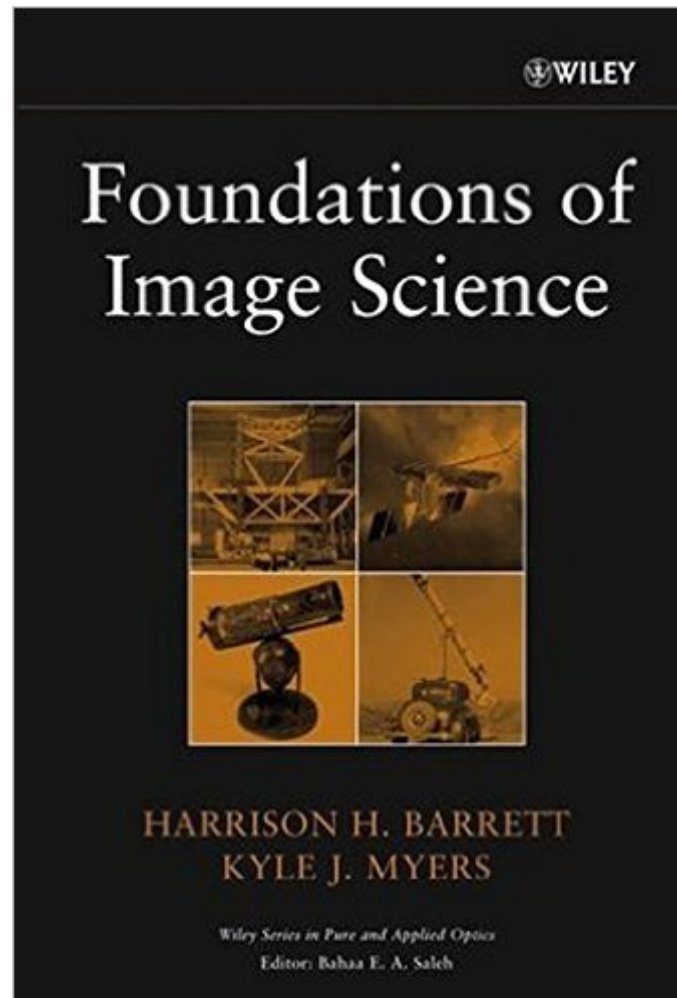


The book was found

# Foundations Of Image Science



## Synopsis

Winner of the 2006 Joseph W. Goodman Book Writing Award! A comprehensive treatment of the principles, mathematics, and statistics of image science In today's visually oriented society, images play an important role in conveying messages. From seismic imaging to satellite images to medical images, our modern society would be lost without images to enhance our understanding of our health, our culture, and our world. Foundations of Image Science presents a comprehensive treatment of the principles, mathematics, and statistics needed to understand and evaluate imaging systems. The book is the first to provide a thorough treatment of the continuous-to-discrete, or CD, model of digital imaging. Foundations of Image Science emphasizes the need for meaningful, objective assessment of image quality and presents the necessary tools for this purpose.

Approaching the subject within a well-defined theoretical and physical context, this landmark text presents the mathematical underpinnings of image science at a level that is accessible to graduate students and practitioners working with imaging systems, as well as well-motivated undergraduate students. Destined to become a standard text in the field, Foundations of Image Science covers:

**Mathematical Foundations:** Examines the essential mathematical foundations of image science

**Image Formation "Models and Mechanisms:** Presents a comprehensive and unified treatment of the mathematical and statistical principles of imaging, with an emphasis on digital imaging systems and the use of SVD methods

**Image Quality:** Provides a systematic exposition of the methodology for objective or task-based assessment of image quality

**Applications:** Presents detailed case studies of specific direct and indirect imaging systems and provides examples of how to apply the various mathematical tools covered in the book

**Appendices:** Covers the prerequisite material necessary for understanding the material in the main text, including matrix algebra, complex variables, and the basics of probability theory

## Book Information

Hardcover: 1540 pages

Publisher: Wiley-Interscience; 1 edition (October 24, 2003)

Language: English

ISBN-10: 0471153001

ISBN-13: 978-0471153009

Product Dimensions: 7.4 x 3 x 10.3 inches

Shipping Weight: 6.2 pounds (View shipping rates and policies)

Average Customer Review: 5.0 out of 5 stars See all reviews (6 customer reviews)

Best Sellers Rank: #1,069,169 in Books (See Top 100 in Books) #137 in Books > Computers & Technology > Graphics & Design > Computer Modelling > Imaging Systems #401 in Books > Science & Math > Physics > Optics #2767 in Books > Textbooks > Science & Mathematics > Mathematics > Statistics

## Customer Reviews

This book always amazes me whenever I use it for the absolutely incredible amount of material that it covers in such depth. I had the tremendous good fortune to have taken a Physical Optics course with Prof. Barrett, and it would be impossible to believe that one person can know so much unless you have personally talked with him about science or had a class with him. The rumor in the department is that Dr. Barrett is the only professor to at one time or other have taught ALL of the department's core graduate courses during his career at the College of Optical Sciences. Furthermore, he is one of the rare scientists who is an authority in his field both theoretically and experimentally, so you do not get a one-sided perspective as can often happen with science texts. The book reflects his vast knowledge, expertise, rigor, and thoroughness. Of course, the book has several chapters on mathematical formalism, including the linear algebra, Dirac delta function, Fourier theory, and group theory. The imaging theory is there, as well as diffraction theory. He covers photon statistics and detection, including the necessary quantum mechanics. He covers several advanced imaging concepts that I haven't any idea about myself. You probably could not find a more comprehensive book in the field of imaging and physical optics. Another benefit is that, at least for the chapters I have used, the individual chapters seem to stand well on their own and you are not forced to study the book in order. This book is not for the faint of heart in any respect. The material itself is not for the faint of heart: it is extremely rigorous and will require your careful attention, but I believe it is well explained and manageable for someone who is serious about learning it.

[Download to continue reading...](#)

Imagery and Disease: Image-Ca, Image-Sp, Image-Db : A Diagnostic Tool for Behavioral Medicine  
Foundations of Image Science  
The Wounded Healer: Ministry in Contemporary Society (Doubleday Image Book. an Image Book)  
Face Image Analysis by Unsupervised Learning (The Kluwer International Series in Engineering and Computer Science, Volume 612) (The Springer International Series in Engineering and Computer Science)  
Study Guide for Foundations of Maternal-Newborn and Women's Health Nursing, 6e (Murray, Study Guide for Foundations of Maternal-Newborn & Women's Health Nursing)  
Foundations of Set Theory (Studies in Logic and the Foundations of

Mathematics) Foundations of Computer Science: C Edition (Principles of Computer Science Series)  
Logic for Computer Science: Foundations of Automatic Theorem Proving, Second Edition (Dover  
Books on Computer Science) Principles of Digital Image Processing: Core Algorithms  
(Undergraduate Topics in Computer Science) Face Image Analysis by Unsupervised Learning (The  
Springer International Series in Engineering and Computer Science) Atlas of Human Anatomy,  
Professional Edition: including NetterReference.com Access with Full Downloadable Image Bank,  
6e (Netter Basic Science) Body Image, Second Edition: A Handbook of Science, Practice, and  
Prevention Image Sensors and Signal Processing for Digital Still Cameras (Optical Science and  
Engineering) Colombia's Military and Brazil's Monarchy: Undermining the Republican Foundations  
of South American Independence (Contributions in Political Science) Indexing It All: The Subject in  
the Age of Documentation, Information, and Data (History and Foundations of Information Science)  
Foundations of Library and Information Science, Third Edition Information and Intrigue: From Index  
Cards to Dewey Decimals to Alger Hiss (History and Foundations of Information Science)  
Foundations of Library and Information Science The Physics of Transfigured Light: The Imaginal  
Realm and the Hermetic Foundations of Science The Great Devonian Controversy: The Shaping of  
Scientific Knowledge among Gentlemanly Specialists (Science and Its Conceptual Foundations  
series)

[Dmca](#)