

1. Record Nr.	UNINA9910483986603321
Titolo	Discrete Geometry for Computer Imagery : 12th International Conference, DGCI 2005, Poitiers, France, April 11-13, 2005, Proceedings // edited by Eric Andres, Guillaume Damiand, Pascal Lienhardt
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2005
ISBN	9783540319658 3540319654 9783540255130 3540255133
Edizione	[1st ed. 2005.]
Descrizione fisica	1 online resource (X, 430 p.)
Collana	Image Processing, Computer Vision, Pattern Recognition, and Graphics, , 3004-9954 ; ; 3429
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Disciplina	006.601516
Soggetti	Computer vision Computer graphics Computer science - Mathematics Discrete mathematics Computer simulation Algorithms Computer Vision Computer Graphics Discrete Mathematics in Computer Science Computer Modelling
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Applications -- Increasing Interconnection Network Connectivity for Reducing Operator Complexity in Asynchronous Vision Systems -- Geometric Robot Mapping -- Discrete Geometry Applied in Hard Real-Time Systems Validation -- Discrete Hierarchical Geometry --

Hierarchical Watersheds Within the Combinatorial Pyramid Framework -- Optimal Design of 2D/3D Hierarchical Content-Based Meshes for Multimedia -- Receptive Fields for Generalized Map Pyramids: The Notion of Generalized Orbit -- Resolution Pyramids on the FCC and BCC Grids -- Discrete Tomography -- The Mojette Transform: The First Ten Years -- On the Stability of Reconstructing Lattice Sets from X-rays Along Two Directions -- Reconstruction of Decomposable Discrete Sets from Four Projections -- A Tomographical Characterization of L-Convex Polyominoes -- Computerized Tomography with Digital Lines and Linear Programming -- A Discrete Modulo N Projective Radon Transform for $N \times N$ Images -- Two Remarks on Reconstructing Binary Vectors from Their Absorbed Projections -- How to Obtain a Lattice Basis from a Discrete Projected Space -- Discrete Topology -- Local Characterization of a Maximum Set of Digital (26,6)-Surfaces -- Algorithms for the Topological Watershed -- The Class of Simple Cube-Curves Whose MLPs Cannot Have Vertices at Grid Points -- Computation of Homology Groups and Generators -- Inclusion Relationships and Homotopy Issues in Shape Interpolation for Binary Images -- Object Properties -- Discrete Bisector Function and Euclidean Skeleton -- Pixel Queue Algorithm for Geodesic Distance Transforms -- Analysis and Comparative Evaluation of Discrete Tangent Estimators -- Surface Volume Estimation of Digitized Hyperplanes Using Weighted Local Configurations -- Rectification of the Chordal Axis Transform and a New Criterion for Shape Decomposition -- Reconstruction and Recognition -- Generalized Functionality for Arithmetic Discrete Planes -- Complexity Analysis for Digital Hyperplane Recognition in Arbitrary Fixed Dimension -- An Elementary Algorithm for Digital Line Recognition in the General Case -- Supercover Model and Digital Straight Line Recognition on Irregular Isothetic Grids -- Discrete Epipolar Geometry -- Local Point Configurations of Discrete Combinatorial Surfaces -- Reversible Polygonalization of a 3D Planar Discrete Curve: Application on Discrete Surfaces -- Uncertain Geometry -- Uncertain Geometry in Computer Vision -- Optimal Blurred Segments Decomposition in Linear Time -- Shape Preserving Digitization of Binary Images After Blurring -- Visualization -- A Low Complexity Discrete Radiosity Method -- A Statistical Approach for Geometric Smoothing of Discrete Surfaces -- Arbitrary 3D Resolution Discrete Ray Tracing of Implicit Surfaces.

Sommario/riassunto

In 2005, the twelfth edition of the conference Discrete Geometry for Computer Imagery was held in Poitiers, France, April 13-15, 2005. The conference was organized by the laboratory SIC ("Signal, Image, Communications") of the University of Poitiers, Centre National de la Recherche Scientifique and the Technical Committee 18 of the International Association for Pattern Recognition. DGCI 2005 was sponsored by the Faculty of Science, the University of Poitiers, the Conseil Général de la Vienne and the Region of Poitou-Charentes. The aim of the conference was to present recent advances in both theoretical aspects and applications in discrete geometry. This year's conference was organized in combination with the 5th Workshop B on Graph-based Representations in Pattern Recognition, April 11-13, 2005 also organized in Poitiers. The workshop GbR aims at using graph-based structures in image analysis. There is a strong connection between the community interested in the GbR workshop and the discrete geometry community. For this reason, for the first time, both the workshop and the DGCI conference were organized in the same place, with a common session of four papers, two submitted to GbR and two to DGCI. The DGCI conference attracted again for this edition many excellent papers, with 53 submitted papers from 21 countries.

After careful reviewing by two and sometimes three reviewers, 36 papers were accepted, from which 22 were selected for oral presentation and 14 as posters. These contributions were regrouped into topics: applications, discrete topology, discrete hierarchical geometry, discrete tomography, object properties, recognition, and reconstruction, uncertain geometry, and visualization.
