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Soggetti	Application software Computer graphics Optical data processing Pattern recognition Mathematics Visualization Computer Applications Computer Graphics Image Processing and Computer Vision Pattern Recognition
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Invited Lectures -- Invariant Recognition and Processing of Planar Shapes -- Recent Advances in Structural Pattern Recognition with Applications to Visual Form Analysis -- On Learning the Shape of Complex Actions -- Mereology of Visual Form -- On Matching Algorithms for the Recognition of Objects in Cluttered Background -- A Unified Framework for Indexing and Matching Hierarchical Shape Structures -- A Fragment-Based Approach to Object Representation and Classification -- Representation -- Minimum-Length Polygons in Approximation Sausages -- Optimal Local Distances for Distance Transforms in 3D Using an Extended Neighbourhood -- Independent Modes of Variation in Point Distribution Models -- Qualitative Estimation of Depth in Monocular Vision -- A New Shape Space for

Second Order 3D-Variations -- Spatial Relations among Pattern Subsets as a Guide for Skeleton Pruning -- Euclidean Fitting Revisited -- On the Representation of Visual Information -- Skeletons in the Framework of Graph Pyramids -- Computational Surface Flattening: A Voxel-Based Approach -- An Adaptive Image Interpolation Using the Quadratic Spline Interpolator -- The Shock Scaffold for Representing 3D Shape -- Curve Skeletonization by Junction Detection in Surface Skeletons -- Representation of Fuzzy Shapes -- Skeleton-Based Shape Models with Pressure Forces: Application to Segmentation of Overlapping Leaves -- A Skeletal Measure of 2D Shape Similarity -- Perception-Based 2D Shape Modeling by Curvature Shaping -- Analysis -- Global Topological Properties of Images Derived from Local Curvature Features -- Adaptive Segmentation of MR Axial Brain Images Using Connected Components -- Discrete Curvature Based on Osculating Circle Estimation -- Detection and Enhancement of Line Structures in an Image by Anisotropic Diffusion -- How Folds Cut a Scene -- Extraction of Topological Features from Sequential Volume Data -- Using Beltrami Framework for Orientation Diffusion in Image Processing -- Digital Planar Segment Based Polyhedrization for Surface Area Estimation -- Shape-Guided Split and Merge of Image Regions -- A Rotation-Invariant Morphology for Shape Analysis of Anisotropic Objects and Structures -- Multiscale Feature Extraction from the Visual Environment in an Active Vision System -- 2-D Shape Decomposition into Overlapping Parts -- Fast Line Detection Algorithms Based on Combinatorial Optimization -- Koenderink Corner Points -- Dynamic Models for Wavelet Representations of Shape -- Straightening and Partitioning Shapes -- Invariant Signatures from Polygonal Approximations of Smooth Curves -- Recognition -- On the Learning of Complex Movement Sequences -- Possibility Theory and Rough Histograms for Motion Estimation in a Video Sequence -- Prototyping Structural Shape Descriptions by Inductive Learning -- Training Space Truncation in Vision-Based Recognition -- Grouping Character Shapes by Means of Genetic Programming -- Pattern Detection Using a Maximal Rejection Classifier -- Visual Search and Visual Lobe Size -- Judging Whether Multiple Silhouettes Can Come from the Same Object -- Discrete Deformable Boundaries for the Segmentation of Multidimensional Images -- Camera Motion Extraction Using Correlation for Motion-Based Video Classification -- Matching Incomplete Objects Using Boundary Signatures -- General Purpose Matching of Grey Level Arbitrary Images -- Many-to-many Matching of Attributed Trees Using Association Graphs and Game Dynamics -- An Expectation-Maximisation Framework for Perceptual Grouping -- Alignment-Based Recognition of Shape Outlines -- Behind the Image Sequence: The Semantics of Moving Shapes -- Probabilistic Hypothesis Generation for Rapid 3D Object Recognition -- Modelling and Retrieval -- Efficient Shape Description Using NURBS -- Non-manifold Multi-tessellation: From Meshes to Iconic Representations of Objects -- Image Indexing by Contour Analysis: A Comparison -- Shape Reconstruction from an Image Sequence -- 3D Shape Reconstruction from Multiple Silhouettes: Generalization from Few Views by Neural Network Learning -- Robust Structural Indexing through Quasi-Invariant Shape Signatures and Feature Generation -- Fast Reconstruction of 3D Objects from Single Free- Hand Line Drawing -- Color and Shape Index for Region-Based Image Retrieval -- Applications -- Virtual Drilling in 3-D Objects Reconstructed by Shape-Based Interpolation -- Morphological Image Processing for Evaluating Malaria Disease -- A Binocular License Plate Reader for High Precision Speed Measurement -- Volume and Surface Area Distributions of

Cracks in Concrete -- Integration of Local and Global Shape Analysis for Logo Classification -- Motion Tracking of Animals for Behavior Analysis -- Head Model Acquisition from Silhouettes.

Sommario/riassunto

This book constitutes the refereed proceedings of the 4th International Workshop on Visual Form, IWVF-4, held in Capri, Italy, in May 2001. The 66 revised full papers presented together with seven invited papers were carefully reviewed and selected from 117 submissions. The book covers theoretical and applicative aspects of visual form processing. The papers are organized in topical sections on representation, analysis, recognition, modelling and retrieval, and applications.
