



Image Processing and Acquisition using Python (Chapman & Hall/CRC Mathematical and Computational Imaging Sciences Series)

By Ravishankar Chityala, Sridevi Pudipeddi

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Image Processing and Acquisition using Python provides readers with a sound foundation in both image acquisition and image processing—one of the first books to integrate these topics together. By improving readers' knowledge of image acquisition techniques and corresponding image processing, the book will help them perform experiments more effectively and cost efficiently as well as analyze and measure more accurately. Long recognized as one of the easiest languages for non-programmers to learn, Python is used in a variety of practical examples.

A refresher for more experienced readers, the first part of the book presents an introduction to Python, Python modules, reading and writing images using Python, and an introduction to images. The second part discusses the basics of image processing, including pre/post processing using filters, segmentation, morphological operations, and measurements. The last part describes image acquisition using various modalities, such as x-ray, CT, MRI, light microscopy, and electron microscopy. These modalities encompass most of the common image acquisition methods currently used by researchers in academia and industry.

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Editorial Review

Review

"This multi-disciplinary image processing guide hits the mark when targeting the introductory college-level user who is interested in an open source solution that is scalable. By approaching the topics in a broad and horizontal fashion, Ravi Chityala and Sridevi Pudipeddi have created a very practical resource that should have broad impact and appeal across multiple physical and biological disciplines while using multiple imaging modalities.

This new book uses an intuitive and efficient structure to describe basic acquisition hand-in-hand with image processing topics using the open source Python coding and even provides pre-packed installations. The authors present an effective approach to address the typical requirement of prerequisite image acquisition, computational knowledge, and/or hardware requirements by carefully balancing programming, math, and computer requirements, making image processing accessible to students and high-end users alike in multiple disciplines."

?Mark A. Sanders, Program Director, University Imaging Centers, University of Minnesota

"This is a well-suited companion for any introductory course on image processing. The concepts are clearly explained and well illustrated through examples and Python code provided to the reader. The code allows the reader to readily apply the concepts to any images at hand, which significantly simplifies the understanding of image processing concepts. This is what makes this book great. I recommend this book to researchers and students who are looking for an introduction to image processing and acquisition."

?Martin Styner, University of North Carolina at Chapel Hill

"I am a faculty member with specialization in biomechanics and have often found it hard to conceptualize the fundamentals of image processing. That is until I found this book. **Image Processing and Acquisition using Python** is unique in that it offers an in-depth understanding of the foundation of mathematics associated with image analysis. Ravi Chityala and Sridevi Pudipeddi provide accessible examples with sample codes to show how the theories are applied. This can be very useful to beginning learners and also for researchers (having Python sample code can be very handy to prototype a solution). This book touches all the fundamental topics on image processing, such as pre/post processing using filters, segmentation, morphological operations, and measurements, and also an in-depth discussion on image acquisition using various modalities like x-ray, CT, MRI, light microscopy, and electron microscopy. All the topics are explained clearly and easily. I would highly recommend this book and cannot praise enough the logical and well-written format that it is presented in."

?Augusto Gil Pascoal, Laboratory of Biomechanics and Functional Morphology, University of Lisbon

"This is a book that every imaging scientist should have on his or her desk ... students and researchers need a course or a book to learn both image acquisition and image processing using a single source, and this book, as a well-rounded introduction to both topics, serves that purpose very well. ... the authors have done a great job of covering the most commonly used image acquisition modalities ... a handy compendium of the most useful information. ... As a long-time Perl user, I had no problem installing Python and trying several useful examples from the book."

?From the Foreword by Alexander Zamyatin, Distinguished Scientist, Toshiba Medical Research Institute USA, Inc.

About the Author

I am currently working at the Minnesota Supercomputing Institute, University of Minnesota, Twin Cities campus. My primary interests are in various aspects of Image processing like Medical and Microscopy Imaging. I am also interested in the extraction of text from images. You can visit my home page at chityala.org/

Users Review

From reader reviews:

Joseph Lunsford:

This book untitled Image Processing and Acquisition using Python (Chapman & Hall/CRC Mathematical and Computational Imaging Sciences Series) to be one of several books this best seller in this year, that's because when you read this publication you can get a lot of benefit in it. You will easily to buy this book in the book shop or you can order it via online. The publisher in this book sells the e-book too. It makes you quicker to read this book, since you can read this book in your Touch screen phone. So there is no reason for your requirements to past this book from your list.

Clarence Nelson:

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James Rodriguez:

Image Processing and Acquisition using Python (Chapman & Hall/CRC Mathematical and Computational Imaging Sciences Series) can be one of your nice books that are good idea. Most of us recommend that straight away because this reserve has good vocabulary that may increase your knowledge in terminology, easy to understand, bit entertaining but nevertheless delivering the information. The copy writer giving his/her effort to put every word into joy arrangement in writing Image Processing and Acquisition using Python (Chapman & Hall/CRC Mathematical and Computational Imaging Sciences Series) nevertheless doesn't forget the main stage, giving the reader the hottest in addition to based confirm resource facts that maybe you can be considered one of it. This great information can certainly drawn you into brand-new stage of crucial considering.

Tina Wilson:

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