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Titolo	Handbook of Image Processing and Computer Vision : Volume 1: From Energy to Image / / by Arcangelo Distante, Cosimo Distante
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Descrizione fisica	1 online resource (xxii, 491 pages) : illustrations
Disciplina	621.367 006.42
Soggetti	Optical data processing Machine learning Data structures (Computer science) Image Processing and Computer Vision Machine Learning Data Structures
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Image Formation Process -- Radiometric Model -- Color -- Optical System -- Digitization and Image Display -- Properties of the Digital Image -- Data Organization -- Representation and Description of Forms -- Image Enhancement Techniques.
Sommario/riassunto	Across three volumes, the Handbook of Image Processing and Computer Vision presents a comprehensive review of the full range of topics that comprise the field of computer vision, from the acquisition of signals and formation of images, to learning techniques for scene understanding. The authoritative insights presented within cover all aspects of the sensory subsystem required by an intelligent system to perceive the environment and act autonomously. Volume 1 (From Energy to Image) examines the formation, properties, and enhancement of a digital image. Topics and features: • Describes the fundamental processes in the field of artificial vision that enable the formation of digital images from light energy • Covers light propagation, color perception, optical systems, and the analog-to-digital conversion of

the signal • Discusses the information recorded in a digital image, and the image processing algorithms that can improve the visual qualities of the image • Reviews boundary extraction algorithms, key linear and geometric transformations, and techniques for image restoration • Presents a selection of different image segmentation algorithms, and of widely-used algorithms for the automatic detection of points of interest • Examines important algorithms for object recognition, texture analysis, 3D reconstruction, motion analysis, and camera calibration • Provides an introduction to four significant types of neural network, namely RBF, SOM, Hopfield, and deep neural networks This all-encompassing survey offers a complete reference for all students, researchers, and practitioners involved in developing intelligent machine vision systems. The work is also an invaluable resource for professionals within the IT/software and electronics industries involved in machine vision, imaging, and artificial intelligence. Dr. Cosimo Distante is a Research Scientist in Computer Vision and Pattern Recognition in the Institute of Applied Sciences and Intelligent Systems (ISAI) at the Italian National Research Council (CNR). Dr. Arcangelo Distante is a researcher and the former Director of the Institute of Intelligent Systems for Automation (ISSIA) at the CNR. His research interests are in the fields of Computer Vision, Pattern Recognition, Machine Learning, and Neural Computation.