Table of Contents

Preface xi

Monday, August 12

Session M1
Invited Lecture by Roberto Tamassia
Robust proximity queries in implicit Voronoi diagrams 1
R. Tamassia, G. Liotta, and F. P. Preparata

Session M2
O-Convexity: Computing hulls, approximations, and orientation sets 2
V. Martynchik, N. Metelski, and D. Wood

Efficient algorithms for counting and reporting pairwise intersections between convex polygons 8
P. Gupta, R. Janardan, and M.I. Smid

Convex hulls of bounded curvature 14
J.-D. Boissonnat and S. Lazard

Enclosing k points in the smallest axis parallel rectangle 20
M. Segal and K. Kedem

Session M3
Finding the set of all minimal nested convex polygons 26
J. Bhadury and R. Chandrasekaran

Optimizing a corridor between two polygons with an application to polyhedral interpolation 32
G. Barequet and B. Wolfers

Heuristics for the generation of random polygons 38
T. Auer and M. Held

Orthogonal polygon reconstruction 44
L. Jackson and S.K. Wismath

Session M4
Correcting topological defects of tessellations 50
D. Wang and J. A. Goldak

Generating rooted triangulations with minimum degree four 56
D. Avis and C. M. Kong
On stable line segments in triangulations
A. Mirzaian, C. A. Wang, and Y.-F. Xu

Diamonds are not a minimum weight triangulation's best friend
P. Bose, L. Devroye, and W. Evans

Session M5
Stabbing information of a simple polygon
H. Everett, F. Hurtado, and M. Noy

K-transversals of parallel convex sets
N. Amenta

Fast stabbing of boxes in high dimensions
F. Nielsen

Shooter location problem
S. C. Nandy, K. Mukhopadhyaya, and Bhargab B. Bhattacharya

Tuesday, August 13

Session Tu1
Invited Lecture by C. Bajaj
Computational geometry for interrogative visualization
C. Bajaj

Session Tu2
An optimal algorithm for dynamic post-office problem
in $\mathbb{R}^2$ and related problems
S. N. Bespamyatnikh

A topology oriented algorithm for the Voronoi diagram of polygons
T. Imai

On non-smooth convex distance functions
N.-M. Lê

Time-optimal proximity graph computations on enhanced meshes
S. Olariu, I. Stojmenovic, and A. Y. Zomaya

Session Tu3
Deforming curves in the plane for tethered-robot motion planning
S. Hert and V. Lumelsky
Heuristic motion planning with movable obstacles
T. Chadzelek, J. Eckstein, and E. Sch"omer

Viewing a set of spheres while moving on a linear flightpath
F. Follert

Approximating shortest paths in arrangements of lines
P. Bose, W. Evans, D. Kirkpatrick, M. McAllister, and J. Snoeyink

Session Tu4
Velocity planning for a robot moving along the shortest straight line path among moving obstacles
K. Krithivasan, A. Rema, S. Schirra, and P.I. Vijaykumar

Lower bounds for computing geometric spanners and approximate shortest paths
D. Z. Chen, G. Das, and M. Smid

On the reachable regions of chains
N. Pei and S. Whitesides

Heuristic motion planning with many degrees of freedom
T. Chadzelek, J. Eckstein, and E. Sch"omer

Session Tu5
Computing largest circles separating two sets of segments
J.-D. Boissonnat, J. Czyzowicz, O. Devillers, J. Urrutia, and M. Yvinec

On the permutations generated by rotational sweeps of planar point sets
H. Bieri and P.-M. Schmidt

Maximal length common non-intersecting paths
J. Czyzowicz, E. Kranakis, D. Krizanc, and J. Urrutia

Wednesday, August 14

Session W1
Maintaining multiple levels of detail in the overlay of hierarchical subdivisions
P. Magillo and L. Floriani

Distance-based subdivision for translational LP containment
K. Daniels and V. J. Milenkovic
Variable resolution terrain surfaces
E. Puppo

Session W2
Generalizing halfspaces
E. Fink and D. Wood

Efficient algorithms for guarding or illuminating the surface of a polyhedral terrain
P. Bose, D. Kirkpatrick, and Z. Li

The surveillance of the walls of an art gallery
A. Laurentini

Session W3
On rectangle visibility graphs. III. External visibility and complexity
T. C. Shermer

Maintaining visibility of a polygon with a moving point of view
D. Z. Chen and O. Daescu

Visibility graph of a set of line segments: A dynamic sequential algorithm and its parallel version
Y. Atassi

Dynamic algorithms for approximate neighbor searching
S. N. Bespamyatnikh

Session W4
Three-dimensional restricted-orientation convexity
E. Fink and D. Wood

Efficient algorithms for the smallest enclosing cylinder problem
E. Schömer, J. Sellen, M. Teichmann, and C. Yap

On the $\Omega(n^{4/3})$ weak lower bounds for some 3D geometric problems
B. Zhu

Thursday, August 15

Session Th1
Invited Lecture by P. Raghavan
Computational geometry impact potential: A business and industrial perspective
P. Raghavan

Session Th2
Probabilistic algorithms for efficient grasping and fixturing
M. Teichmann

On a problem of immobilizing polygons
J. Czyzowicz, I. Stojmenovic, and T. Szymacha

Finding an $o(n^2 \log n)$ algorithm is sometimes hard
A. Hernández Barrera

Improved orthogonal drawings of 3-graphs
T. Biedl

Session Th3
Algorithms on polygonal embeddings of graphs
L. Cai

Optimal orthogonal drawings of connected plane graphs
T. Biedl

Straight line embeddings of planar graphs on point sets
N. Castaneda and J. Urrutia

Extending rectangular range reporting with query sensitive analysis
R. Y. Flatland and C. V. Stewart

Session Th4
The complexity of rivers in triangulated terrains

Computing the angularity tolerance
M. de Berg, H. Meijer, M. Overmars, and G. Wilfong

The complexity of illuminating polygons by $\alpha$-flood-lights
J. Bagga, L. Gewali, and D. Glasser

Author Index