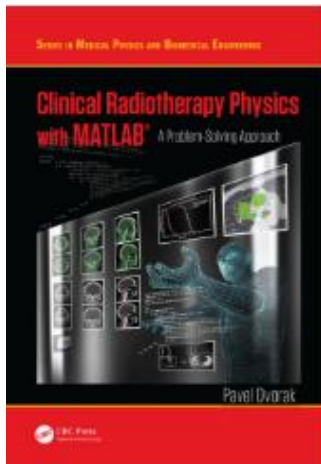


A BOOK REVIEW
CLINICAL RADIOTHERAPY PHYSICS WITH MATLAB:
A PROBLEM-SOLVING APPROACH
BY PAVEL DVORAK



Introduction and purpose

This book provides a “dummy” for beginner’s guide to using MATLAB® to solve common problems in DICOM and imaging post-processing. It also provides guidance on how to manage the preliminary problems of dose calculation and the extrapolation of data from instruments and devices available in modern radiation

Audience

The book is intended as an introductory guide to managing simple problems and code in MATLAB® which will be useful in radiation therapy environments. The added value of the book is its many recent references and publications in the field of radiotherapy about the discussed topic.

The book can contribute to the training of students or stimulate professionals to improve the state of the art of technology, solving everyday clinical problems related to software and technology, and developing what is not available in their own radiotherapy department.

Content/Features/Assessment

The book is organized into ten chapters, as the author guides the readers through the problems in DICOM and the typical domain of the TPS, LINAC and images systems available in modern radiation therapy. The author tries to provide the reader with the initial tools to

understand which parameters, script, or complex codes should be written and how to integrate industrial data with simple interfaces developed in MATLAB®. In particular the book provides a dummy for programmers, in the field of image co-registration, management and dose calculation and addresses the problems of quality assurance and data analysis through gamma index with examples of breaking down the problem and assembling the information necessary to achieve the goal.

A much needed addition to current literature in the field, this book is tailored to the needs of medical physicists who are problem-solving using scripts and codes in MATLAB. Dr. Dvorak has provided scripts as dummy codes and summarized a sample of problems typically present in radiotherapy related to the use of advanced systems for treatment plans, such as the management of ROIs and Volumes in images and the automation of quality controls of LINAC, through dedicated toolbox developments and useful codes in daily clinical practice, to have an online control of the LINAC parameters and / or interpretations of the ROIs and Volumes reported in the images and on which accurate dose calculations are possible.

The book can be used to support MSc programs in medical physics or early-career professionals from different disciplines (physics, engineering, software and medical instruments design, etc....) who need to understand the approach of using MATLAB® codes for problem solving in radiation therapy.

Reviewed by Gabriele Guidi, Ph.D., M.Sc.

Director of Medical Physics
Az. Ospedaliero-Universitaria di Modena, Italy
His research interests are in Adaptive Radiation Therapy, workflow automation and predictive methods in medicine.