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Descrizione fisica	1 online resource (273 p.)
Collana	Advances in computer vision and pattern recognition
Altri autori (Persone)	JuynhCong Phuoc
Disciplina	621.367
Soggetti	Computer vision Pattern recognition systems Spectrum analysis - Data processing Image processing - Digital techniques
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction -- Spectral Image Acquisition -- Spectral Image Formation Process -- Reflectance Modelling -- Illuminant Power Spectrum -- Photometric Invariance -- Spectrum Representation -- Material Discovery -- Reflection Geometry -- Polarisation of Light -- Shape and Refractive Index from Polarisation.
Sommario/riassunto	In contrast with trichromatic image sensors, imaging spectroscopy can capture the properties of the materials in a scene. This implies that scene analysis using imaging spectroscopy has the capacity to robustly encode material signatures, infer object composition and recover photometric parameters. This landmark text/reference presents a detailed analysis of spectral imaging, describing how it can be used in elegant and efficient ways for the purposes of material identification, object recognition and scene understanding. The opportunities and challenges of combining spatial and spectral information are explored in depth, as are a wide range of applications from surveillance and computational photography, to biosecurity and resource exploration. Topics and features: Discusses spectral image acquisition by hyperspectral cameras, and the process of spectral image formation Examines models of surface reflectance, the recovery of photometric

invariants, and the estimation of the illuminant power spectrum from spectral imagery Describes spectrum representations for the interpolation of reflectance and radiance values, and the classification of spectra Reviews the use of imaging spectroscopy for material identification Explores the recovery of reflection geometry from image reflectance Investigates spectro-polarimetric imagery, and the recovery of object shape and material properties using polarimetric images captured from a single view An essential resource for researchers and graduate students of computer vision and pattern recognition, this comprehensive introduction to imaging spectroscopy for scene analysis will also be of great use to practitioners interested in shape analysis employing polarimetric imaging, and material recognition and classification using hyperspectral or multispectral data.
