1. Record Nr. UNINA9911004823803321

Autore	Weeks Arthur R
Titolo	Fundamentals of electronic image processing / / Arthur R. Weeks, Jr
Pubbl/distr/stampa	Bellingham, Wash., : SPIE Optical Engineering Press New York, : IEEE Press, c1996
ISBN	1-61583-746-9 0-8194-8043-6 9780470544709
Descrizione fisica	xiii, 570 p. : ill. (some col.), maps
Collana	SPIE/IEEE series on imaging science & engineering
Disciplina	621.36/7
Soggetti	Image processing
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Preface -- Acknowledgments -- 1. Introduction to electronic image processing. 1.1. Historical background; 1.2. Applications of image processing; 1.3. Introduction to visual perception; 1.4. Image formation; 1.5. Sampling and quantization; 1.6. Image neighbors and distances; 1.7. Typical image processing systems -- 2. Transforms used in electronic image processing. 2.1. The Fourier series; 2.2. The one-dimensional Fourier transform; 2.3. The two-dimensional Fourier transform; 2.4. Important functions relating to the Fourier transform; 2.5. The discrete Fourier transform; 2.6. Example and properties of the discrete Fourier transform; 2.7. Computation of the discrete Fourier transform; 2.8. Other image transforms -- 3. Image enhancement by point operations. 3.1. An overview of point processing; 3.2. Constant and nonlinear operations; 3.3. Operations between images; 3.4. Histogram techniques -- 4. Spatial filtering and fourier frequency methods. 4.1. Various types of noise that appear in images; 4.2. Spatial filtering; 4.3. Spatial frequency filtering; 4.4. Image restoration. 5. Nonlinear image processing techniques. 5.1. Nonlinear spatial filters based on order statistics; 5.2. Nonlinear mean filters; 5.3. Adaptive filters; 5.4. The homomorphic filter -- 6. Color image processing. 6.1. Color fundamentals; 6.2. Color models; 6.3. Examples of color image processing; 6.4. Pseudocoloring and color displays -- 7. Image

geometry and morphological filters. 7.1. Spatial interpolation; 7.2. Image geometry; 7.3. Binary morphology: dilation and erosion; 7.4. Binary morphology: opening, closing, edge detection, and skeletonization; 7.5. Binary morphology: hit-miss, thinning, thickening, and pruning; 7.6. Binary morphology: granulometries and the pattern spectrum; 7.7. Graylevel morphology -- 8. Image segmentation and representation. 8.1. Image thresholding; 8.2. Edge, line, and point detection; 8.3. Region based segmentation; 8.4. Image representation -- 9. Image compression. 9.1. Compression fundamentals; 9.2. Error-free compression methods; 9.3. Lossy compression methods -- Bibliography -- Index.

Sommario/riassunto

This book is directed to practicing engineers and scientists who need to understand the fundamentals of image processing theory and algorithms to perform their technical tasks. It is intended to fill the gap between existing high-level texts dedicated to specialists in the field and the need for a more practical, fundamental text on image processing. A variety of example images are used to enhance reader understanding of how particular image processing algorithms work.