BOOK REVIEW

Biomedical Image Processing. Thomas M Deserno (Ed). Heidelberg: Springer Verlag, 2011. pp. 632 £126/\$199 ISBN 978-3-642-15815-5.

This book has been developed from tutorial SC086 “Fundamentals of Medical Imaging Processing”, which is offered annually at the SPIE Symposium on Medical Imaging. As such, it is a proceeding with a series of individual self-contained reviews on various topics fundamental to image processing in general. The reviews are by top experts in each field, and are nicely ordered and introduced by the book editor. While this is definitely not a textbook, it does lend itself well for use as a backbone book to support a graduate course on image processing for students of dental, oral and maxillofacial radiology. It is also a valuable source of information that should be on every dental, oral and maxillofacial radiologist’s bookshelf.

The proceeding starts with a 50 page overview of the key elements of image processing, which is written by the Editor, Dr Thomas M Deserno. This sets the rest of the work in context. This very clear overview is a must read for graduate students in our discipline. It covers a topic that, sadly, is often neglected; namely, the engineering basics of digital diagnostic imaging.

The sections that follow the editor’s overview are image formation (PET/MRI hybrid imaging and 4D ultrasound in cardiology); image enhancement (morphological imaging applied to biomedicine, and image

registration); feature extraction (texture, multi-scale and multi-orientation, and feature extraction and selection for decision making); segmentation (parametric and non-parametric clustering, region-based segmentation and model-based segmentation); classification and measurement (melanoma diagnosis, CADx mammography and medical image analysis for clinical development of therapeutics); image data visualization (visualization and exploration of segmented anatomic structures and processing and visualization of diffusion MRI); image management and integration (DICOM, PACS-based CAD, and content-based image retrieval); and evaluation and customizing (systematic evaluation and ground truth, toolkits and software for developing biomedical image processing and analysis applications, and image processing and performance gap). Each of these sections and their individual seminars are self-contained like separate short stories and can be comfortably read independently of the rest of the book.

I would recommend this book as a reference for all oral, dental and maxillofacial radiologists and allied scientists as a well-written and easy to read source of information on image processing. This book also lends itself nicely for use as a supplemental text in imaging processing for graduate students pursuing a residency in oral and maxillofacial radiology.

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