

Table of Contents

Session 1A: Arrangements I	
Topological Walk Revisited.	1
T. Asano, T. Tokuyama	
A Pseudo-Algorithmic Separation of Lines from Pseudo-Lines.	7
W. Steiger, I. Streinu	
Level Difference of the Reconstructed Arrangement.	12
M. Inaba, Y. Aoki, S. Hasegawa	
Session 1B: Visibility Graphs	
Interval Graphs as Visibility Graphs of Simple Polygons Part I: Parachutes.	18
A. Lubiw, N. Mouawad	
Minimal Tangent Visibility Graphs.	24
M. Pocchiola, G. Vegter	
Planar Visibility Graphs.	30
S.-Y. Lin, C. Chen	
Invited Presentation	
Modeling with Simplicial Complexes	36
Herbert Edelsbrunner (U. of Illinois)	
Session 2A: Motion Planning	
Hunting Voronoi Vertices in Non-Polygonal Domains.	45
V. Ferrucci, M. Overmars, A. Rao, J. Vleugels	
Motion Planning for Vacuum Cleaner Robots.	51
C. Wentink, O. Schwarzkopf	
Widest Empty Corridor with Multiple Links and Right-angle Turns.	57
S.-W. Cheng	
Session 2B: Nearest Neighbours	
The colored quadrant priority search tree with an application to the all-nearest-foreign-neighbors problem.	63
A. Brinkman, T. Graf, K. Hinrichs	
Distribution algorithms for the all-nearest-foreign-neighbors problem in arbitrary L^t – metrics.	69
T. Graf, K. Hinrichs	
The Region Approach for some Dynamic Closest-Point Problems.	75
S. Bespamyatnykh	
Session 3A: Illumination	
Optimal Floodlight Illumination of Orthogonal Art Galleries.	81
V. Estivill-Castro, J. Urrutia	
Positive and Negative Results on the Floodlight Problem.	87
W. Steiger, I. Streinu	

Session 3B: Arrangements II	
Finding Hamiltonian Circuits in Arrangements of Jordan Curves is NP-complete.	93
C. Iwamoto, G. Toussaint	
Optimal Slope Selection Via Cuttings.	99
H. Bronnimann, B. Chazelle	
Session 4A: Paths in a Polygon	
An Efficient Solution to the Zookeeper's Problem.	104
J. Hershberger, J. Snoeyink	
Shortest Paths in a Simple Polygon in the Presence of "Forbidden" Vertices.	110
E. Papadopoulou, D.T. Lee	
Computing the Dent Diameter of a Polygon.	116
P. Yamamoto	
Session 4B: Voronoi Diagrams	
Revenge of the Dog: Queries on Voronoi Diagrams of Moving Points.	122
O. Devillers, M. Golin, K. Kedem, S. Schirra	
On Computing Voronoi Diagrams of Convex Polyhedra by Means of Wavefront Propagation.	128
M. Held	
Some Qualitative Properties of a Generalized Voronoi Diagram for Convex Polyhedra in d-dimensions.	134
A. Dattasharma	
Session 5A: Geometric Graphs	
Saving Bits Made Easy.	140
S. Arikati, A. Maheshwari, C. Zaroliagis	
Worst-Case TSP Point Sets in All Dimensions are Asymptotically Equidistributed.	147
T. L. Snyder, J. M. Steele	
Session 5B: Convex Hulls	
Incremental Algorithms for Finding the Convex Hulls of Circles and the Lower Envelopes of Parabolas.	153
O. Devillers, M. Golin	
An Eight-Way Perturbation Technique for the Three-Dimensional Convex Hull.	159
T. Ono	
Session 6A: Delaunay Triangulations I	
Hierarchical Delaunay Triangulation.	165
J-M. Moreau	
Numerically Robust Algorithm for Constructing Constrained Delaunay Triangulation.	171
H. Inagaki, K. Sugihara	
The Constrained Delaunay Pyramid- A Model for Reconstructing Surfaces at Multiple Resolutions.	177
A. Voigtmann, L. Becker, K. Hinrichs	
Session 6B: Polygons	
Recognizing S-Star Polygons.	183
L. Gewali	
Generating Random x-Monotone Polygons with Given Vertices.	189
C. Zhu, G. Sundaram, J. Snoeyink, J. Mitchell	

Session 7A: Delaunay Triangulations II	
On Delaunay Oriented Matroids.	195
F. Santos	
The Delaunay Triangulation Maximizes the Mean Inradius.	201
T. Lambert	
Session 7B: Optical Model	
Optical Computer Vision.	207
Y.B. Karasik	
Constructing Optically in Constant Time the K-Level of an Arrangement of Lines in the Plane and Other Related Problems.	212
Y.B. Karasik	
Session 8A: Applications	
Persistent Spatial Relations - a Systems Design Objective.	219
C. Gold	
Limited Gaps.	225
K. Daniels, V. Milenkovic	
The T-Hull Approach to Shape Analysis.	231
P. Mezey	
Session 8B: Implementation	
Levels of Degeneracy and Exact Lower Complexity Bounds for Geometric Algorithms.	237
P. Hertling, K. Weihrauch	
GASP - An Animation System for Computational Geometry.	243
D. Dobkin, A. Tal	
Tolerance of Geometric Structures.	250
M. Abellanas, F. Hurtado, P. Ramos	
Session 9A: Intersection	
Intersection Detection and Computation of Manhattan Terrains.	256
B. Zhu	
A Simple Trapezoid Sweep Algorithm for Reporting Red/Blue Segment Intersections.	263
T. Chan	
Optimal Nearly-Similar Polygon Stabbers of Convex Polygons.	269
P. Colley, H. Meijer, D. Rappaport	
Session 9B: Graphs	
Tolerance-Free NeST Representations.	275
R.B. Hayward, P. Kearney	
Orthogonal Drawings with the Minimum Number of Bends.	281
G. Liotta, F. Vargiu, G. Di Battista	
Graph-Theoretical Conditions for Inscribability and Delaunay Realizability.	287
M. Dillencourt, W. Smith	

Session 10A: Guard Problems I	
Edge Guarding a Triangulated Polyhedral Terrain.	293
H. Everett, E. Rivera-Campo	
Edge Guards on a Fortress.	296
S.M. Yiu, A Choi	
Generalized Guarding and Partitioning for Rectilinear Polygons.	302
E. Gyori, F. Hoffmann, K. Kriegel, T. Shermer	
Session 10B: Optimization	
Optimal Rectilinear Steiner Minimal Trees in $O(n^2 2.62^n)$ Time.	308
J. Ganley, J. Cohoon	
Convex Minimization on a Grid and Applications.	314
C. Mirolo	
On the Number of Extrema of a Polyhedron.	320
L. Palios	
Session 11A: Triangulations	
Cardinality Bounds for Triangulations with Bounded Minimum Angle.	326
S. Mitchell	
An Optimal Algorithm for Greedy Triangulation of a Set of Points.	332
C.A. Wang	
Triangulating with High Connectivity.	339
T K. Dey, M. Dillencourt, S. Ghosh	
Session 11B: Polyhedra	
All Convex Polyhedra can be Clamped with Parallel Jaw Grippers.	344
P. Bose, D. Bremner, G. Toussaint	
Optimal Tetrahedralization of the 3d-Region "Between" a Convex Polyhedron and a Convex Polygon.	350
L. Palios	
The Size of a Generalized Voronoi Diagram for Convex Polyhedra in d-dimensions.	357
A. Dattasharma	
Session 12A: Visibility	
Link-2-Convex One-Fillable Polygons are Starshaped.	363
D. Bremner	
Reconstruction of Parallel Line Segments From Endpoint Visibility Information.	369
S. Wismath	
Determining Weak External Visibility of Polygons in Parallel.	375
D. Chen	
Session 12B: Guard Problems II	
K-Guarding Polygons on the Plane.	381
P. Belleville, P. Bose, J. Czyzowicz, J. Urrutia, J. Zaks	
Controlling Guards.	387
G. Hernandez-Penalver	
Consecutive Guards.	393
M. Abellanas, J. Garcia-Lopez, F. Hurtado	