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Nota di contenuto	Front Cover; Feature Extraction & Image Processing for Computer Vision; Copyright page; Contents; Preface; What is new in the third edition?; Why did we write this book?; The book and its support; In gratitude; Final message; About the authors; 1 Introduction; 1.1 Overview; 1.2 Human and computer vision; 1.3 The human vision system; 1.3.1 The eye; 1.3.2 The neural system; 1.3.3 Processing; 1.4 Computer vision systems; 1.4.1 Cameras; 1.4.2 Computer interfaces; 1.4.3 Processing an image; 1.5 Mathematical systems; 1.5.1 Mathematical tools; 1.5.2 Hello Matlab, hello images!; 1.5.3 Hello Mathcad! 1.6 Associated literature1.6.1 Journals, magazines, and conferences; 1.6.2 Textbooks; 1.6.3 The Web; 1.7 Conclusions; 1.8 References; 2 Images, sampling, and frequency domain processing; 2.1 Overview; 2.2 Image formation; 2.3 The Fourier transform; 2.4 The sampling criterion; 2.5 The discrete Fourier transform; 2.5.1 1D transform; 2.5.2 2D transform; 2.6 Other properties of the Fourier transform; 2.6.1 Shift invariance; 2.6.2 Rotation; 2.6.3 Frequency scaling; 2.6.4 Superposition (linearity); 2.7 Transforms other than Fourier; 2.7.1 Discrete cosine transform; 2.7.2 Discrete Hartley transform

2.7.3 Introductory wavelets2.7.3.1 Gabor wavelet; 2.7.3.2 Haar wavelet; 2.7.4 Other transforms; 2.8 Applications using frequency domain properties; 2.9 Further reading; 2.10 References; 3 Basic image processing operations; 3.1 Overview; 3.2 Histograms; 3.3 Point operators; 3.3.1 Basic point operations; 3.3.2 Histogram normalization; 3.3.3 Histogram equalization; 3.3.4 Thresholding; 3.4 Group operations; 3.4.1 Template convolution; 3.4.2 Averaging operator; 3.4.3 On different template size; 3.4.4 Gaussian averaging operator; 3.4.5 More on averaging; 3.5 Other statistical operators
3.5.1 Median filter3.5.2 Mode filter; 3.5.3 Anisotropic diffusion; 3.5.4 Force field transform; 3.5.5 Comparison of statistical operators; 3.6 Mathematical morphology; 3.6.1 Morphological operators; 3.6.2 Gray-level morphology; 3.6.3 Gray-level erosion and dilation; 3.6.4 Minkowski operators; 3.7 Further reading; 3.8 References; 4 Low-level feature extraction (including edge detection); 4.1 Overview; 4.2 Edge detection; 4.2.1 First-order edge-detection operators; 4.2.1.1 Basic operators; 4.2.1.2 Analysis of the basic operators; 4.2.1.3 Prewitt edge-detection operator
4.2.1.4 Sobel edge-detection operator4.2.1.5 The Canny edge detector; 4.2.2 Second-order edge-detection operators; 4.2.2.1 Motivation; 4.2.2.2 Basic operators: the Laplacian; 4.2.2.3 The Marr-Hildreth operator; 4.2.3 Other edge-detection operators; 4.2.4 Comparison of edge-detection operators; 4.2.5 Further reading on edge detection; 4.3 Phase congruency; 4.4 Localized feature extraction; 4.4.1 Detecting image curvature (corner extraction); 4.4.1.1 Definition of curvature; 4.4.1.2 Computing differences in edge direction; 4.4.1.3 Measuring curvature by changes in intensity (differentiation)
4.4.1.4 Moravec and Harris detectors

Sommario/riassunto

This book is an essential guide to the implementation of image processing and computer vision techniques, with tutorial introductions and sample code in Matlab. Algorithms are presented and fully explained to enable complete understanding of the methods and techniques demonstrated. As one reviewer noted, ""The main strength of the proposed book is the exemplar code of the algorithms."" Fully updated with the latest developments in feature extraction, including expanded tutorials and new techniques, this new edition contains extensive new material on Haar wavelets, Viola-Jones, bilateral fi