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Titolo	Guide to Signals and Patterns in Image Processing : Foundations, Methods and Applications // by Apurba Das
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Descrizione fisica	1 online resource (XXIV, 416 p. 372 illus., 102 illus. in color.)
Disciplina	006.42
Soggetti	Optical data processing Pattern perception Signal processing Image processing Speech processing systems Image Processing and Computer Vision Pattern Recognition Signal, Image and Speech Processing
Lingua di pubblicazione	Inglese
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Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di contenuto	Introduction to Digital Images -- Image Enhancement in the Spatial Domain -- Interpretation and Processing of Images in the Frequency Domain -- Color Science and Color Technology -- Wavelets: Multi-Resolution Image Processing -- Compression and Encoding of Images: Image Formats -- Morphology-Based Image Processing -- Patterns in Images and their Applications -- Psycho-Visual Pattern Recognition: Computer Vision -- Appendix A: Digital Differentiation and Edge Detection -- Appendix B: Elementary Probability Theory -- Appendix C: Frequently Used MATLAB Functions.
Sommario/riassunto	This unique text/reference reviews the field of digital image processing from the different perspectives offered by the separate domains of signal processing and pattern recognition. The book describes a rich array of applications, representing the latest trends in industry and academic research. To inspire further interest in the field, a selection of elegant, worked-out numerical problems are also included in the text.

The content is presented in an accessible manner, examining each topic in depth without assuming any prior knowledge from the reader, and providing additional background material in the appendices. Topics and features: Introduces the processes of sampling, quantization and encoding of images, as well as the operations of convolution and correlation, and the basic geometric transformations Covers image enhancement techniques in the spatial domain, the frequency domain, and the wavelet domain Describes the basics of the physics of light and color, and of the psycho-visual color system Reviews compression methods and formats for encoding images Discusses morphology-based image processing, which bridges signal processing and pattern recognition perspectives Examines state-of-the-art applications of techniques for feature extraction, selection, and reduction Investigates the modeling of object recognition in the human visual system for computer vision Provides electronic supplementary material, including MATLAB and C++ code, interactive GUI-based modules, and teaching slides at an associated website Appealing to a broad audience of students, tutors, researchers and professionals, this work offers an indispensable guide to image processing, pattern recognition and computer vision. The coverage draws upon the author's extensive experience in academic teaching and training, government R&D, and private industry.

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