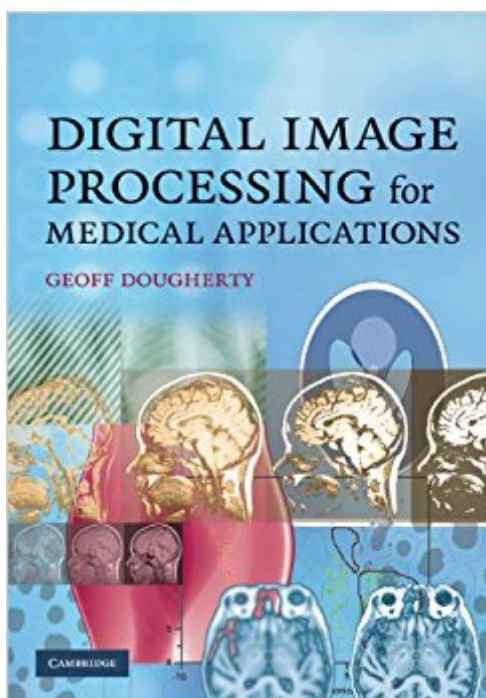


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# Digital Image Processing For Medical Applications



## Synopsis

Image processing is a hands-on discipline, and the best way to learn is by doing. This text takes its motivation from medical applications and uses real medical images and situations to illustrate and clarify concepts and to build intuition, insight and understanding. Designed for advanced undergraduates and graduate students who will become end-users of digital image processing, it covers the basics of the major clinical imaging modalities, explaining how the images are produced and acquired. It then presents the standard image processing operations, focusing on practical issues and problem solving. Crucially, the book explains when and why particular operations are done, and practical computer-based activities show how these operations affect real images. All images, links to the public-domain software ImageJ and custom plug-ins, and selected solutions are available from [www.cambridge.org/books/dougherty](http://www.cambridge.org/books/dougherty).

## Book Information

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## Customer Reviews

"Digital Image Processing succeeds in being an accessible but rigorous first course in the generation and manipulation of medical images. Dougherty moves seamlessly between gamma rays, radiation doses, picture archiving strategies, Boolean logic, Fourier transforms, and applications like mammography and angiography. The chief strengths of Digital Image Processing are its clear and well-considered organization, its accessibility to a variety of audiences, and its applicability to an array of imaging modalities and techniques. The book also has wonderful illustrations, particularly of how to enhance images in the spatial and frequency domains." David R.

Okada & Ron Blankstein, *Perspectives in Biology and Medicine*"The author states that this book is intended for biomedical engineers, computer scientists, radiological scientists, and physicists. It is my opinion that the quality of this book extends that list to medical physicists, digital artists, digital animators, and art restoration professionals. It also would be appropriate for graduate students in these disciplines who have an interest in the mathematical and computer-based manipulation of all types of imaging.... This book is well written, hangs together as a complete work, is coherent, easy to read, and makes good on its claims set forth in the preface and introduction.... The examples, illustrations, and chapter constructions are outstanding. The two middle sections of the book are its forte, and the index is useful and complete. This book is a must for anyone going into image processing -- period." William Davros, *Medical Physics*"Dougherty writes clearly, and the text provides many useful, understandable illustrations, several in color." S.L. Tanimoto, *CHOICE*"Digital image processing is a vast field. Even applications in medical imaging cover a very wide spectrum of activities. These can range from simple calculations of image profiles to complex CT reconstruction. Geoff Dougherty's book manages to condense the enormous digital image processing toolbox to a level that is ideal for someone with background in medical imaging wishing to explore this field. Getting the level correct is always difficult, but Professor Dougherty's vast teaching experience is clearly evident throughout the book. Relatively simple mathematics is used, but only where necessary. A particularly attractive aspect of the book are the computer-based activities in each chapter which give the reader 'hands-on' image processing experience. It is also an ideal starter textbook for a scientist proposing to specialise in medical image processing; the bibliography is impressive and up to date. It's the book I'd like to have read starting out in medical image processing some twenty-five years ago!" Patrick Kenny, Chief Physicist, Mater Misericordiae University Hospital, Dublin

This practical book for advanced undergraduates and graduate students explains the concepts and the effective use of image processing tools for medical applications. Real medical images and hands-on activities are used to develop the reader's skill and confidence. All images, public-domain software and solutions available from [www.cambridge.org/books/dougherty](http://www.cambridge.org/books/dougherty).

Difficult to follow. Equations appear without proper explanation. Illustrations supposedly for comparison, look identical. Exercises, using ImageJ, a java-based open licence program, are good. Some of the exercises, however, fall foul of Java's inbuilt security, and are impossible to run, except by advanced IT personnel.

Well written for the informatics student & the imageJ link with tuts are helpful. Links to some you tube clips may be beneficial though.

I was lucky enough to receive a first draft of this book for my class with Dr. Dougherty. He is an amazing individual & a captivating professor. At the time I didn't appreciate this book as much as one should, however since I have just completed Ultrasound School at Loma Linda University, it has been a wonderful reference material when it comes to the "physics" of ultrasound. It was truly something to be taught the book from the author, and to now see he has written a new one, is fantastic, I cannot wait to add it to my collection. This is a must buy for anyone wanting to know the "how" or "why" medical imaging works!

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