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Nota di contenuto	Invited Papers -- Arithmetic Discrete Planes Are Quasicrystals -- Affine Connections, and Midpoint Formation -- Mathematics in Atmospheric Sciences: An Overview -- Discrete Shape Representation, Recognition

and Analysis -- On Three Constrained Versions of the Digital Circular Arc Recognition Problem -- Efficient Lattice Width Computation in Arbitrary Dimension -- Convergence of Binomial-Based Derivative Estimation for C² Noisy Discretized Curves -- Christoffel and Fibonacci Tiles -- Optimal Partial Tiling of Manhattan Polyominoes -- An Improved Coordinate System for Point Correspondences of 2D Articulated Shapes -- Two Linear-Time Algorithms for Computing the Minimum Length Polygon of a Digital Contour -- Multiscale Discrete Geometry -- Discrete and Combinatorial Tools for Image Segmentation and Analysis -- Vanishing Point Detection with an Intersection Point Neighborhood -- Ellipse Detection with Elemental Subsets -- Multi-Label Simple Points Definition for 3D Images Digital Deformable Model -- Marching Triangle Polygonization for Efficient Surface Reconstruction from Its Distance Transform -- Multivariate Watershed Segmentation of Compositional Data -- Pixel Approximation Errors in Common Watershed Algorithms -- Digital Deformable Model Simulating Active Contours -- Discrete and Combinatorial Topology -- Topology-Preserving Thinning in 2-D Pseudomanifolds -- Discrete Versions of Stokes' Theorem Based on Families of Weights on Hypercubes -- Distances on Lozenge Tilings -- Jordan Curve Theorems with Respect to Certain Pretopologies on -- Decomposing Cavities in Digital Volumes into Products of Cycles -- Thinning Algorithms as Multivalued -Retractions -- Characterization of Simple Closed Surfaces in \mathbb{R}^3 : A New Proposition with a Graph-Theoretical Approach -- Border Operator for Generalized Maps -- Computing Homology: A Global Reduction Approach -- Models for Discrete Geometry -- Surface Sketching with a Voxel-Based Skeleton -- Minimal Offsets That Guarantee Maximal or Minimal Connectivity of Digital Curves in $n\mathbb{D}$ -- Arithmetization of a Circular Arc -- On the Connecting Thickness of Arithmetical Discrete Planes -- Patterns in Discretized Parabolas and Length Estimation -- Universal Spaces for Surfaces -- A Linear Time and Space Algorithm for Detecting Path Intersection -- Geometric Transforms -- The Curvilinear Skeleton -- A Discrete δ -Medial Axis -- Appearance Radii in Medial Axis Test Mask for Small Planar Chamfer Norms -- Exact, Scaled Image Rotation Using the Finite Radon Transform -- Lower and Upper Bounds for Scaling Factors Used for Integer Approximation of 3D Anisotropic Chamfer Distance Operator -- A Novel Algorithm for Distance Transformation on Irregular Isothetic Grids -- Fully Parallel 3D Thinning Algorithms Based on Sufficient Conditions for Topology Preservation -- Quasi-Affine Transformation in Higher Dimension -- Discrete Tomography -- Solving Some Instances of the 2-Color Problem -- Grey Level Estimation for Discrete Tomography -- The 1-Color Problem and the Brylawski Model.

Sommario/riassunto

This book constitutes the refereed proceedings of the 15th IAPR International Conference on Discrete Geometry for Computer Imagery, DGCI 2009, held in Montréal, Canada, in September/October 2009. The 42 revised full papers were carefully reviewed and selected from numerous submissions. The papers are organized in topical sections on discrete shape, representation, recognition and analysis; discrete and combinatorial tools for image segmentation and analysis; discrete and combinatorial Topology; models for discrete geometry; geometric transforms; and discrete tomography.
