

Digital Image Processing

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Preface

This book, '*Digital Image Processing*' is the result of a genuine effort taken by the authors to present the digital image processing concepts in a clear manner with numerous examples using high resolution images. This book is aimed to cater to the needs of undergraduate engineering students who have introductory knowledge of mathematical analysis, vectors, matrices, probability and statistics. The scope of this book is limited to satisfy the syllabus of Anna University, Chennai. Since Digital Image Processing is a fast growing field nurtured greatly by the developments in VLSI technology and multimedia applications, this book will be of great use to the students of various departments such as Electronics and Communication Engineering, Computer Science Engineering, Information and Technology, Electronics and Instrumentation Engineering.

The book is organized into five chapters starting from the fundamental concepts of image processing. *Chapter 1* provides a brief insight into digital images processing, its origin and applications, digital image acquisition techniques and devices. Elements of visual perception, Image sampling and quantization techniques and a brief introduction to color models are presented.

Chapter 2 presents various Image Enhancement techniques in spatial domain and frequency domain image enhancement techniques. First half of *Chapter 3* deals with noise model and various image restoration techniques in a comprehensive manner with suitable examples. The second half of chapter 3 is dedicated to present image segmentation techniques along with Dilation and Erosion concepts.

Chapter 4 deals with Multi-resolution processing along with wavelets, image compression techniques and standards. *Chapter 5* presents image representation and description algorithms which are of the basis for various recognition applications. On the whole this book is organized in a manner so that it will be of great use to the student community.

Application oriented examples and solved problems are presented for the comprehensive understanding of the concepts. Great effort has gone into the manuscript preparation and proof reading. Suggestions to improve the contents of this book are greatly appreciated.

June, 2016

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