

**WATKINS, C., SADUN, A. and MARENKA, S.** (1993): *Modern Imaging Processing: Warping, Morphing, and Classical Techniques*. Academic Press Professional, Cambridge, USA, 234pp. unstated price (softcover).

A couple of caution notes to the prospective readers/users of the book: (a) if you are looking for an introductory book on image processing methods then do not be frightened by the title of the book, you can be assured that this will be an ideal introductory text for you to procure. (b) if you are an advanced learner in the field and expect to find a detailed coverage of the modern topics like warping and morphing, then your expectations may not be met. However, it can be unequivocally said that both the beginners and the advanced learners are going to find the book and the disk included tremendously useful. But, why? Because the strength of the book lies in its naturally simple way of describing different image processing methods, both classical and modern, and the inclusion of the corresponding C codes in the enclosed diskette which are very well documented for the user.

The book is divided in the following six parts: I. Introduction, II. Basic Image Processing Concepts, III. Advanced Image Processing Concepts, IV. Applications of Image Processing, V. Using the Software Found with This Book, and VI. Conclusion.

The two chapters in part I deal with the very basics of the hardware and software requirements for an image processing system. They also include a theoretical description of CCDs in scanners as well as in cameras.

Part II comprises four chapters. They deal with the basic image processing concepts of arithmetic operations, geometric transformations, digital filtering, and colour reduction and dithering, respectively. Every effort has been made in the description of these methods to make them algorithmic and detailed mathematical treatments have been avoided as far as possible. Examples of input images and corresponding processed images have been presented to show the strength of a large number of simple image processing operations, C-routines for which are also given.

Part III comprises three chapters. The first chapter amongst them deals with advanced geometric transformations in general and discusses about the two advanced techniques of warping and morphing in particular. Although some simple interactive programs are developed which can be used to make very quick and impressive image warps on PC, the discussion is somewhat brief on these two modern topics which have been included in the title of the book. The other two chapters are on frequency domain techniques and miscellaneous techniques, respectively. The latter techniques cover the interesting issues such as contrast control, sensitivity control, contour plots, gamma correction, and surface and 3-D plots.

Part IV is on applications. The three chapters in this part are on Astronomy, Medical and Biological Imaging, and Commercial Art, respectively. The chapter on Medical and Biological Imaging is particularly impressive with careful selection of MRI and CAT-scan images.

Part V is on software supplied with this book. It comprises two chapters, one on the C language convention used and the other on the details of the image processing software. The latter chapter can be used as a guide for the organisation and functionality of the software included in the diskette. Amongst others, it gives a chapter-by-chapter organisation of programs.

In part VI on conclusion the future of image processing is discussed. Mention is made of the applications in the geographical field, machine vision and robotics, post office automation, and printing.

In summary, it is a unique book to have which would allow someone to get a hands on experience with a number of image processing techniques and the good news is that the software is claimed to run on any IBM PC or compatible.