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Titolo	Mathematical Models for Remote Sensing Image Processing : Models and Methods for the Analysis of 2D Satellite and Aerial Images / / edited by Gabriele Moser, Josiane Zerubia
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Collana	Signals and Communication Technology, , 1860-4862
Disciplina	778.35
Soggetti	Signal processing Image processing Speech processing systems Mathematical models Lasers Photonics Remote sensing Signal, Image and Speech Processing Mathematical Modeling and Industrial Mathematics Optics, Lasers, Photonics, Optical Devices Remote Sensing/Photogrammetry
Lingua di pubblicazione	Inglese
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Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Mathematical models and methods for remote sensing image analysis: an introduction -- Models for hyperspectral image analysis: from unmixing to object-based classication -- Very high spatial resolution optical imagery: tree-based methods and multi-temporal models for mining and analysis -- Very high resolution and interferometric SAR: Markovian and patch-based non-local mathematical models -- Polarimetric SAR modelling: Mellin kind statistics and time-frequency analysis -- Remote sensing data fusion: guided lter-based hyperspectral pansharpening and graph-based feature-level fusion -- “Remote sensing data fusion: Markov models and mathematical morphology for multisensor, multiresolution, and multiscale image

classication -- Change detection in multitemporal images through single-and multi-scale approaches -- Satellite image time series: mathematical models for data mining and missing data restoration -- Advances in kernel machines for image classification and biophysical parameter retrieval.

Sommario/riassunto

This book maximizes reader insights into the field of mathematical models and methods for the processing of two-dimensional remote sensing images. It presents a broad analysis of the field, encompassing passive and active sensors, hyperspectral images, synthetic aperture radar (SAR), interferometric SAR, and polarimetric SAR data. At the same time, it addresses highly topical subjects involving remote sensing data types (e.g., very high-resolution images, multiangular or multiresolution data, and satellite image time series) and analysis methodologies (e.g., probabilistic graphical models, hierarchical image representations, kernel machines, data fusion, and compressive sensing) that currently have primary importance in the field of mathematical modelling for remote sensing and image processing. Each chapter focuses on a particular type of remote sensing data and/or on a specific methodological area, presenting both a thorough analysis of the previous literature and a methodological and experimental discussion of at least two advanced mathematical methods for information extraction from remote sensing data. This organization ensures that both tutorial information and advanced subjects are covered. With each chapter being written by research scientists from (at least) two different institutions, it offers multiple professional experiences and perspectives on each subject. The book also provides expert analysis and commentary from leading remote sensing and image processing researchers, many of whom serve on the editorial boards of prestigious international journals in these fields, and are actively involved in international scientific societies. Providing the reader with a comprehensive picture of the overall advances and the current cutting-edge developments in the field of mathematical models for remote sensing image analysis, this book is ideal as both a reference resource and a textbook for graduate and doctoral students as well as for remote sensing scientists and practitioners.