

Table of Contents

Planarity and Planar Drawings

Confluent Drawings: Visualizing Non-planar Diagrams in a Planar Way	1
<i>Matthew Dickerson, David Eppstein, Michael T. Goodrich, Jeremy Yu Meng</i>	
An Experimental Study of Crossing Minimization Heuristics	13
<i>Carsten Gutwenger, Petra Mutzel</i>	
Stop Minding Your P's and Q's: Implementing a Fast and Simple DFS-Based Planarity Testing and Embedding Algorithm	25
<i>John M. Boyer, Pier Francesco Cortese, Maurizio Patrignani, Giuseppe Di Battista</i>	
Bounds and Methods for k -Planar Crossing Numbers	37
<i>Farhad Shahrokhi, Ondrej Sýkora, Laszlo A. Székely, Imrich Vrt'o</i>	

Geometric Graph Theory

How Many Ways Can One Draw a Graph?	47
<i>János Pach, Géza Tóth</i>	
Two Results on Intersection Graphs of Polygons	59
<i>Jan Kratochvíl, Martin Pergel</i>	
Stretching of Jordan Arc Contact Systems	71
<i>Hubert de Fraysseix, Patrice Ossona de Mendez</i>	
Noncrossing Hamiltonian Paths in Geometric Graphs	86
<i>Jakub Černý, Zdeněk Dvořák, Vít Jelínek, Jan Kára</i>	

Applications and Systems – Part I

GraphAEL: Graph Animations with Evolving Layouts	98
<i>Cesim Erten, Philip J. Harding, Stephen G. Kobourov, Kevin Wampler, Gary Yee</i>	
Visualizing Related Metabolic Pathways in Two and a Half Dimensions	111
<i>Ulrik Brandes, Tim Dwyer, Falk Schreiber</i>	

GoVisual for CASE Tools Borland Together ControlCenter and Gentleware Poseidon – System Demonstration	123
<i>Carsten Gutwenger, Joachim Kupke, Karsten Klein, Sebastian Leipert</i>	

Straight-Line, Circular, and Circular-Arc Drawings

Area-Efficient Drawings of Outerplanar Graphs	129
<i>Ashim Garg, Adrian Rusu</i>	
A Framework for User-Grouped Circular Drawings	135
<i>Janet M. Six, Ioannis (Yanni) G. Tollis</i>	
Fixed-Location Circular-Arc Drawing of Planar Graphs	147
<i>Alon Efrat, Cesim Erten, Stephen G. Kobourov</i>	
A More Practical Algorithm for Drawing Binary Trees in Linear Area with Arbitrary Aspect Ratio	159
<i>Ashim Garg, Adrian Rusu</i>	

Symmetries

An Integer Programming Approach to Fuzzy Symmetry Detection	166
<i>Christoph Buchheim, Michael Jünger</i>	
Barycentric Drawings of Periodic Graphs	178
<i>Olaf Delgado-Friedrichs</i>	

3D-Drawings

Three-Dimensional Grid Drawings with Sub-quadratic Volume	190
<i>Vida Dujmović, David R. Wood</i>	
Laying Out Iterated Line Digraphs Using Queues	202
<i>Toru Hasunuma</i>	
Track Drawings of Graphs with Constant Queue Number	214
<i>Emilio Di Giacomo, Henk Meijer</i>	
3D Visibility Representations of Complete Graphs	226
<i>Jan Štola</i>	
Drawing Series-Parallel Graphs on Restricted Integer 3D Grids	238
<i>Emilio Di Giacomo</i>	
Nearly Optimal Three Dimensional Layout of Hypercube Networks	247
<i>Tiziana Calamoneri, Annalisa Massini</i>	

Embeddings and Triangulations

Graph Embedding with Minimum Depth and Maximum External Face	259
<i>Carsten Gutwenger, Petra Mutzel</i>	
More Efficient Generation of Plane Triangulations	273
<i>Shin-ichi Nakano, Takeaki Uno</i>	
Planar Embeddings of Graphs with Specified Edge Lengths	283
<i>Sergio Cabello, Erik D. Demaine, Günter Rote</i>	

Applications and Systems – Part II

BGPlay: A System for Visualizing the Interdomain Routing Evolution	295
<i>Giuseppe Di Battista, Federico Mariani, Maurizio Patrignani, Maurizio Pizzonia</i>	
GraphEx: An Improved Graph Translation Service	307
<i>Stina Bridgeman</i>	
A Constrained, Force-Directed Layout Algorithm for Biological Pathways	314
<i>Burkay Genc, Ugur Dogrusoz</i>	
Intersection-Free Morphing of Planar Graphs	320
<i>Cesim Erten, Stephen G. Kobourov, Chandan Pitta</i>	

Fixed Parameter Tractability

Fixed Parameter Algorithms for ONE-SIDED CROSSING MINIMIZATION Revisited	332
<i>Vida Dujmović, Henning Fernau, Michael Kaufmann</i>	
Experiments with the Fixed-Parameter Approach for Two-Layer Planarization	345
<i>Matthew Suderman, Sue Whitesides</i>	

Clusters, Cuts, and Orthogonal Drawings

Characterizing Families of Cuts That Can Be Represented by Axis-Parallel Rectangles	357
<i>Ulrik Brandes, Sabine Cornelsen, Dorothea Wagner</i>	
Convex Drawing for c-Planar Biconnected Clustered Graphs	369
<i>Hiroshi Nagamochi, Katsutoshi Kuroya</i>	

Layout of Directed Hypergraphs with Orthogonal Hyperedges	381
<i>Georg Sander</i>	

No-Bend Orthogonal Drawings of Subdivisions of Planar Triconnected Cubic Graphs	387
<i>Md. Saidur Rahman, Noritsugu Egi, Takao Nishizeki</i>	

k-Level Drawings

Radial Level Planarity Testing and Embedding in Linear Time	393
<i>Christian Bachmaier, Franz J. Brandenburg, Michael Forster</i>	

An Improved Approximation to the One-Sided Bilayer Drawing	406
<i>Hiroshi Nagamochi</i>	

Straight-Line Drawings of 2-Outerplanar Graphs on Two Curves	419
<i>Emilio Di Giacomo, Walter Didimo</i>	

Force Directed and Energy-Based Techniques

An Energy Model for Visual Graph Clustering	425
<i>Andreas Noack</i>	

Simultaneous Graph Drawing: Layout Algorithms and Visualization Schemes	437
<i>Cesim Erten, Stephen G. Kobourov, Vu Le, Armand Navabi</i>	

Axis-by-Axis Stress Minimization	450
<i>Yehuda Koren, David Harel</i>	

Drawing Graphs with Nonuniform Nodes Using Potential Fields	460
<i>Jen-Hui Chuang, Chun-Cheng Lin, Hsu-Chun Yen</i>	

Surfaces and Diagrams

Drawing Area-Proportional Venn and Euler Diagrams	466
<i>Stirling Chow, Frank Ruskey</i>	

Optimal Pants Decompositions and Shortest Homotopic Cycles on an Orientable Surface	478
<i>Éric Colin de Verdière, Francis Lazarus</i>	

Posters

Degree Navigator TM : The Journey of a Visualization Software	491
<i>Guy-Vincent Jourdan, Ivan Rival, Nejib Zaguia</i>	

HexGraph: Applying Graph Drawing Algorithms to the Game of Hex	494
<i>Colin Murray, Carsten Friedrich, Peter Eades</i>	
GLuskap: Visualization and Manipulation of Graph Drawings in 3-Dimensions	496
<i>Breanne Dyck, Jill Joevenazzo, Elspeth Nickle, Jon Wilsdon, Stephen Wismath</i>	
Web-Linkage Viewer: Drawing Links in the Web Based on a Site-Oriented Framework	498
<i>Yasuhito Asano, Takao Nishizeki</i>	
The Puzzle Layout Problem	500
<i>Kozo Sugiyama, Seok-Hee Hong, Atsuhiko Maeda</i>	
Visual Data Mining with ILOG Discovery	502
<i>Thomas Baudel, Bruno Haible, Georg Sander</i>	
Graph Drawing Contest	
Graph Drawing Contest Report	504
<i>Franz J. Brandenburg, Ulrik Brandes, Peter Eades, Joe Marks</i>	
Invited Talks	
Engineering and Visualizing Algorithms	509
<i>Camil Demetrescu, Irene Finocchi, Giuseppe F. Italiano</i>	
Report on the Invited Lecture by Pat Hanrahan, Titled “On Being in the Right Space”	514
Open Problems	
Selected Open Problems in Graph Drawing	515
<i>Franz J. Brandenburg, David Eppstein, Michael T. Goodrich, Stephen G. Kobourov, Giuseppe Liotta, Petra Mutzel</i>	
Author Index	541

Graph Drawing

11th International Symposium, GD 2003, Perugia, Italy,

September 21-24, 2003, Revised Papers

Liotta, G. (Ed.)

2004, XIV, 542 p., Softcover

ISBN: 978-3-540-20831-0