Digital Imaging And Communications In Medicine

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Informatics in Medical Imaging - George C. Kagadis 2011-10-17 Informatics in Medical Imaging provides a comprehensive survey of the field of medical imaging informatics. In addition to radiology, it also addresses other specialties such as pathology, cardiology, dermatology, and surgery, which have adopted the use of digital images. The book discusses basic imaging informatics protocols, picture archiving and communication systems, and the electronic medical record. It details key instrumentation and data mining technologies used in medical imaging informatics as well as practical operational issues, such as procurement, maintenance, teleradiology, and ethics. Highlights Introduces the basic ideas of imaging informatics, the terms used, and how data are represented and transmitted Emphasizes the fundamental communication paradigms: HL7, DICOM, and IHE Describes information systems that are typically used within imaging departments: orders and result systems, acquisition systems, reporting systems, archives, and information-display systems Outlines the principal components of modern computing, networks, and storage systems Covers the technology and principles of display and acquisition detectors, and rounds out with a discussion of other key computer technologies Discusses procurement and maintenance issues; ethics and its relationship to government initiatives like HIPAA; and constructs beyond radiology The technologies of medical imaging and radiation therapy are so complex and computer-driven that it is difficult for physicians and technologists responsible for their clinical use to know exactly what is happening at the point of care. Medical physicists are best equipped to understand the technologies and their applications, and these individuals are assuming greater responsibilities in the clinical arena to ensure that intended care is delivered in a safe and effective manner. Built on a foundation of classic and cutting-edge research, Informatics in Medical Imaging supports and updates medical physicists functioning at the intersection of radiology and radiation.

Principles of Biomedical Informatics - Ira J. Kalet, PhD 2013-09-26 This second edition of a pioneering technical work in biomedical informatics provides a very readable treatment of the deep computational ideas at the foundation of the field. Principles of Biomedical Informatics, 2nd Edition is radically reorganized to make it especially useable as a textbook for courses that move beyond the standard introductory material. It includes exercises at the end of each chapter, ideas for student projects, and a number of new topics, such as: • tree structured data, interval trees, and time-oriented medical data and their use • On Line Application Processing (OLAP), an old database idea that is only recently coming of age and finding surprising importance in

biomedical informatics • a discussion of nursing knowledge and an example of encoding nursing advice in a rule-based system • X-ray physics and algorithms for cross-sectional medical image reconstruction, recognizing that this area was one of the most central to the origin of biomedical computing • an introduction to Markov processes, and • an outline of the elements of a hospital IT security program, focusing on fundamental ideas rather than specifics of system vulnerabilities or specific technologies. It is simultaneously a unified description of the core research concept areas of biomedical data and knowledge representation, biomedical information access, biomedical decision-making, and information and technology use in biomedical contexts, and a pre-eminent teaching reference for the growing number of healthcare and computing professionals embracing computation in health-related fields. As in the first edition, it includes many worked example programs in Common LISP, the most powerful and accessible modern language for advanced biomedical concept representation and manipulation. The text also includes humor, history, and anecdotal material to balance the mathematically and computationally intensive development in many of the topic areas. The emphasis, as in the first edition, is on ideas and methods that are likely to be of lasting value, not just the popular topics of the day. Ira Kalet is Professor Emeritus of Radiation Oncology, and of Biomedical Informatics and Medical Education, at the University of Washington. Until retiring in 2011 he was also an Adjunct Professor in Computer Science and Engineering, and Biological Structure. From 2005 to 2010 he served as IT Security Director for the University of Washington School of Medicine and its major teaching hospitals. He has been a member of the American Medical Informatics Association since 1990, and an elected Fellow of the American College of Medical Informatics since 2011. His research interests include simulation systems for design of radiation treatment for cancer, software development methodology, and artificial intelligence applications to medicine, particularly expert systems, ontologies and modeling. Develops principles and methods for representing biomedical data, using information in context and in decision making, and accessing information to assist the medical community in using data to its full potential Provides a series of principles for expressing biomedical data and ideas in a computable form to integrate biological, clinical, and public health applications Includes a discussion of user interfaces, interactive graphics, and knowledge resources and reference material on programming languages to provide medical informatics programmers with the technical tools to develop systems

Digital Imaging Systems for Plain Radiography - Luis Lanca 2012-10-25 Advances in digital technology led to the development of digital x-ray detectors that are currently in wide use for projection radiography, including Computed Radiography (CR) and Digital Radiography (DR). Digital Imaging Systems for Plain Radiography addresses the current technological methods available to medical imaging professionals to ensure the optimization of the radiological process concerning image quality and reduction of patient exposure. Based on extensive research by the authors and reference to the current literature, the book addresses how exposure parameters influence the diagnostic quality in digital systems, what the current acceptable radiation doses are for useful diagnostic images, and at what level the dose could be reduced to maintain an accurate diagnosis. The book is a valuable resource for both students learning the field and for imaging professionals to apply to their own practice while performing radiological examinations with digital systems.

Digital Imaging - Jason Oakley 2003 The first book to help the modern radiographer and radiologist to understand how digital imaging, manipulation and storage systems work.

Medical Imaging - K.C. Santosh 2019-08-20 The book discusses varied topics pertaining to advanced or up-to-date techniques in medical imaging using artificial intelligence (AI), image recognition (IR) and machine learning (ML) algorithms/techniques. Further, coverage includes analysis of chest radiographs (chest x-rays) via stacked generalization models, TB type detection using slice separation approach, brain tumor image segmentation via deep learning, mammogram mass separation, epileptic seizures, breast ultrasound

images, knee joint x-ray images, bone fracture detection and labeling, and diabetic retinopathy. It also reviews 3D imaging in biomedical applications and pathological medical imaging.

Digital Imaging and Communications in Medicine (DICOM) - Oleg S. Pianykh 2009-10-26
This is the second edition of a very popular book on DICOM that introduces this complex standard from a very practical point of view. It is aimed at a broad audience of radiologists, clinical administrators, information technologists, medical students, and lecturers. The book provides a gradual, down to earth introduction to DICOM, accompanied by an analysis of the most common problems associated with its implementation. Compared with the first edition, many improvements and additions have been made, based on feedback from readers. Whether you are running a teleradiology project or writing DICOM software, this book will provide you with clear and helpful guidance. It will prepare you for any DICOM projects or problem solving, and assist you in taking full advantage of multifaceted DICOM functionality.

The Essential Physics of Medical Imaging - Jerold T. Bushberg 2020-11-24
Widely regarded as the cornerstone text in the field, the successful series of editions continues to follow the tradition of a clear and comprehensive presentation of the physical principles and operational aspects of medical imaging. The Essential Physics of Medical Imaging, 4th Edition, is a coherent and thorough compendium of the fundamental principles of the physics, radiation protection, and radiation biology that underlie the practice and profession of medical imaging. Distinguished scientists and educators from the University of California, Davis, provide up-to-date, readable information on the production, characteristics, and interactions of non-ionizing and ionizing radiation, magnetic fields and ultrasound used in medical imaging and the imaging modalities in which they are used, including radiography, mammography, fluoroscopy, computed tomography, magnetic resonance, ultrasound, and nuclear medicine. This vibrant, full-color text is enhanced by more than 1,000 images, charts, and graphs, including hundreds of new illustrations. This text is a must-have resource for medical imaging professionals, radiology residents who are preparing for Core Exams, and teachers and students in medical physics and biomedical engineering.

PACS and Imaging Informatics - H. K. Huang 2010-01-12
The definitive guide to PACS — now with more clinically applicable material In recent years, the field of picture archiving and communications systems—PACS—and image informatics has advanced due to both conceptual and technological advancements. This edition of PACS and Imaging Informatics: Basic Principles and Applications addresses the latest in this exciting field. In contrast to the previous edition, this updated text uses the framework of image informatics, not physics or engineering principles, to explain PACS. It is the only resource that thoroughly covers the critical issues of hardware/software design and implementation in a systematic and easily comprehensible manner. To strengthen and update the book, the author: Emphasizes clinical applications of PACS and integrates clinical examples throughout the text Reflects the many changes in the field, with new chapters on Web-based PACS, security, integrating the healthcare enterprise, clinical management systems, and the electronic patient record Uses the framework of imaging informatics to explain PACS, making the book accessible to those without advanced knowledge of physics, engineering, math, or information technology Explains how PACS can improve workflow, therapy, and treatment With the most systematic and thorough coverage of practical applications available, this text is the complete guide for all those involved in designing, implementing, and using PACS. Professionals in medical and allied health imaging informatics; radiologists and their technical staff; surgeons and oncologists and their teams; medical and electronic engineers; medical informaticians; and fellows, graduate students, and advanced undergraduates will all benefit from this valuable resource. "An excellent book for people involved in the design, implementation, or simply the operations of PACS and an appropriate textbook." —From a review of the previous edition in IEEE Engineering in Medicine and Biology "The strength of the book lies in the vast experience of the author, who has implemented PACS at numerous

institutions in the United States and abroad." —From a review of the previous edition in Radiology

Artificial Intelligence in Medical Imaging - Erik R. Ranschaert 2019-01-29
This book provides a thorough overview of the ongoing evolution in the application of artificial intelligence (AI) within healthcare and radiology, enabling readers to gain a deeper insight into the technological background of AI and the impacts of new and emerging technologies on medical imaging. After an introduction on game changers in radiology, such as deep learning technology, the technological evolution of AI in computing science and medical image computing is described, with explanation of basic principles and the types and subtypes of AI. Subsequent sections address the use of imaging biomarkers, the development and validation of AI applications, and various aspects and issues relating to the growing role of big data in radiology. Diverse real-life clinical applications of AI are then outlined for different body parts, demonstrating their ability to add value to daily radiology practices. The concluding section focuses on the impact of AI on radiology and the implications for radiologists, for example with respect to training. Written by radiologists and IT professionals, the book will be of high value for radiologists, medical/clinical physicists, IT specialists, and imaging informatics professionals.

Digital Image Processing for Medical Applications - Geoff Dougherty 2009
Hands-on text for a first course aimed at end-users, focusing on concepts, practical issues and problem solving.

DICOM Structured Reporting - David A. Clunie 2000

Data Protection and Privacy in Healthcare - Ahmed Elngar 2021-03-10
The Healthcare industry is one of the largest and rapidly developing industries. Over the last few years, healthcare management is changing from disease centered to patient centered. While on one side the analysis of healthcare data plays an important role in healthcare management, but on the other side the privacy of a patient's record must be of equal concern. This book uses a research-oriented approach and focuses on privacy-based healthcare tools and technologies. It offers details on privacy laws with real-life case studies and examples, and addresses privacy issues in newer technologies such as Cloud, Big Data, and IoT. It discusses the e-health system and preserving its privacy, and the use of wearable technologies for patient monitoring, data streaming and sharing, and use of data analysis to provide various health services. This book is written for research scholars, academicians working in healthcare and data privacy domains, as well as researchers involved with healthcare law, and those working at facilities in security and privacy domains. Students and industry professionals, as well as medical practitioners might also find this book of interest.

Practical Guide to Clinical Computing Systems - Thomas Payne 2014-11-21
Although informatics trainees and practitioners who assume operational computing roles in their organization may have reasonably advanced understanding of theoretical informatics, many are unfamiliar with the practical topics - such as downtime procedures, interface engines, user support, JCAHO compliance, and budgets - which will become the mainstay of their working lives. Practical Guide to Clinical Computing Systems 2nd edition helps prepare these individuals for the electronic age of health care delivery. It is also designed for those who migrate into clinical computing operations roles from within their health care organization. A new group of people interested in this book are those preparing for Clinical Informatics board certification in the US. The work provides particular differentiation from the popular first edition in four areas: 40% more content detailing the many practical aspects of clinical informatics. Addresses the specific needs of the Clinical Informatics board certification course – for which it is presently recommended by the ABPM Focus on new tech paradigms including cloud computing and concurrency – for this rapidly changing field. Focuses on the practical aspects of operating clinical computing systems in medical centers rather than abstruse theory. Provides deepened and broadened authorship with a global panel of contributors providing new wisdom and

new perspectives - reflecting inclusion of the first edition on the clinical informatics study guide materials. Presents a practical treatment of workday but often unfamiliar issues – downtime procedures, interface engines, user support, JCAHO compliance, and budgets.

Biomedical Image Processing - Thomas Martin Deserno 2011-03-01
In modern medicine, imaging is the most effective tool for diagnostics, treatment planning and therapy. Almost all modalities have went to directly digital acquisition techniques and processing of this image data have become an important option for health care in future. This book is written by a team of internationally recognized experts from all over the world. It provides a brief but complete overview on medical image processing and analysis highlighting recent advances that have been made in academics. Color figures are used extensively to illustrate the methods and help the reader to understand the complex topics.

PACS-Based Multimedia Imaging Informatics - H. K. Huang 2019-01-14
Thoroughly revised to present the very latest in PACS-based multimedia in medical imaging informatics—from the electronic patient record to the full range of topics in digital medical imaging—this new edition by the founder of PACS and multimedia image informatics features even more clinically applicable material than ever before. It uses the framework of PACS-based image informatics, not physics or engineering principles, to explain PACS-based multimedia informatics and its application in clinical settings and labs. New topics include Data Grid and Cloud Computing, IHE XDS-I Workflow Profile (Integrating the Healthcare Enterprise Cross-enterprise Document Sharing for Imaging), extending XDS to share images, and diagnostic reports and related information across a group of enterprise health care sites. PACS-Based Multimedia Imaging Informatics is presented in 4 sections. Part 1 covers the beginning and history of Medical Imaging, PACS, and Imaging Informatics. The other three sections cover Medical Imaging, Industrial Guidelines, Standards, and Compliance; Informatics, Data Grid, Workstation, Radiation Therapy, Simulators, Molecular Imaging, Archive Server, and Cloud Computing; and multimedia Imaging Informatics, Computer-Aided Diagnosis (CAD),

Image-Guide Decision Support, Proton Therapy, Minimally Invasive Multimedia Image-Assisted Surgery, BIG DATA. New chapter on Molecular Imaging Informatics Expanded coverage of PACS and eHR's (Electronic Health Record), with HIPPA compliance New coverage of PACS-based CAD (Computer-Aided Diagnosis) Reorganized and expanded clinical chapters discuss one distinct clinical application each Minimally invasive image assisted surgery in translational medicine Authored by the world's first and still leading authority on PACS and medical imaging PACS-Based Multimedia Imaging Informatics: Basic Principles and Applications, 3rd Edition is the single most comprehensive and authoritative resource that thoroughly covers the critical issues of PACS-based hardware and software design and implementation in a systematic and easily comprehensible manner. It is a must-have book for all those involved in designing, implementing, and using PACS-based Multimedia Imaging Informatics.

Telemedicine - Institute of Medicine 1996-11-08
Telemedicineâ€"the use of information and telecommunications technologies to provide and support health care when distance separates the participantsâ€"is receiving increasing attention not only in remote areas where health care access is troublesome but also in urban and suburban locations. Yet the benefits and costs of this blend of medicine and digital technologies must be better demonstrated before today's cautious decision-makers invest significant funds in its development. Telemedicine presents a framework for evaluating patient care applications of telemedicine. The book identifies managerial, technical, policy, legal, and human factors that must be taken into account in evaluating a telemedicine program. The committee reviews previous efforts to establish evaluation frameworks and reports on results from several completed studies of image transmission, consulting from remote locations, and other telemedicine programs. The committee also examines basic elements of an evaluation and considers relevant issues of quality, accessibility, and cost of health care. Telemedicine will be of immediate interest to anyone with interest in the clinical application of telemedicine.

Photoshop CS4 Bible - Stacy Cates 2009-01-27
The ultimate comprehensive reference to Adobe now updated and revised to cover the CS4 release! As the industry-standard image-editing software for print and digital media, Photoshop has a phenomenally broad reach and, if you're a user, then you're anxious to get started with CS4! This authoritative guide to Photoshop CS4 shows you how to retouch, color correct, manipulate, and combine images Sheds light on optimal ways to create cutting-edge special effects for digital or film-based images, and then use them on the Web or in print More than 1,200 pages are packed with advice that demystifies even the most complex Photoshop tasks Covers everything from image-editing basics to techniques for working with camera raw images Also discusses the file browser, histogram palette, lens blur, customizable keyboard shortcuts, and more Note: CD-ROM/DVD and other supplementary materials are not included as part of eBook file.

Practical Imaging Informatics - Society for Imaging 2009-10-03
Attention SIIM Members: a special discount is available to you; please log in to the SIIM website at www.siim.org/pii or call the SIIM office at 703-723-0432 for information on how you can receive the SIIM member price. Imaging Informatics Professionals (IIPs) have come to play an indispensable role in modern medicine, and the scope of this profession has grown far beyond the boundaries of the PACS. A successful IIP must not only understand the PACS itself, but also have knowledge of clinical workflow, a base in several medical specialties, and a solid IT capability regarding software interactions and networking. With the introduction of a certification test for the IIP position, a single source was needed to explain the fundamentals of imaging informatics and to demonstrate how those fundamentals are applied in everyday practice. Practical Imaging Informatics describes the foundations of information technology and clinical image management, details typical daily operations, and discusses rarer complications and issues.

Digital Imaging and Communications in Medicine (DICOM) - Oleg S. Pianykh 2016-05-01
This is the second edition of a very popular book on DICOM that introduces this complex standard from a very practical point of view. It provides a gradual, down to earth introduction to DICOM, and this edition contains many improvements and additions.

Radiology Secrets Plus E-Book - E. Scott Pretorius 2010-07-01
Radiology Secrets Plus—a Secrets Series title in the new PLUS format—offers an easy-to-read, information-at-your-fingertips approach to radiology. Drs. E. Scott Pretorius and Jeffrey A. Solomon provide the expert perspective you need to grasp the nuances of this specialty. This new edition offers more information and expanded full color visual elements to provide an overall enhanced learning experience. All this, along with the popular question-and answer approach, makes it a perfect concise board review tool and a handy clinical reference. Maintains the popular and trusted Secrets Series® format, using questions and short answers for effective and enjoyable learning. Provides the most current overview and authoritative coverage of all topics thanks to contributions from an impressive list of experts in the field of radiology. Introduces the new PLUS format, with an expanded size and layout and full color for easier review, more information, and more visual elements for an overall enhanced experience. Provides the current standards of radiology practice through thorough updates to every chapter that reflect the most up-to-date information. Contains more, larger images (including new full color PET and CT images), to offer a clearer picture of what is seen is practice.

Medical Modelling - Richard Bibb 2014-12-13
Medical modelling and the principles of medical imaging, Computer Aided Design (CAD) and Rapid Prototyping (also known as Additive Manufacturing and 3D Printing) are important techniques relating to various disciplines - from biomaterials engineering to surgery. Building on the success of the first edition, Medical Modelling: The application of Advanced Design and Rapid Prototyping techniques in medicine provides readers with a revised edition of the original text, along with key information on innovative imaging techniques, Rapid Prototyping technologies and case studies. Following an overview of medical imaging for Rapid Prototyping, the book goes on to discuss working with medical

scan data and techniques for Rapid Prototyping. In this second edition there is an extensive section of peer-reviewed case studies, describing the practical applications of advanced design technologies in surgical, prosthetic, orthotic, dental and research applications. Covers the steps towards rapid prototyping, from conception (modelling) to manufacture (manufacture) Includes a comprehensive case studies section on the practical application of computer-aided design (CAD) and rapid prototyping (RP) Provides an insight into medical imaging for rapid prototyping and working with medical scan data

Digital Imaging and Communications in Medicine (DICOM) - Oleg S. Pianykh 2016-05-01
This is the second edition of a very popular book on DICOM that introduces this complex standard from a very practical point of view. It provides a gradual, down to earth introduction to DICOM, and this edition contains many improvements and additions.

Clinical Imaging Physics - Ehsan Samei 2020-06-30
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.

A Patient's Guide to Medical Imaging - Ronald Eisenberg, JD, MD, FACR 2011-03-02
Knowing what to expect from a medical imaging procedure can decrease patient anxiety. This book explains the reasons for obtaining various studies, what preparation is needed, how the procedure is performed, how long it usually lasts, and what the patient will feel - all designed to permit a less stressful experience.

Practical Digital Imaging and PACS - J. Anthony Seibert 1999

Practical Digital Imaging and PACS - J. Anthony Seibert 1999
The book is a compendium of 25 papers presented at the June 1999 American Association of Physicists in Medicine summer school at Sonoma State University. The program emphasizes new advances in imaging technology, covering inherently digital imaging modalities-- computed radiography, CT, MRI, ultrasound, and nuclear medicine. It also provides the medical physicist with tools and information to become conversant with the details of digital imaging and communications in medicine (DICOM) standards, and to enable the verification of optimal image acquisition, display, archiving, and quality control of PACS in the clinical environment. No index. Annotation copyrighted by Book News, Inc., Portland, OR

Medical Imaging: Concepts, Methodologies, Tools, and Applications - Management Association, Information Resources 2016-07-18
Medical imaging has transformed the ways in which various conditions, injuries, and diseases are identified, monitored, and treated. As various types of digital visual representations continue to advance and improve, new opportunities for their use in medical practice will likewise evolve. Medical Imaging: Concepts, Methodologies, Tools, and Applications presents a compendium of research on digital imaging technologies in a variety of healthcare settings. This multi-volume work contains practical

examples of implementation, emerging trends, case studies, and technological innovations essential for using imaging technologies for making medical decisions. This comprehensive publication is an essential resource for medical practitioners, digital imaging technologists, researchers, and medical students.

Research Anthology on Telemedicine Efficacy, Adoption, and Impact on Healthcare Delivery - Management Association, Information Resources 2021-01-15
Telemedicine, which involves electronic communications and software, provides the same clinical services to patients without the requirement of an in-person visit. Essentially, this is considered remote healthcare. Though telemedicine is not a new practice, it has become an increasingly popular form of healthcare delivery due to current events, including the COVID-19 pandemic. Not only are visits being moved onto virtual platforms, but additional materials and correspondence can remain in the digital sphere. Virtual lab results, digital imaging, medical diagnosis, and video consultations are just a few examples that encompass how telemedicine can be used for increased accessibility in healthcare delivery. With telemedicine being used in both the diagnosis and treatment of patients, technology in healthcare can be implemented at almost any phase of the patient experience. As healthcare delivery follows the digital shift, it is important to understand the technologies, benefits and challenges, and overall impacts of the remote healthcare experience. The Research Anthology on Telemedicine Efficacy, Adoption, and Impact on Healthcare Delivery presents the latest research on best practices for adopting telehealth into medical practices and its efficacy and solutions for the improvement of telemedicine, as well as addresses emerging challenges and opportunities, including issues such as securing patient data and providing healthcare accessibility to rural populations. Covering important themes that include doctor-patient relationships, tele-wound monitoring, and telemedicine regulations, this book is essential for healthcare professionals, doctors, medical students, academic and medical libraries, medical technologists, practitioners, stakeholders, researchers, academicians, and students interested in the emerging technological developments and solutions within the field of telemedicine.

Introduction to Computational Health Informatics - Arvind Kumar Bansal 2020-01-08
This class-tested textbook is designed for a semester-long graduate or senior undergraduate course on Computational Health Informatics. The focus of the book is on computational techniques that are widely used in health data analysis and health informatics and it integrates computer science and clinical perspectives. This book prepares computer science students for careers in computational health informatics and medical data analysis. Features Integrates computer science and clinical perspectives Describes various statistical and artificial intelligence techniques, including machine learning techniques such as clustering of temporal data, regression analysis, neural networks, HMM, decision trees, SVM, and data mining, all of which are techniques used widely used in health-data analysis Describes computational techniques such as multidimensional and multimedia data representation and retrieval, ontology, patient-data deidentification, temporal data analysis, heterogeneous databases, medical image analysis and transmission, biosignal analysis, pervasive healthcare, automated text-analysis, health-vocabulary knowledgebases and medical information-exchange Includes bioinformatics and pharmacokinetics techniques and their applications to vaccine and drug development

Practical Radiation Oncology Physics - Sonja Dieterich 2015-08-21
Perfect for radiation oncologists, medical physicists, and residents in both fields, Practical Radiation Oncology Physics provides a concise and practical summary of the current practice standards in therapeutic medical physics. A companion to the fourth edition of Clinical Radiation Oncology, by Drs. Leonard Gunderson and Joel Tepper, this indispensable guide helps you ensure a current, state-of-the art clinical practice. Covers key topics such as relative and in-vivo dosimetry, imaging and clinical imaging, stereotactic body radiation therapy, and brachytherapy. Describes technical aspects and patient-related aspects of current clinical practice. Offers key practice guideline

recommendations from professional societies throughout - including AAPM, ASTRO, ABS, ACR, IAEA, and others. Includes therapeutic applications of x-rays, gamma rays, electron and charged particle beams, neutrons, and radiation from sealed radionuclide sources, plus the equipment associated with their production, use, measurement, and evaluation. Features a "For the Physician" box in each chapter, which summarizes the key points with the most impact on the quality and safety of patient care. Provides a user-friendly appendix with annotated compilations of all relevant recommendation documents. Includes an enhanced Expert Consult eBook with open-ended questions, ideal for self-assessment and highlighting key points from each chapter. Download and search all of the text, figures, and references on any mobile device.

Medical and Biological Image Analysis - 2018-07-04
This book deals with medical image analysis methods. In particular, it contains two significant chapters on image segmentation as well as some selected examples of the application of image analysis and processing methods. Despite the significant development of information technology methods used in modern image analysis and processing algorithms, the segmentation process remains open. This is mainly due to intra-patient variability and/or scene diversity. Segmentation is equally difficult in case of ultrasound imaging and depends on the location of the probe or the contact force. Regardless of the imaging method, segmentation must be tailored for a specific application in almost every case. These types of application areas for various imaging methods are included in this book.

The Role of Telehealth in an Evolving Health Care Environment - Institute of Medicine 2012-12-20
In 1996, the Institute of Medicine (IOM) released its report Telemedicine: A Guide to Assessing Telecommunications for Health Care. In that report, the IOM Committee on Evaluating Clinical Applications of Telemedicine found telemedicine is similar in most respects to other technologies for which better evidence of effectiveness is also being demanded. Telemedicine, however, has some special characteristics-shared with information technologies generally-that warrant particular

notice from evaluators and decision makers. Since that time, attention to telehealth has continued to grow in both the public and private sectors. Peer-reviewed journals and professional societies are devoted to telehealth, the federal government provides grant funding to promote the use of telehealth, and the private technology industry continues to develop new applications for telehealth. However, barriers remain to the use of telehealth modalities, including issues related to reimbursement, licensure, workforce, and costs. Also, some areas of telehealth have developed a stronger evidence base than others. The Health Resources and Service Administration (HRSA) sponsored the IOM in holding a workshop in Washington, DC, on August 8-9 2012, to examine how the use of telehealth technology can fit into the U.S. health care system. HRSA asked the IOM to focus on the potential for telehealth to serve geographically isolated individuals and extend the reach of scarce resources while also emphasizing the quality and value in the delivery of health care services. This workshop summary discusses the evolution of telehealth since 1996, including the increasing role of the private sector, policies that have promoted or delayed the use of telehealth, and consumer acceptance of telehealth. The Role of Telehealth in an Evolving Health Care Environment: Workshop Summary discusses the current evidence base for telehealth, including available data and gaps in data; discuss how technological developments, including mobile telehealth, electronic intensive care units, remote monitoring, social networking, and wearable devices, in conjunction with the push for electronic health records, is changing the delivery of health care in rural and urban environments. This report also summarizes actions that the U.S. Department of Health and Human Services (HHS) can undertake to further the use of telehealth to improve health care outcomes while controlling costs in the current health care environment.

Handbook of X-ray Imaging - Paolo Russo 2017-12-14
Containing chapter contributions from over 130 experts, this unique publication is the first handbook dedicated to the physics and technology of X-ray imaging, offering extensive coverage of the field. This highly comprehensive work is edited by one of the world's leading experts in X-

ray imaging physics and technology and has been created with guidance from a Scientific Board containing respected and renowned scientists from around the world. The book's scope includes 2D and 3D X-ray imaging techniques from soft-X-ray to megavoltage energies, including computed tomography, fluoroscopy, dental imaging and small animal imaging, with several chapters dedicated to breast imaging techniques. 2D and 3D industrial imaging is incorporated, including imaging of artworks. Specific attention is dedicated to techniques of phase contrast X-ray imaging. The approach undertaken is one that illustrates the theory as well as the techniques and the devices routinely used in the various fields. Computational aspects are fully covered, including 3D reconstruction algorithms, hard/software phantoms, and computer-aided diagnosis. Theories of image quality are fully illustrated. Historical, radioprotection, radiation dosimetry, quality assurance and educational aspects are also covered. This handbook will be suitable for a very broad audience, including graduate students in medical physics and biomedical engineering; medical physics residents; radiographers; physicists and engineers in the field of imaging and non-destructive industrial testing using X-rays; and scientists interested in understanding and using X-ray imaging techniques. The handbook's editor, Dr. Paolo Russo, has over 30 years' experience in the academic teaching of medical physics and X-ray imaging research. He has authored several book chapters in the field of X-ray imaging, is Editor-in-Chief of an international scientific journal in medical physics, and has responsibilities in the publication committees of international scientific organizations in medical physics. Features: Comprehensive coverage of the use of X-rays both in medical radiology and industrial testing The first handbook published to be dedicated to the physics and technology of X-rays Handbook edited by world authority, with contributions from experts in each field

Digital Imaging and Communications in Medicine (DICOM) - Oleg S. Pianykh 2011-11-15
This is the second edition of a very popular book on DICOM that introduces this complex standard from a very practical point of view. It is aimed at a broad audience of radiologists, clinical administrators, information technologists, medical students, and lecturers. The book provides a gradual, down to earth introduction to DICOM, accompanied by an analysis of the most common problems associated with its implementation. Compared with the first edition, many improvements and additions have been made, based on feedback from readers. Whether you are running a teleradiology project or writing DICOM software, this book will provide you with clear and helpful guidance. It will prepare you for any DICOM projects or problem solving, and assist you in taking full advantage of multifaceted DICOM functionality.

Diagnostic Radiology Physics with MATLAB® - Johan Helmenkamp 2020-11-23
Imaging modalities in radiology produce ever-increasing amounts of data which need to be displayed, optimized, analyzed and archived: a "big data" as well as an "image processing" problem. Computer programming skills are rarely emphasized during the education and training of medical physicists, meaning that many individuals enter the workplace without the ability to efficiently solve many real-world clinical problems. This book provides a foundation for the teaching and learning of programming for medical physicists and other professions in the field of Radiology and offers valuable content for novices and more experienced readers alike. It focuses on providing readers with practical skills on how to implement MATLAB® as an everyday tool, rather than on solving academic and abstract physics problems. Further, it recognizes that MATLAB is only one tool in a medical physicist's toolkit and shows how it can be used as the "glue" to integrate other software and processes together. Yet, with great power comes great responsibility. The pitfalls to deploying your own software in a clinical environment are also clearly explained. This book is an ideal companion for all medical physicists and medical professionals looking to learn how to utilize MATLAB in their work. Features Encompasses a wide range of medical physics applications in diagnostic and interventional radiology Advances the skill of the reader by taking them through real-world practical examples and solutions with access to an online resource of example code The diverse examples of varying difficulty make the book suitable for readers from a

variety of backgrounds and with different levels of programming experience.

Digital Imaging and Communications in Medicine (DICOM) - Oleg S. Pianykh 2008-05-20
This is the first Digital Imaging and Communications in Medicine (DICOM) book to introduce this complex imaging standard from a very practical point of view. It prepares the reader for any DICOM project and demonstrates how to take full advantage of this tool.

Digital Signal Processing for Medical Imaging Using Matlab - E.S. Gopi 2012-09-14
This book describes medical imaging systems, such as X-ray, Computed tomography, MRI, etc. from the point of view of digital signal processing. Readers will see techniques applied to medical imaging such as Radon transformation, image reconstruction, image rendering, image enhancement and restoration, and more. This book also outlines the physics behind medical imaging required to understand the techniques being described. The presentation is designed to be accessible to beginners who are doing research in DSP for medical imaging. Matlab programs and illustrations are used wherever possible to reinforce the concepts being discussed.

PACS - Keith J. Dreyer 2013-03-14
This textbook reviews the technological developments associated with the transition of radiology departments to filmless environments. Each chapter addresses the key topics in current literature with regard to the generation, transfer, interpretation and distribution of images to the medical enterprise. As leaders in the field of computerized medical imaging, the editors and contributors will provide insight into emerging technologies for physicians, administrators, and other interested groups. As health care organizations throughout the world begin to generate filmless implementation strategies, this exhaustive review has proven to be a vital aid to leaders in the development of health care.

Whole Slide Imaging - Anil V. Parwani 2021-10-29
This book provides up-to-date and practical knowledge in all aspects of whole slide imaging (WSI) by experts in the field. This includes a historical perspective on the evolution of this technology, technical aspects of making a great whole slide image, the various applications of whole slide imaging and future applications using WSI for computer-aided diagnosis The goal is to provide practical knowledge and address knowledge gaps in this emerging field. This book is unique because it addresses an emerging area in pathology for which currently there is only limited information about the practical aspects of deploying this technology. For example, there are no established selection criteria for choosing new scanners and a knowledge base with the key information. The authors of the various chapters have years of real-world experience in selecting and implementing WSI solutions in various aspects of pathology practice. This text also discusses practical tips and pearls to address the selection of a WSI vendor, technology details, implementing this technology and provide an overview of its everyday uses in all areas of pathology. Chapters include important information on how to integrate digital slides with laboratory information system and how to streamline the "digital workflow" with the intent of saving time, saving money, reducing errors, improving efficiency and accuracy, and ultimately benefiting patient outcomes. Whole Slide Imaging: Current Applications and Future Directions is designed to present a comprehensive and state-of-the-art approach to WSI within the broad area of digital pathology. It aims to give the readers a look at WSI with a deeper lens and also envision the future of pathology imaging as it pertains to WSI and associated digital innovations.

Basic Knowledge of Medical Imaging Informatics - Peter M. A. van Ooijen 2021-05-26
This book provides a unique introduction to the vast field of Medical Imaging Informatics for students and physicians by depicting the basics of the different areas in Radiology Informatics. It features short chapters on the different main areas in Medical Imaging Informatics, such as Picture Archiving and Communication Systems (PACS), radiology reporting, data sharing, and de-identification and anonymization, as well as standards like Digital Imaging and Communications in Medicine (DICOM), Integrating the Health Enterprise (IHE) and Health Level 7

(HL7,. Written by experts in the respective fields and endorsed by the European Society of Medical Imaging Informatics (EuSoMII) the scope of the book is based on the Medical Imaging Informatics sub-sections of the European Society of Radiology (ESR) European Training Curriculum Undergraduate Level and Level I. This volume will be an invaluable resource for residents and radiologists and is also specifically suited for undergraduate training.