") at the University of California-Davis for radiology residents. The text is a guide to the fundamental principles of medical imaging physics, radiation protection and radiation biology, with complex topics presented in the clear and concise manner and style for which these authors are known. Coverage includes the production, characteristics and interactions of ionizing radiation used in medical imaging and the imaging modalities in which they are used, including radiography, mammography, fluoroscopy, computed tomography and nuclear medicine. Special attention is paid to optimizing patient dose in each of these modalities. Sections of the book address topics common to all forms of diagnostic imaging, including image quality and medical informatics as well as the non-ionizing medical imaging modalities of MRI and ultrasound. The basic science important to nuclear imaging, including the nature and production of radioactivity, internal dosimetry and radiation detection and measurement, are presented clearly and concisely. Current concepts in the fields of radiation biology and radiation protection relevant to medical imaging, and a number of helpful appendices complete this comprehensive textbook. The text is enhanced by numerous full color charts, tables, images and superb illustrations that reinforce central concepts. The book is ideal for medical imaging professionals, and teachers and students in medical physics and biomedical engineering. Radiology residents will find this text especially useful in bolstering their understanding of imaging physics and related topics prior to board exams. --NEW Four-color throughout --NEW Companion website with fully searchable text and images --Basic line drawings help to explain concepts --Comprehensive coverage of diagnostic imaging modalities --Superb writing style of the author team helps make a difficult subject approachable and engaging "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 image reconstruction. Gengsheng Lawrence Zeng is an expert in the development of medical image reconstruction algorithms and is a professor at the Department of Radiology, University of Utah, Salt Lake City, Utah, USA. Clinical Medical Imaging Physics: Current and Emerging Practice is the first text of its kind—a comprehensive reference work covering all imaging modalities in use in clinical medicine today. Destined to become a classic in the field, this book provides state-of-practice descriptions for each imaging modality, followed by special sections on new and emerging applications, technologies, and practices. Authored by luminaries in the field of medical physics, this resource is a sophisticated, one-volume handbook to a fast-advancing field that is becoming ever more central to contemporary clinical medicine. Summarizes the current state of clinical medical imaging physics in one volume, with a focus on emerging technologies and applications Provides comprehensive coverage of all key clinical imaging modalities, taking into account the new realities in healthcare practice Features a strong focus on clinical application of principles and technology, now and in the future Contains authoritative text compiled by world-renowned editors and contributors responsible for guiding the development of the field Practicing radiologists and medical physicists will appreciate Clinical Medical Imaging Physics as a peerless everyday reference work. Additionally, graduate students and residents in medical physics and radiology will find this book essential as they study for their board exams. Das Wörterbuch bietet einen kompakten Zugang zu den englischen bzw. deutschen Übersetzungen der wichtigsten Begriffe in den bildgebenden Verfahren. Alle modernen Verfahren sind abgedeckt. Beispielsätze erleichtern das Verständnis von Wortwahl und korrekter Idiomatik. Unverzichtbar für alle, die englischsprachige Arbeiten sicher verstehen oder verfassen möchten. Co-published by the European Medical Imaging Technology e-Encyclopaedia for Lifelong Learning (EMITEL) consortium and supported by the International Organization for Medical Physics (IOMP), Encyclopaedia of Medical Physics contains nearly 2,800 cross-referenced entries relating to medical physics and associated technologies. Split into two convenie This volume contains the proceedings of the NATO Advanced Study Institute on "Picture Archiving and Communication Systems (PACS) in Medicine" held in Evian, France, October 14- 26, 1990. The program committee of the institute consisted of H.K. Huang (Director), Osman Ratib, Albert Bakker, and Gerd Witte. This institute brought together approximately 90 participants from 15 countries. These proceedings are the accumulation of eight years of research and development results in PACS by various dedicated groups throughout the world. The purpose of this institute was to review the most recent technology available for PACS and some clinical results. The readers should notice the remarkable advances in this field by comparing the contents in these proceedings with those in a previous institute on "Pictorial Information Systems in Medicine" held August 27 - September 7, 1984 in Braunlage/Harz, Federal Republic of Germany, and published as Vol. 19 in this series. The institute was organized according to four categories: PACS components and system integration, PACS and related research in various countries and manufacturing companies, clinical experience and research support, and participants' scientific communications. In PACS components, we included image acquisition, workstations, data storage and networking. In system integration, topics on interfaces between Hospital Information System (HIS), Radiology Information System (RIS) and PACS, clinical reports, the ACR/NEMA standard, databases, reliability, and system integration were discussed. This lecture series emphasized the technical detail and "how to" aspects. This scholarly set of well-harmonized volumes provides indispensable and complete coverage of the exciting and evolving subject of medical imaging systems. Leading experts on the international scene tackle the latest cutting-edge techniques and technologies in an in-depth but eminently clear and readable approach.Complementing and intersecting one another, each volume offers a comprehensive treatment of substantive importance to the subject areas. The chapters, in turn, address topics in a self-contained manner with authoritative introductions, useful summaries, and detailed reference lists. Extensively well-illustrated with figures throughout, the five volumes as a whole achieve a unique depth and breath of coverage.As a cohesive whole or independent of one another, the volumes may be acquired as a set or individually. The use of diagnostic imaging has increased dramatically in the last 10-15 years. It is now a routine part of the clinical investigation of many patients and is often crucial in determining their management. By the late 1960s, the computer and television were linked to produce medical images that were as startling as Roentgen's original X-rays. Computerized tomography (CT) and magnetic reasonance imaging (MRI) made it possible to picture soft tissues invisible to ordinary X-rays. Ultrasound allowed expectant parents to see their unborn children. Positron emission tomography (PET) enabled neuroscientists to map the brain. In this lively history of medical imaging, the first to cover the full scope of the field from X-rays to MRI-assisted surgery, Bettyann Kevles explores the consequences of these developments for medicine and society. Through lucid prose, vivid anecdotes, and more than seventy striking illustrations, she shows how medical imaging has transformed the practice of medicine - from pediatrics to dentistry, neurosurgery to

geriatrics, gynecology to oncology. Beyond medicine, Kevles describes how X-rays and the newer technologies have become part of the texture of modern life and culture. They helped undermine Victorian sexual sensibilities, gave courts new forensic tools, provided plots for novels and movies, and offered artists from Picasso to Warhol new ways to depict the human form.