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Titolo	Cellular automata in image processing and geometry // edited by Paul Rosin, Andrew Adamatzky, Xianfang Sun
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ISBN	3-319-06431-2
Edizione	[1st ed. 2014.]
Descrizione fisica	1 online resource (312 p.)
Collana	Emergence, Complexity and Computation, , 2194-7287 ; ; 10
Disciplina	511.35
Soggetti	Computational intelligence Optical data processing Computational complexity Artificial intelligence Computational Intelligence Image Processing and Computer Vision Complexity Artificial Intelligence
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	Cellular Automata for Efficient Image and Video Compression -- Cellular Automata for Image Resizing -- Skeletonizing Digital Images with Cellular Automata -- Image Processing Algorithms Implementation Using Quantum Cellular Automata -- Edge Detection using Cellular Automata -- Copy-move forgery detection using cellular automata -- Active Image Forgery Detection using Cellular Automata -- Content-based image retrieval with cellular automata -- The Application of Cellular Automaton in Medical Semiautomatic Segmentation -- Convex Hulls and Metric Gabriel Graphs -- Cellular automaton shading for building envelopes -- Pattern Formation Using Cellular Automata and L-Systems: A Case Study in Producing Islamic Patterns -- Interactive Cellular Automata Systems for Creative Projects.
Sommario/riassunto	The book presents findings, views and ideas on what exact problems of image processing, pattern recognition and generation can be efficiently solved by cellular automata architectures. This volume provides a

convenient collection in this area, in which publications are otherwise widely scattered throughout the literature. The topics covered include image compression and resizing; skeletonization, erosion and dilation; convex hull computation, edge detection and segmentation; forgery detection and content based retrieval; and pattern generation. The book advances the theory of image processing, pattern recognition and generation as well as the design of efficient algorithms and hardware for parallel image processing and analysis. It is aimed at computer scientists, software programmers, electronic engineers, mathematicians and physicists, and at everyone who studies or develops cellular automaton algorithms and tools for image processing and analysis, or develops novel architectures and implementations of massive parallel computing devices. The book will provide attractive reading for a general audience because it has do-it-yourself appeal: all the computer experiments presented within it can be implemented with minimal knowledge of programming. The simplicity yet substantial functionality of the cellular automaton approach, and the transparency of the algorithms proposed, makes the text ideal supplementary reading for courses on image processing, parallel computing, automata theory and applications.
