

# 22nd European Workshop on Computational Geometry

Delphi, March 27–29, 2006

## Workshop Program

Monday, March 27, 2006

- 9:20 – 9:30** **Opening Remarks**
- 9:30 – 10:30** **Session 1: Polygons and (Pseudo-)Triangulations**
- Where to build a temple, and where to dig to find one  
*Greg Aloupis, Jean Cardinal, Sébastien Collette, John Iacono, Stefan Langerman*
- Fixed Parameter Algorithms for Minimum Weight Partitions  
*Christian Borgelt, Magdalene Grantson, Christos Levcopoulos*
- Pseudo-Convex Decomposition of Simple Polygons  
*Stefan Gerdjikov, Alexander Wolff*
- The Existence of a Pseudo-triangulation in a given Geometric Graph  
*André Schulz*
- 10:30 – 10:40** *Break*
- 10:40 – 11:40** **Session 2: Ray Shooting and Curve Decomposition**
- Ray Shooting Amidst Fat Convex Polyhedra in 3-Space  
*Boris Aronov, Mark de Berg, Chris Gray*
- Approximation of an open polygonal curve with a minimum number of circular arcs  
*R. L. Scot Drysdale, Günter Rote, Astrid Sturm*
- How to Sample and Reconstruct Curves With Unusual Features  
*Tobias Lenz*
- On the Curve Equipartition Problem: a brief exposition of basic issues  
*Costas Panagiotakis, George Georgakopoulos, George Tziritas*
- 11:40 – 12:00** *Coffee Break*
- 12:00 – 13:00** **Invited Talk**
- Understanding the Inverse Ackermann function  
*Raimund Seidel*
- 13:00 – 15:00** *Lunch*
- 15:00 – 16:00** **Session 3: Combinatorial Geometry**
- On the density of iterated line segment intersections  
*Ansgar Grüne, Sanaz Kamali Sarvestani*
- On the structure of sets attaining the rectilinear crossing number  
*Oswin Aichholzer, David Orden, Pedro A. Ramos*
- On the All-Farthest-Segments Problem for a Planar Set of Points  
*Asish Mukhopadhyay, Samidh Chatterjee, Benjamin Lafreniere*
- Planar Point Sets with Large Minimum Convex Partitions  
*Jesús García-López, Carlos M. Nicolás*
- 16:00 – 16:10** *Break*

**16:10 – 17:10 Session 4: Collision Detection and Folding**

Kinetic Collision Detection for Balls Rolling on a Plane

*Mohammad Ali Abam, Mark de Berg, Sheung-Hung Poon, Bettina Speckmann*

Computing Shortest Paths amidst Growing Discs in the Plane

*Jur van den Berg, Mark Overmars*

Few Optimal Foldings of HP Protein Chains on Various Lattices

*Sheung-Hung Poon, Shripad Thite*

Reconfiguring planar dihedral chains

*Greg Aloupis, Henk Meijer*

**17:10 – 17:30**

*Coffee Break*

**17:30 – 18:30 Session 5: Geometric Graphs**

Gray Code Enumeration of Plane Straight-Line Graphs

*Oswin Aichholzer, Franz Aurenhammer, Clemens Huemer, Birgit Vogtenhuber*

The Rotation Graph of k-ary Trees is Hamiltonian

*Clemens Huemer, Ferran Hurtado, Julian Pfeifle*

Cover Contact Graphs

*Manuel Abellanas, Nieves Atienza, Natalia de Castro, Carmen Cortés,*

*María Angeles Garrido, Clara Isabel Grima, Gregorio Hernández, Alberto Márquez,*

*Auxiliadora Moreno, José Ramón Portillo, Pedro Reyes, Jesús Valenzuela,*

*María Trinidad Villar*

A binary labelling for plane Laman graphs and quadrangulations

*Clemens Huemer, Sarah Kappes*

**18:45**

**Business Meeting**

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**Tuesday, March 28, 2006**

**9:00 – 10:00 Session 6: Geometry**

Helly-Type Theorems for Line Transversals to Disjoint Unit Balls

*Otfried Cheong, Xavier Goaoc, Andreas Holmsen, Sylvain Petitjean*

Geometric realization of a projective triangulation with one face removed

*C. Paul Bonnington, Atsuhiko Nakamoto, Kyoji Ohba*

Splitting (Complicated) Surfaces Is Hard

*Erin W. Chambers, Éric Colin de Verdière, Jeff Erickson, Francis Lazarus,*

*Kim Whittlesey*

Pants Decomposition of the Punctured Plane

*Sheung-Hung Poon, Shripad Thite*

**10:00 – 10:10**

*Break*

**10:10 – 11:10 Session 7: Geometric Matching**

Computing the Fréchet Distance Between Simple Polygons

*Kevin Buchin, Maike Buchin, Carola Wenk*

Probabilistic matching of sets of polygonal curves

*Helmut Alt, Ludmila Scharf, Sven Scholz*

On the ICP Algorithm

*Esther Ezra, Micha Sharir, Alon Efrat*

Noisy disk set matching under rigid motion

*Yago Diez, J. Antoni Sellarès*

11:10 – 11:30	<i>Coffee Break</i>
11:30 – 12:30	<b>Invited Talk</b> So Much Data, So Little Time <i>Bernard Chazelle</i>
12:30 – 14:30	<i>Lunch</i>
14:30 – 16:00	<b>Visit of Archeological Site and Museum</b>
16:00 – 17:00	<b>Session 8: Meshing</b> Restricted Mesh Simplification Using Edge Contractions <i>Mattias Andersson, Joachim Gudmundsson, Christos Levkopoulos</i> Guaranteed-Quality Anisotropic Mesh Generation for Domains with Curvers <i>Yusuke Yokosuka, Keiko Imai</i> Modifying Delaunay Refined Two-Dimensional Triangular Meshes <i>Narcís Coll, Marité Guerrieri, J. Antoni Sellarès</i> Mesh optimisation based on Willmore energy <i>Lyuba Alboul, Willie Brink, Marcos Rodrigues</i>
17:00 – 17:10	<i>Break</i>
17:10 – 18:10	<b>Session 9: Approximation and Optimization Algorithms</b> A New Approximation Algorithm for Labeling Weighted Points with Sliding Labels <i>Thomas Erlebach, Torben Hagerup, Klaus Jansen, Moritz Minzloff, Alexander Wolff</i> A polynomial-time approximation algorithm for a geometric dispersion problem <i>Marc Benkert, Joachim Gudmundsson, Christian Knauer, Esther Moet, René van Oostrum, Alexander Wolff</i> Covering a Set of Points with a Minimum Number of Lines <i>Magdalene Grantson, Christos Levkopoulos</i> Min-max-min Geometric Facility Location Problems <i>Jean Cardinal, Stefan Langerman</i>
18:10 – 18:30	<i>Coffee Break</i>
18:30 – 19:30	<b>Session 10: Proximity and Visibility</b> Proximity structures in the fixed orientation metrics <i>Christian Wulff-Nilsen</i> Randolph's Robot Game is NP-complete! <i>Birgit Engels, Tom Kamphans</i> Visibility Map determination using Angle preprocessing <i>Lidia Ortega, Antonio J. Rueda, Francisco Feito</i> Maximizing the Guarded Interior of an Art Gallery <i>Ioannis Z. Emiris, Christodoulos Fragoudakis, Euripides Markou</i>
20:30	<b>Workshop Dinner</b>

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## Wednesday, March 29, 2006

### 9:00 – 10:00 Session 11: Terrains and In-Place Algorithms

On Realistic Terrains

*Esther Moet, Marc van Kreveld, A. Frank van der Stappen*

River networks and watershed maps of triangulated terrains revisited

*Hee-Kap Ahn, Mark de Berg, Otfried Cheong, Herman Haverkort, Frank van der Stappen, Laura Toma*

In-Place Randomized Slope Selection

*Henrik Blunck, Jan Vahrenhold*

In-Place Algorithms for Computing (Layers of) Maxima

*Henrik Blunck, Jan Vahrenhold*

10:00 – 10:10 *Break*

### 10:10 – 11:10 Session 12: Boxes and Volumes

Finding enclosing boxes with empty intersection

*Carmen Cortés, José Miguel Díaz-Báñez, Jorge Urrutia*

Inner Approximation of Polygons and Polyhedra by Unions of Boxes

*Christian Spielberger, Martin Held*

On the Bounding Boxes Obtained by Principal Component Analysis

*Darko Dimitrov, Christian Knauer, Klaus Kriegel, Günter Rote*

Algorithms for Maximizing the Volume of Intersection of Polytopes

*Komei Fukuda, Takeaki Uno*

11:10 – 11:30 *Coffee Break*

### 11:30 – 12:30 Invited Talk

From triangles to curves

*Monique Teillaud*

12:30 – 14:30 *Lunch*

### 14:30 – 15:30 Session 13: Embeddings

On Embedding a Graph on Two Sets of Points

*Emilio Di Giacomo, Giuseppe Liotta, Francesco Trotta*

Acyclic Orientation of Drawings

*Eyal Ackerman, Kevin Buchin, Christian Knauer, Günter Rote*

A homotopy theorem for arrangements of double pseudolines

*Luc Habert, Michel Pocchiola*

Tight planar packings of two trees

*Yoshiaki Oda, Katsuhiro Ota*

### 15:40 – 16:40 Session 14: Implementation of Geometric Algorithms

A Topologically Robust Boolean Algorithm Using Approximate Arithmetic

*Julian M. Smith, Neil A. Dodgson*

A Small Improvement in the Walking Algorithm for Point Location in a Triangulation

*Ivana Kolingerová*

A certified algorithm for the InCircle predicate among ellipses

*Ioannis Z. Emiris, Elias P. Tsigaridas, George M. Tzoumas*

Voronoi diagrams in CGAL

*Menelaos I. Karavelas*

16:40

Concluding Remarks