Delineating Organs At Risk In Radiation Therapy

Stereotactic Radiosurgery and Stereotactic Body Radiation Therapy (SBRT)
Accelerated Partial Breast Irradiation
New Technologies in Radiation Oncology
Principles and Practice of Radiotherapy Techniques in Thoracic Malignancies
Deep Learning and Convolutional Neural Networks for Medical Image Computing
Adaptive Radiation Therapy
Clinical Target Volumes in Conformal and Intensity Modulated Radiation Therapy
Target Volume Delineation for Pediatric Cancers
MRI Atlas of the Human Cerebellum
Target Volume Definition in Radiation Oncology
Nasopharyngeal Cancer
Intracranial and Spinal Radiotherapy
Opportunities for Organ Donor Intervention Research
Textbook of Patient Safety and Clinical Risk Management
Management of Pericardial Disease
Practical Essentials of Intensity Modulated Radiation Therapy
Practical Radiotherapy Planning Fourth Edition
Auto-Segmentation for Radiation Oncology
Radiation Oncology Physics
Accuracy Requirements and Uncertainties in Radiotherapy
Machine Learning in Radiation Oncology
Re-Irradiation: New Frontiers
Auto-Segmentation for Radiation Oncology
Target Volume Delineation for Conformal and Intensity-Modulated Radiation Therapy
Nasopharyngeal Carcinoma
Delineating Organs at Risk in Radiation Therapy
Principles and Practice of Urooncology
Advances in Radiation Oncology
Target Volume Delineation and Treatment Planning for Particle Therapy
Radiographic Atlas of Skull and Brain Anatomy
Image-Guided IMRT
Handbook of Treatment Planning, 2nd Ed
Medical Image Computing and Computer-Assisted Intervention - MICCAI 2008
Target Volume Delineation and Field Setup
The Sun, the Earth, and Near-earth Space
Radiation Therapy Techniques and Treatment Planning for Breast Cancer
Stereotactic Body Radiation Therapy
OR 2.0 Context-Aware Operating Theaters, Computer Assisted Robotic Endoscopy, Clinical Image-Based Procedures, and Skin Image Analysis
Deep Learning and Data Labeling for Medical Applications
Radiation Oncology: A Physicist's-Eye View

JANELLE SAGE

Stereotactic Radiosurgery and Stereotactic Body Radiation Therapy (SBRT) Springer Nature
This is a highly practical resource about the specific technical aspects of delivering radiation treatment. Pocket-sized and well organized for ease of use, the book is designed to lead radiation oncology trainees and residents step by step through the basics of radiotherapy planning and delivery for all major malignancies. This second edition retains the valued features of the first edition-comprehensive yet concise, practical, evidence-based-while incorporating recent advances in the field. This includes expanded and updated discussions of SBRT for prostate and GI tumors, intraoperative.
Accelerated Partial Breast Irradiation Springer
This book constitutes the refereed proceedings of two workshops held at the 19th International Conference on Medical Image Computing and Computer-Assisted Intervention, MICCAI 2016, in Athens, Greece, in October 2016: the First Workshop on Large-Scale Annotation of Biomedical Data and Expert Label Synthesis, LABELS 2016, and the Second International Workshop on Deep Learning in Medical Image Analysis, DLMIA 2016. The 28 revised regular papers presented in this book were carefully reviewed and selected from a total of 52 submissions. The 7 papers selected for LABELS deal with topics from the following fields: crowd-sourcing methods; active learning; transfer learning; semi-supervised learning; and modeling of label uncertainty.The 21 papers selected for DLMIA span a wide range of topics such as image description; medical imaging-based diagnosis; medical signal-based diagnosis; medical image reconstruction and model selection using deep learning techniques; meta-heuristic techniques for fine-tuning parameter in deep learning-based architectures; and applications based on deep learning techniques.
New Technologies in Radiation Oncology CRC Press
The MRI Atlas of the Human Cerebellum constitutes the most complete, detailed work on the human cerebellum to date. This definitive work provides images in the three cardinal planes (sagittal, transverse, and coronal) at closely spaced intervals of 2 millimeters. The images are derived from MRI scans of one individual and from postmortem sections of another. It is the only such atlas set within the universally accepted framework of the Talairach stereotaxic system, derived from standard landmarks in the brain. The book includes a new nomenclature system (labeling system) which is easier to use, aids in understanding the organization of the cerebellum, and is consistent with earlier work on the anatomy of the cerebellum in animals and the development of the human cerebellum in infants. Recent studies have shown that the cerebellum is involved in much more than motor coordination alone: also in higher functions including memory, language, emotion, and attention, as well as sensory discrimination. This atlas facilitates this new era of study of the cerebellum, allowing investigators to identify cerebellar structures with precision. Everyone concerned with the anatomy, function, or dysfunction of the cerebellum should have a copy. Key Features * Provides the most comprehensive, detailed, and authoritative atlas of the human cerebellum * Contains 110 MRI images and 110 corresponding cryosection images * Includes a CD with all of the images and text from the book, supported by both PC and Macintosh computer platforms * Developed within the universally accepted framework of the Talairach

stereotaxic system * Contains detailed myelin- and Nissl-stained histology of major nuclei * Presents a new, easy-to-use nomenclature system * Allows investigators to identify structures with precision and to address detailed structure-function correlations

Principles and Practice of Radiotherapy Techniques in Thoracic Malignancies Springer

" ... Concise explanations and descriptions - easily read and readily understood - of what we know of the chain of events and processes that connect the Sun to the Earth, with special emphasis on space weather and Sun-Climate."--Dear Reader.

Deep Learning and Convolutional Neural Networks for Medical Image Computing Springer

This book addresses the day-to-day treatment planning issues that radiation oncologists are likely to encounter during the treatment of breast cancer patients and provides numerous practical “tips” that will assist in navigation of the treatment planning process, from delineation of the tumor boundaries to discrimination of adjacent normal tissues and critical structures at risk of radiation injury. Differences in target delineation and treatment planning according to technique are emphasized, with coverage of conventional radiation therapy and advanced techniques including cardiac-sparing approaches, e.g., using active breathing control, intensity-modulated radiation therapy, proton beam therapy, and electron beam therapy post mastectomy. Individual chapters also focus on radiation setup and verification techniques and radiation treatment planning systems. The book, which is part of the Springer series Practical Guides in Radiation Oncology, is designed for hands-on use by radiation oncology residents/fellows in training and practicing radiation oncologists.

Adaptive Radiation Therapy Springer

The papers collected in this hugely useful volume cover the principle physical and biological aspects of radiation therapy and in addition, address practical clinical considerations in the planning and delivering of that therapy. The importance of the assessment of uncertainties is emphasized. Topics include an overview of the physics of the interactions of radiation with matter and the definition of the goals and the design of radiation therapy approaches.

Clinical Target Volumes in Conformal and Intensity Modulated Radiation Therapy Springer

This book presents a detailed review of the state of the art in deep learning approaches for semantic object detection and segmentation in medical image computing, and large-scale radiology database mining. A particular focus is placed on the application of convolutional neural networks, with the theory supported by practical examples. Features: highlights how the use of deep neural networks can address new questions and protocols, as well as improve upon existing challenges in medical image computing; discusses the insightful research experience of Dr. Ronald M. Summers; presents a comprehensive review of the latest research and literature; describes a range of different methods that make use of deep learning for object or landmark detection tasks in 2D and 3D medical imaging; examines a varied selection of techniques for semantic segmentation using deep learning principles in medical imaging; introduces a novel approach to interleaved text and image deep mining on a large-scale radiology image database.

Target Volume Delineation for Pediatric Cancers Springer Science & Business Media

This publication is aimed at students and teachers involved in teaching programmes in field of medical radiation physics, and it covers the basic medical physics knowledge required in the form of a syllabus for modern radiation oncology. The information will be useful to those preparing for professional certification exams in radiation oncology, medical physics, dosimetry or radiotherapy technology.

MRI Atlas of the Human Cerebellum Springer Science & Business Media

The third edition of Intensity Modulated Radiation Therapy was written to enhance the reader’s understanding of the cutting-edge technology of Intensity Modulated Radiation Therapy. It is designed to both update old readers and inform new readers about the complexities and details of clinical management. This completely updated edition provides a step-by-step, practical approach to the use of IMRT in the evaluation and treatment of cancer patients. Because of IMRT’s ability to employ individually controlled beamlets, it is an extremely promising technique, especially when paired with CT, PET, and/or MRI. With these improved procedures, doctors and clinicians will be able to take high resolution images of tumors while minimizing dosages to surrounding tissue. In order to focus on the most up to date IMRT techniques, the introductory chapters have been condensed to provide a brief overview of IMRT physics, mechanics and quality assurance, and also CT and MR imaging. To help assist in clinical decision-making it provides the reader with more than 700 full-color illustrations, IMRT tables and clear, straightforward descriptions that address a range of tumor types and sites including head and neck, urinary, and gynecologic cancers.

Target Volume Definition in Radiation Oncology CRC Press

Implementing safety practices in healthcare saves lives and improves the quality of care: it is therefore vital to apply good clinical practices, such as the WHO surgical checklist, to adopt the most appropriate measures for the prevention of assistance-related risks, and to identify the potential ones using tools such as reporting & learning systems. The culture of safety in the care environment and of human factors influencing it should be developed from the beginning of medical studies and in the first years of professional practice, in order to have the maximum impact on clinicians' and nurses' behavior. Medical errors tend to vary with the level of proficiency and experience, and this must be taken into account in adverse events prevention. Human factors assume a decisive importance in resilient organizations, and an understanding of risk control and containment is fundamental for all medical and surgical specialties. This open access book offers recommendations and examples of how to improve patient safety by changing practices, introducing organizational and technological innovations, and creating effective, patient-centered, timely, efficient, and equitable care systems, in order to spread the quality and patient safety culture among the new generation of healthcare professionals, and is intended for residents and young professionals in different clinical specialties.

Nasopharyngeal Cancer Springer Publishing Company

This textbook is designed to help the busy radiation oncologist to accurately and confidently delineate tumor volumes for conformal radiation therapy (including IMRT). The book provides an atlas of clinical target volumes (CTVs) for commonly encountered cancers, with each chapter illustrating CTV delineation on a slice-by-slice basis, on planning CT images. Common anatomic variants for each tumor are represented in individual illustrations, with annotations highlighting differences in coverage. The anatomy of each site and patterns of lymphatic drainage are discussed, and their influence on the design of CTVs is explained in detail. Utilization of other imaging modalities, including MRI, to delineate volumes is highlighted. Key details of simulation and planning are briefly reviewed. Although the emphasis is on target volume delineation for conformal techniques, information is also provided on conventional radiation field setup and design when IMRT is not suitable.

Intracranial and Spinal Radiotherapy Springer Nature

Modern medical imaging and radiation therapy technologies are so complex and computer driven that it is difficult for physicians and technologists to know exactly what is happening at the point-of-care. Medical physicists responsible for filling this gap in knowledge must stay abreast of the latest advances at the intersection of medical imaging and radiation therapy. This book provides medical physicists and radiation oncologists current and relevant information on Adaptive Radiation Therapy (ART), a state-of-the-art approach that uses a feedback process to account for patient-specific anatomic and/or biological changes, thus delivering highly individualized radiation therapy for cancer patients. The book should also benefit medical dosimetrists and radiation therapists. Adaptive Radiation Therapy describes technological and methodological advances in the field of ART, as well as initial clinical experiences using ART for selected anatomic sites. Divided into three sections (radiobiological basis, current technologies, and clinical applications), the book covers: Morphological and biological biomarkers for patient-specific planning Design and optimization of treatment plans Delivery of IMRT and IGRT intervention methodologies of ART Management of intrafraction variations, particularly with respiratory motion Quality assurance needed to ensure the safe delivery of ART ART applications in several common cancer types / anatomic sites The technology and methodology for ART have advanced significantly in the last few years and accumulated clinical data have demonstrated the need for ART in clinical settings, assisted by the wide application of intensity modulated radiation therapy (IMRT) and image-guided radiation therapy (IGRT). This book shows the real potential for supplying every patient with individualized radiation therapy that is maximally accurate and precise.

Opportunities for Organ Donor Intervention Research Springer

Defining organs at risk is a crucial task for radiation oncologists when aiming to optimize the benefit of radiation therapy, with delivery of the maximum dose to the tumor volume while sparing healthy tissues. This book will prove an invaluable guide to the delineation of organs at risk of toxicity in patients undergoing radiotherapy. The first and second sections address the anatomy of organs at risk, discuss the pathophysiology of radiation-induced damage, and present dose constraints and methods for target volume delineation. The third section is devoted to the radiological anatomy of organs at risk as seen on typical radiotherapy planning CT scans, with a view to assisting the radiation oncologist to recognize and delineate these organs for each anatomical region – head and neck, mediastinum, abdomen, and pelvis. The book is intended both for young radiation oncologists still in training and for their senior colleagues wishing to reduce intra-institutional variations in practice and thereby to standardize the definition of clinical target volumes.

Textbook of Patient Safety and Clinical Risk Management Springer

Intensity-modulated radiation therapy (IMRT), one of the most important developments in radiation oncology in the past 25 years, involves technology to deliver radiation to tumors in the right location, quantity and time. Unavoidable irradiation of surrounding normal tissues is distributed so as to preserve their function. The achievements and future directions in the field are grouped in the three sections of the book, each suitable for supporting a teaching course. Part 1 contains topical reviews of the basic principles of IMRT, part 2 describes advanced techniques such as image-guided and biologically based approaches, and part 3 focuses on investigation of IMRT to improve outcome at various cancer sites.

Management of Pericardial Disease IAEA

This handbook is designed to provide the radiation oncologist with clear practical guidance in the delineation of tumor volumes and/or radiation fields for a wide variety of pediatric cancers, including the most frequently encountered malignancies of childhood. This is a guide to designing treatment fields and volumes that may be utilized in the delivery of conformal therapies such as intensity-modulated radiation therapy and proton therapy, the latter being particularly relevant in children. Each chapter focuses on a specific tumor type, providing general guidelines that will assist the reader in delineating the clinical target volume for particular presentations, including patterns of spread. As the target volumes can be complex, detailed illustrations are presented of the volumes in representative cases, contoured slice by slice on the planning CT images. In addition to target volume delineation for conformal treatment, field design setup for conventional approaches is also discussed.

Practical Essentials of Intensity Modulated Radiation Therapy Academic Press

- Summarizes the state of the art in the most relevant areas of medical physics and engineering applied to radiation oncology - Covers all relevant areas of the subject in detail, including 3D imaging and image processing, 3D treatment planning, modern treatment techniques, patient positioning, and aspects of verification and quality assurance - Conveys information in a readily understandable way that will appeal to professionals and students with a medical background as well as to newcomers to radiation oncology from the field of physics

Practical Radiotherapy Planning Fourth Edition Springer

Planning is a critical stage of radiotherapy. Careful consideration of the complex variables involved and critical assessment of the techniques available are fundamental to good and effective practice. First published in 1985, Practical Radiotherapy Planning has, over three editions, established itself as the popular choice for the trainee raditation oncologist and radiographer, providing the 'nuts and bolts' of planning in a practical and accessible manner. This fourth edition encompasses a wealth of new material, reflecting the radical change in the practice of radiotherapy in recent years. The information contained within the introductory chapters has been expanded and brought up to date, and a new chapter on patient management has been added. CT stimulators, MLC shieldings and dose profiles, principles of IMRT, and use of MRI, PET and ultrasound are all included, amongst other new developments in this field. The aim of the book remains unchanged. Complexity of treatment planning has increased greatly, but the fourth edition continues to emphasise underlying principles of treatment that can be applied for conventional, conformal and novel treatments, taking into account advances in imaging and treatment delivery.

Auto-Segmentation for Radiation Oncology Academic Press

This book is a practical, up-to-date guide to the treatment of patients with brain and spinal tumors. Leading experts in the field explain treatment techniques in detail, highlighting key considerations in the use of external beam radiation therapy, intensity-modulated radiation therapy, particle therapy, radiosurgery, and stereotactic body radiation therapy. Specific recommendations are described for different tumor types, and helpful information provided on other important issues, such as the interaction of radiotherapy and systemic therapy and the avoidance of treatment complications. With the development of modern technology, highly conformal radiotherapy techniques have become more complicated, yet also more widely employed. This book will equip readers with the knowledge required to set up practices to deliver quality brain and spinal radiation therapy appropriate to each patient. It will be of benefit to radiation oncologists, clinical

oncologists, medical physicists, medical dosimetrists, radiation therapists, and senior nurses as well as medical oncologists and surgical oncologists with an interest in radiotherapy.

Radiation Oncology Physics Springer

This text is a concise handbook designed to assist the clinician in the implementation of Accelerated Partial Breast Irradiation (APBI). It includes a review of the principles that underlie APBI, a practical and detailed description of each technique for APBI, a review of current clinical results of APBI, and a review of the incidence and management of treatment related complications. The book encompasses a number of different techniques and approaches that include brachytherapy, intraoperative, and external beam techniques. There is currently no single source that describes these techniques and their clinical implementation.

Accuracy Requirements and Uncertainties in Radiotherapy Springer

This evidence-based, state of the art guide to the management of urological malignancies, including bladder cancer, prostate cancer, and testicular cancer, is designed to serve as an easy-to-consult reference that will assist in daily decision making and the delivery of optimal care for individual patients within a multidisciplinary setting. Readers will find up-to-date information on patient selection and the full range of treatment modalities, including modern radiotherapy techniques, systemic chemotherapy, surgical procedures (including robotic surgery and other minimally invasive approaches), hormonal therapies, immunotherapy, and focal therapies. With regard to radiotherapy, the coverage encompasses everything from delineation of tumor volumes and organs at risk based on CT simulation through to delivery of stereotactic body radiotherapy, intensity-modulated radiation therapy, tomotherapy, volumetric modulated arc therapy, and proton therapy. The authors are leading authorities with international reputations who have been selected for their expertise in the topic that they address. The book will be of value for all practicing urooncologists as well as other oncology fellows and residents interested in urooncology.