

# Curriculum Vitae

## Stephen G. Kobourov

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### Education

- 2000 PhD Computer Science, Johns Hopkins University  
Thesis: Visualization of Large Graphs; Advisor: Michael T. Goodrich
- 1997 MS Computer Science, Johns Hopkins University
- 1995 BS Computer Science and Mathematics (double major); Classics (minor)  
*Summa Cum Laude*, Dartmouth College

### Professional Experience

- 2006 – present Associate Professor, Computer Science, University of Arizona
- 2000 – 2006 Assistant Professor, Computer Science, University of Arizona
- 2008 – 2009 Research Scientist, AT&T Research Labs, Florham Park, New Jersey
- 2006 – 2007 Fulbright Scholar, Computer Science, University of Botswana
- Summer 2006 Visiting Researcher, Universität Tübingen, Germany
- Summer 2005 Visiting Researcher, AT&T Research Labs
- Summer 2004 Visiting Researcher, Lancaster University, United Kingdom
- Summer 2003 Visiting Researcher, DIMACS, Rutgers University
- 1998 – 1999 Visiting Instructor, Computer Science, Dartmouth College

### Research Interests

Graph Drawing and Information Visualization, Geometric Algorithms and Data Structures, Human Computer Interaction, Algorithms for Mobile Robots, Education Technology

### Books and Monographs

1. M. T. Goodrich and S. G. Kobourov, editors, *Proceedings of the 10th International Symposium on Graph Drawing (GD)*, Lecture Notes in Computer Science, vol. 2528, Springer-Verlag, 2002.

### Refereed Journal Publications (authors in alphabetical order)

2. C. A. Duncan, M. T. Goodrich, and S. G. Kobourov, “Balanced Aspect Ratio Trees and Their Use for Drawing Large Graphs,” *Journal of Graph Algorithms and Applications*, vol. 4, p. 19–46, 2000. (Invited to this special issue on best papers from GD’98.)
3. C. C. Cheng, C. A. Duncan, M. T. Goodrich, and S. G. Kobourov, “Drawing Planar Graphs with Circular Arcs,” *Discrete & Computational Geometry*, vol. 25, p. 405–418, 2001.
4. C. A. Duncan, M. T. Goodrich, and S. G. Kobourov, “Balanced Aspect Ratio Trees: Combining the Advantages of  $k$ -d Trees and Octrees,” *Journal of Algorithms*, vol. 38, p. 303–333, 2001. (Invited to this special issue on best papers from SODA’99.)
5. C. A. Duncan, M. T. Goodrich, and S. G. Kobourov, “Planarity-Preserving Clustering and Embedding for Large Planar Graphs,” *Computational Geometry: Theory and Applications*, vol. 24, no. 3, p. 95–114, 2002. (Invited to this special issue on the best papers from GD’99.)
6. P. Gajer and S. G. Kobourov, “GRIP: Graph Drawing with Intelligent Placement,” *Journal of Graph Algorithms and Applications*, vol. 6, no. 3, p. 203–224, 2002. (Invited to this special issue on the best papers from GD’2000.)

7. C. A. Duncan and S. G. Kobourov, "Polar Coordinate Drawing of Planar Graphs with Good Angular Resolution," *Journal of Graph Algorithms and Applications*, vol. 7, no. 4, p. 311–333, 2003. (Invited to this special issue on the best papers from GD'2001.)
8. P. Gajer, M. T. Goodrich, and S. G. Kobourov, "A Multi-Dimensional Approach to Force-Directed Layouts of Large Graphs," *Computational Geometry: Theory and Applications*, vol. 29, no. 1, p. 3–18, 2004. (Invited to this special issue on the best papers from CGC'2001.)
9. T. Biedl, E. Demaine, C. A. Duncan, R. Fleischer, and S. G. Kobourov, "Tight Bounds on Maximal and Maximum Matching," *Journal of Discrete Mathematics*, vol. 285, no. 1, p. 7–15, 2004.
10. C. Collberg and S. G. Kobourov, "Self-Plagiarism in Computer Science," *Communications of the ACM*, vol. 48, no. 4, p. 88–94, 2005.
11. C. Erten and S. G. Kobourov, "Simultaneous Embedding of a Planar Graph and Its Dual on the Grid," *Theory of Computing Systems*, vol. 38, no. 3, p. 313–327, 2005. (Invited to this special issue on the best papers from ISAAC 2002).
12. C. Erten, S. G. Kobourov, V. Le, and A. Navabi, "Simultaneous Graph Drawing: Layout Algorithms and Visualization Schemes," *Journal of Graph Algorithms and Applications*, vol. 9, no. 1, p. 165–182, 2005. (Invited to this special issue on the best papers from GD'2003.)
13. S. G. Kobourov and K. Wampler, "Non-Euclidean Spring Embedders," *IEEE Transactions on Visualization and Computer Graphics*, vol. 11, no. 6, p. 757–767, 2005.
14. C. Erten and S. G. Kobourov, "Simultaneous Embedding of Planar Graphs with Few Bends," *Journal of Graph Algorithms and Applications*, vol. 9, no. 3, p. 347–364, 2006. (Invited to this special issue on the best papers from GD'2004.)
15. C. A. Duncan, A. Efrat, S. G. Kobourov, and C. Wenk, "Drawing Graphs with Fat Edges," *International Journal of Foundations of Computer Science*, vol. 17, no. 5, p. 1143–1165, 2006. (Invited to this special issue on graph drawing.)
16. A. Efrat, S. G. Kobourov, and A. Lubiw, "Computing Homotopic Shortest Paths Efficiently," *Computational Geometry: Theory and Applications*, vol. 35, no. 3, p. 162–172, 2006.
17. P. Brass, E. Cenek, C. A. Duncan, A. Efrat, C. Erten, D. Ismailescu, S. G. Kobourov, A. Lubiw, and J. S. B. Mitchell, "On Simultaneous Planar Graph Embeddings," *Computational Geometry: Theory and Applications*, vol. 36, no. 2, p. 117–130, 2007.
18. A. Efrat, C. Erten, and S. G. Kobourov, "Fixed-Location Circular-Arc Drawing of Planar Graphs," *Journal of Graph Algorithms and Applications*, vol. 11, no. 1, p. 145–164, 2007.
19. C. A. Duncan, S. G. Kobourov, and V. S. A. Kumar, "Optimal Constrained Graph Exploration," *ACM Transactions on Algorithms*, vol. 2, no. 3, p. 380–402, 2007.
20. S. G. Kobourov and M. Landis, "Morphing Planar Graphs in Spherical Space," *Journal of Graph Algorithms and Applications*, vol. 12, no. 1, p. 113–127, 2008. (Invited to this special issue on the best papers from GD'2006.)
21. J. Cappos, A. Estrella-Balderrama, J. Fowler, and S. G. Kobourov, "Simultaneous Graph Embedding with Bends and Circular Arcs," *Computational Geometry: Theory and Applications*, vol. 42, no. 2, p. 173–182, 2008.
22. F. Frati, M. Kaufmann and S. G. Kobourov, "Constrained Simultaneous and Near-Simultaneous Embeddings," *Journal of Graph Algorithms and Applications*. Accepted, to appear in 2009. (Invited to this special issue on the best papers from GD'2007.)
23. A. Estrella-Balderrama, J. Fowler, and S. G. Kobourov, "Characterization of Unlabeled Level Planar Trees", *Computational Geometry: Theory and Applications*. Accepted, to appear in 2009.
24. C. Binucci, E. Di Giacomo, W. Didimo, A. Estrella-Balderrama, F. Frati, S. G. Kobourov, G. Liotta, "Upward Straight-line Embeddings of Directed Graphs into Point Sets," *Computational Geometry: Theory and Applications*. Accepted, to appear in 2009.
25. S. G. Kobourov, K. Pavlou, J. Cappos, M. Stepp, M. Miles, and A. Wixted, "Multiple Mice vs. Multitouch Multiuser Hardware," *International Journal of Human-Computer Interaction*. Accepted, to appear in 2009.

26. A. Estrella-Balderrama, J. Fowler, and S. G. Kobourov, “GraphSET, a tool for simultaneous graph drawing,” *Software: Practice and Experience*. Accepted, to appear in 2009.

**Refereed Conference Publications (authors in alphabetical order)**

27. B. Awerbuch and S. G. Kobourov, “Polylogarithmic-Overhead Piecemeal Graph Exploration,” *11th ACM Conference on Computational Learning Theory (COLT)*, p. 280–286, July 1998.
28. C. A. Duncan, M. T. Goodrich, and S. G. Kobourov, “Balanced Aspect Ratio Trees and Their Use for Drawing Large Graphs,” *6th Symposium on Graph Drawing (GD)*, p. 111–124, 1998. (Prelim. version of 2.)
29. C. A. Duncan, M. T. Goodrich, and S. G. Kobourov, “Planarity-Preserving Clustering and Embedding for Large Planar Graphs,” *7th Symposium on Graph Drawing (GD)*, p. 186–196, 1999. (Prelim. version of 5.)
30. C. C. Cheng, C. A. Duncan, M. T. Goodrich, and S. G. Kobourov, “Drawing Planar Graphs with Circular Arcs,” *7th Symposium on Graph Drawing (GD)*, p. 117–126, 1999. (Prelim. version of 3.)
31. C. A. Duncan, M. T. Goodrich, and S. G. Kobourov, “Balanced Aspect Ratio Trees: Combining the Advantages of  $k$ -d Trees and Octrees,” *10th ACM-SIAM Symposium on Discrete Algorithms, (SODA)*, p. 300–309, 1999. (Prelim. version of 4.)
32. S. Bridgeman, M. T. Goodrich, S. G. Kobourov, and R. Tamassia, “PILOT: An Interactive Tool for Learning and Grading,” *31st ACM Technical Symposium on Computer Science Education (SIGCSE)*, p. 139–143, March 2000.
33. S. Bridgeman, M. T. Goodrich, S. G. Kobourov, and R. Tamassia, “SAIL: A System for Generating, Archiving, and Retrieving Specialized Assignments Using L<sup>A</sup>T<sub>E</sub>X,” *31st ACM Technical Symposium on Computer Science Education (SIGCSE)*, p. 300–304, March 2000.
34. P. Gajer, M. T. Goodrich, and S. G. Kobourov, “A Fast Multi-Dimensional Algorithm for Drawing Large Graphs,” *8th Symposium on Graph Drawing (GD)*, p. 211–221, 2000. (Prelim. version of 8.)
35. P. Gajer and S. G. Kobourov, “GRIP: Graph Drawing with Intelligent Placement,” *8th Symposium on Graph Drawing (GD)*, p. 222–228, 2000. (Prelim. version of 6.)
36. C. A. Duncan, S. G. Kobourov, and V. S. A. Kumar, “Optimal Constrained Graph Exploration,” *12th ACM-SIAM Symposium on Discrete Algorithms (SODA)*, p. 807–814, 2001. (Prelim. version of 19.)
37. C. A. Duncan and S. G. Kobourov, “Polar Coordinate Drawing of Planar Graphs with Good Angular Resolution,” *9th Symposium on Graph Drawing (GD)*, p. 407–421, 2001. (Prelim. version of 7.)
38. T. Biedl, E. Demaine, C. A. Duncan, R. Fleischer, and S. G. Kobourov, “Tight Bounds on Maximal and Maximum Matching,” *12th International Symposium on Algorithms & Computation (ISAAC)*, p. 308–319, 2001. (Prelim. version of 9.)
39. C. A. Duncan, A. Efrat, S. G. Kobourov, and C. Wenk, “Drawing Graphs with Fat Edges,” *9th Symposium on Graph Drawing (GD)*, p. 162–177, 2001. (Prelim. version of 15.)
40. A. Efrat, S. G. Kobourov, M. Stepp, and C. Wenk, “Growing Fat Graphs,” *18th ACM Symposium on Computational Geometry (SCG)*, p. 277–278, 2002.
41. C. Collberg, S. G. Kobourov, J. Miller, and S. Westbrook, “AlgoVista: A Tool to Enhance Algorithm Design and Understanding,” *7th Symposium on Innovation and Technology in Computer Science Education (ITiCSE)*, p. 228–228, 2002.
42. A. Efrat, S. G. Kobourov, and A. Lubiw, “Computing Homotopic Shortest Paths Efficiently,” *10th European Symposium on Algorithms (ESA)*, p. 411–423, 2002. (Prelim. version of 16.)
43. C. Erten and S. G. Kobourov, “Simultaneous Embedding of a Planar Graph and Its Dual on the Grid,” *13th International Symposium on Algorithms & Computation (ISAAC)*, p. 575–587, 2002. (Prelim. version of 11.)
44. C. Collberg, S. G. Kobourov, J. Nagra, J. Pitts, and K. Wampler, “A System for Graph-Based Visualization of the Evolution of Software,” *ACM Symposium on Software Visualization (SoftVis)*, p. 77–86, 2003.

45. P. Brass, E. Cenek, C. A. Duncan, A. Efrat, C. Erten, D. Ismailescu, S. G. Kobourov, A. Lubiw, and J. S. B. Mitchell, “On Simultaneous Planar Graph Embeddings,” *Workshop on Algorithms and Data Structures (WADS)*, p. 243–255, 2003. (Prelim. version of 17.)
46. C. Collberg, S. G. Kobourov, S. Kobes, B. Smith, S. Trush, and G. Yee, “TetraTetris: An Application of Multi-User Touch-Based Interaction using DiamondTouch,” *9th International Conference on Human-Computer Interaction (INTERACT)*, p. 81–88, 2003.
47. A. Efrat, H. H. González-Baños, S. G. Kobourov, and L. Palaniappan, “Optimal Motion Strategies to Track and Capture a Predictable Target,” *IEEE Conference of Robotics and Automation (ICRA)*, p. 411–423, 2003.
48. C. Collberg, S. G. Kobourov, E. Carter, and C. Thomborson, “Error-Correcting Graphs for Software Watermarking,” *29th Workshop on Graph Theoretic Concepts in Computer Science (WG)*, p. 156–167, 2003.
49. C. Collberg, S. G. Kobourov, J. Louie, and T. Slattery, “SPLAT: A System for Self-Plagiarism Detection,” *International Conference on WWW/Internet (ICWI)*, p. 508–514, 2003.
50. A. Efrat, C. Erten, and S. G. Kobourov, “Fixed-Location Circular-Arc Drawing of Planar Graphs,” *11th Symposium on Graph Drawing (GD)*, p. 147–158, 2003. (Prelim. version of 18.)
51. C. Erten, S. G. Kobourov, and C. Pitta, “Intersection-Free Morphing of Planar Graphs,” *11th Symposium on Graph Drawing (GD)*, p. 320–331, 2003.
52. F. Brandenburg, D. Eppstein, M. T. Goodrich, S. G. Kobourov, G. Liotta, and P. Mutzel, “Selected Open Problems in Graph Drawing,” *11th Symposium on Graph Drawing (GD)*, p. 515–539, 2003.
53. C. Erten, S. G. Kobourov, V. Le, and A. Navabi, “Simultaneous Graph Drawing: Layout Algorithms and Visualization Schemes,” *11th Symposium on Graph Drawing (GD)*, p. 437–449, 2003. (Prelim. version of 12.)
54. C. Erten, P. J. Harding, S. G. Kobourov, K. Wampler, and G. Yee, “GraphAEL: Graph Animations with Evolving Layouts,” *11th Symposium on Graph Drawing (GD)*, p. 98–110, 2003.
55. C. Collberg, S. G. Kobourov, and S. Westbrook, “AlgoVista: An Algorithmic Search Tool in an Educational Setting,” *35th ACM Technical Symposium on Computer Science Education (SIGCSE)*, p. 462–466, 2004.
56. C. Erten, P. Harding, S. G. Kobourov, K. Wampler, and G. Yee, “Exploring the Computing Literature Using Temporal Graph Visualization,” *Conference on Visualization and Data Analysis (VDA)*, p. 45–56, 2004.
57. C. Duncan, D. Eppstein, and S. G. Kobourov, “The Geometric Thickness of Low Degree Graphs,” *20th ACM Symposium on Computational Geometry (SCG)*, p. 340–346, 2004.
58. C. Erten, S. G. Kobourov, and C. Pitta, “Morphing Planar Graphs,” *20th ACM Symposium on Computational Geometry (SCG)*, p. 451–452, 2004.
59. S. G. Kobourov and K. Wampler, “Non-Euclidean Spring Embedders,” *10th IEEE Symposium on Information Visualization (INFOVIS)*, p. 207–214, 2004. (Prelim. version of 13.)
60. J. Abello, S. G. Kobourov, and R. Yusufov, “Visualizing Large Graphs with Compound-Fisheye Views and Treemaps,” *12th Symposium on Graph Drawing (GD)*, p. 431–442, 2004.
61. S. G. Kobourov and C. Pitta, “An Interactive Multi-User System for Simultaneous Graph Drawing,” *12th Symposium on Graph Drawing (GD)*, p. 492–503, 2004.
62. C. Erten and S. G. Kobourov, “Simultaneous Embedding of Planar Graphs with Few Bends,” *12th Symposium on Graph Drawing (GD)*, p. 195–206, 2004. (Prelim. version of 14.)
63. D. Forrester, S. G. Kobourov, A. Navabi, K. Wampler, and G. Yee, “graphael: A System for Generalized Force-Directed Layouts,” *12th Symposium on Graph Drawing (GD)*, p. 454–466, 2004.
64. B. Dux, A. Iyer, S. Debray, D. Forrester, and S. G. Kobourov, “Visualizing the Behavior of Dynamically Modifiable Code,” *13th IEEE International Workshop on Program Comprehension (IWPC)*, p. 337–340, 2005.

65. C. Collberg, S. Debray, S. G. Kobourov, and S. Westbrook, "Increasing Undergraduate Involvement in Computer Science Research," *8th World Conference on Computers in Education (WCCE)*, p. 342–352, 2005.
66. J. Cappos, S. G. Kobourov, M. Miles, M. Stepp, K. Pavlou, and A. Wixted, "Collaboration with DiamondTouch." *10th International Conference on Human-Computer Interaction (INTERACT)*, p. 986–990, 2005. (Prelim. version of 25.)
67. C. Erten, A. Efrat, D. Forrester, A. Iyer, and S. G. Kobourov, "Force-Directed Approaches to Sensor Localization." *8th Workshop on Algorithm Engineering and Experiments (ALENEX)*, p. 108–118, 2006.
68. S. G. Kobourov and M. Landis, "Morphing Planar Graphs in Spherical Space.", *14th Symposium on Graph Drawing (GD)*, p. 306–317, 2006. (Prelim. version of 20.)
69. A. Estrella-Balderrama, J. Fowler, and S. G. Kobourov, "Characterization of Unlabeled Level Planar Trees", *14th Symposium on Graph Drawing (GD)*, p. 367–379, 2006. (Prelim. version of 23.)
70. J. Cappos, A. Estrella-Balderrama, J. Fowler, and S. G. Kobourov, "Simultaneous Graph Embedding with Bends and Circular Arcs", *14th Symposium on Graph Drawing (GD)*, p. 95–107, 2006.
71. U. Brandes, C. Erten, J. Fowler, F. Frati, M. Geyer, C. Gutwenger, S. Hong, M. Kaufmann, S. G. Kobourov, G. Liotta, P. Mutzel, A. Symvonis, "Colored Simultaneous Geometric Embeddings," *13th International Computing and Combinatorics Conference, (COCOON)*, p. 254–263, 2007.
72. J. Fowler and S. G. Kobourov, "Characterization of Unlabeled Level Planar Graphs," *15th Symposium on Graph Drawing (GD)*, p. 37–49, 2007.
73. J. Fowler and S. G. Kobourov, "Minimum Level Nonplanar Patterns for Trees," *15th Symposium on Graph Drawing (GD)*, p. 69–75, 2007.
74. F. Frati, M. Kaufmann and S. G. Kobourov, "Constrained Simultaneous and Near-Simultaneous Embeddings," *15th Symposium on Graph Drawing (GD)*, p. 268–279, 2007. (Prelim. version of 22.)
75. J. Fowler, M. Jünger, S. G. Kobourov, and M. Schulz, "On Simultaneous Embedding with Fixed Edges," *Conference on Topological and Geometric Graph Theory*, Electronic Notes in Discrete Mathematics, vol. 31, p. 41–44, 2008.
76. A. Estrella-Balderrama, F. Frati, and S. G. Kobourov, "Upward Straight-line Embeddings of Directed Graphs into Point Sets," *34th Workshop on Graph-Theoretic Concepts in Computer Science (WG)*, p. 122–133, 2008.
77. J. Fowler, M. Jünger, S. G. Kobourov, and M. Schulz, "Characterizing Simultaneous Embedding with Fixed Edges," *34th Workshop on Graph-Theoretic Concepts in Computer Science (WG)*, p. 146–158, 2008.
78. A. Estrella-Balderrama, J. Fowler and S. G. Kobourov, "GraphSET: Graph Simultaneous Embedding Tool," *16th Symposium on Graph Drawing (GD)*, p. 169–180, 2008. (Prelim. version of 26.)
79. A. Estrella-Balderamma, J. Fowler, and S. G. Kobourov, "Colored Simultaneous Geometric Embeddings and Universal Pointsets," *21th Canadian Conference on Computational Geometry (CCCG)*. Accepted, to appear in 2009.
80. C. Binucci, E. Di Giacomo, W. Didimo, A. Estrella-Balderamma, F. Frati, S. G. Kobourov, and G. Liotta, "Directed Graphs with an Upward Straight-line Embedding into Every Point Set," *21th Canadian Conference on Computational Geometry (CCCG)*. Accepted, to appear in 2009.
81. A. Estrella-Balderrama, J. Fowler, and S. G. Kobourov, "On the Characterization of Level Planar Trees by Minimal Patterns," *17th Symposium on Graph Drawing (GD)*. Accepted, to appear in 2009.
82. C. Duncan, S. G. Kobourov, and M. Goodrich, "Planar Drawings of Higher-Genus Graphs," *17th Symposium on Graph Drawing (GD)*. Accepted, to appear in 2009.
83. E. Gansner, Y. Hu, S. G. Kobourov, and C. Volinsky, "Putting Recommendations on the Map – Visualizing Clusters and Relations," *3rd ACM Conference on Recommendation Systems*. Accepted, to appear in 2009.
84. E. Gansner, Y. Hu, and S. G. Kobourov, "GMap: Visualizing Graphs and Clusters as Maps," *3rd IEEE Pacific Visualization Symposium (PacificVis)*. Accepted, to appear in 2010.

85. E. Gansner, Y. Hu, M. Kaufmann, and S. G. Kobourov, “Optimal Polygonal Representation of Planar Graphs,” *9th Latin American Theoretical Informatics Symposium (LATIN)*. Accepted, to appear in 2010.
86. S. Isaacman, R. Becker, R. Caceres, S. Kobourov, J. Rowland, A. Varshavsky, “A Tale of Two Cities,” *11th ACM Workshop on Mobile Computing Systems and Applications (HotMobile)*. Accepted, to appear in 2010.

## Other Publications

87. C. A. Duncan, M. T. Goodrich, and S. G. Kobourov, “Balanced Aspect Ratio Trees: An Introduction,” 3rd CGC Workshop on Computational Geometry, Providence, 1998.
88. S. G. Kobourov, “Visualization of Large Graphs,” PhD Thesis, Johns Hopkins University, 2000.
89. M. T. Goodrich and S. G. Kobourov, “Multi-Scale Algorithms for Graph Drawing”, 11th Workshop on Computational Geometry, Stony Brook, 2001.
90. C. Erten and S. G. Kobourov, “Simultaneous Embeddings,” 12th Workshop on Computational Geometry, DIMACS, 2002.
91. V. Batagelj, U. Brandes, S. Corman, J. Johnson, S. G. Kobourov, L. Krempel, A. Mrvar, and D. Wagner, “Analysis and Visualization of Network Data,” *22nd International Sunbelt Social Networks Conference*, 2002.
92. F. J. Brandenburg, C. A. Duncan, E. Gansner, and S. G. Kobourov, “Graph-Drawing Contest Report,” *12th Symposium on Graph Drawing (GD)*, p. 512–516, 2004.
93. J. Cappos and S. G. Kobourov, “Trees on Tracks,” 14th Workshop on Computational Geometry, Boston, 2004.
94. C. A. Duncan, G. W. Klau, S. G. Kobourov, and G. Sander, “Graph-Drawing Contest Report,” *13th Symposium on Graph Drawing (GD)*, p. 448–452, 2005.
95. C. A. Duncan, S. G. Kobourov, and D. Wagner, “Graph-Drawing Contest Report,” *14th Symposium on Graph Drawing (GD)*, p. 528–531, 2006.
96. C. A. Duncan, S. G. Kobourov, and G. Sander, “Graph-Drawing Contest Report,” *15th Symposium on Graph Drawing (GD)*, p. 295–300, 2007.
97. S. P. Borgatti, S. G. Kobourov, O. Kohlbacher, and P. Mutzel, “User-Centered Graph Drawing”, Dagstuhl Seminar Proceedings, 2008.

## Software Tools

1. **GraphSET**: Graph Simultaneous Embedding Tool provides a practical way to study several types of problems in simultaneous embedding, <http://graphset.cs.arizona.edu>
2. **SMorph**: Tool for smooth, continuous, and intersection-free morphing of planar graph drawings on the surface of the sphere, <http://smorph.cs.arizona.edu>
3. **GRIP**: Graph Drawing with Intelligent Placement tool provides several efficient algorithms for visualizing large graphs in 2D and 3D Euclidean space, <http://grip.cs.arizona.edu>
4. **TGRIP**: Temporal Graph Drawing with Intelligent Placement tool can visualize large graphs that evolve over time, <http://tgrip.cs.arizona.edu>
5. **GraphAEL**: Graph Animations with Evolving Layouts visualizes large evolving graphs in Euclidean, Spherical, and Hyperbolic spaces, <http://graphael.cs.arizona.edu>
6. **TetraTetris** is a multi-user game and the first non-trivial application developed for the Diamond-Touch table, <http://tetraTetris.cs.arizona.edu>
7. **DT** is an interactive, multi-user application designed for the DiamondTouch table for discovering simultaneous planar graph embeddings, <http://dt.cs.arizona.edu>
8. **GMorph** is a system for smooth, continuous, and intersection-free morphing of planar graph drawings in 2D Euclidean space, <http://gmorph.cs.arizona.edu>
9. **SimG** is a system for simultaneously visualizing multiple graphs defined on a common set of vertices, <http://simg.cs.arizona.edu>
10. **SPLaT** is a web-spider and text analyzer for self-plagiarism detection, <http://splat.cs.arizona.edu>

## Grants

1. PI, *CAREER: Embedding, Morphing, & Visualizing Dynamic Graphs*, NSF-CCF, \$419,645, 2006-11
2. PI, *Visualization of Giga-Graphs and Graph Processes*, NSF-ACR, \$240,358, 2002-05
3. PI, *Multi-Scale Non-Euclidean Graph Visualization*, ACIST, \$20,000, 2004-05
4. PI, *Simultaneous Graph Embedding for Visualization of Temporal Data*, ITCDI, \$15,000, 2003-04
5. PI, *Temporal Graph Exploration*, ITCDI, \$11,022, 2002-03
6. PI, *Visualization of Giga-Graphs and Graph Processes*, NSF-REU Suppl., \$42,500, 2002-05
7. co-PI, *Bootstrapping Broad-Coverage Network Services*, NSF-CNS, \$94,000, 2004-05
8. co-PI, *Research Experience for Undergraduates Supplement to IRI*, NSF, \$15,000, 2000-04
9. co-PI, *Interactive Classification*, ITCDI, \$12,500, 2003-04

## Press Coverage

1. “American Professor Installs First University Wireless Network.”  
*University of Botswana Horizon*, April 11, 2007.
2. “Professor Sees Societal Connections in Graphics.”  
*Arizona Daily Star*, August 14, 2006.
3. “UA Computer Scientist Wins Fulbright Scholarship.”  
*Lo Que Pasa*, May 8, 2006.
4. “Journal Publishers Turn to Software to Root Out Plagiarism by Scholars.”  
*The Chronicle of Higher Education*, June 10, 2005.
5. “Taking on the Cheats.”  
*Nature* 435, p. 258-259, May 19, 2005.

## Honors, Awards, and Memberships

Faculty Impact Award, University of Arizona, 2007  
Fulbright Scholar, US Department of State, 2006  
National Science Foundation Career Award, 2005  
First Prize in the 7th Annual Graph Drawing Contest, 2000  
Fred Demerritte Graduate Studies Fellowship, 1995  
Brainerd Memorial Scholarship (full scholarship for undergraduate studies) 1992-95  
Presidential Scholar (independent research project, Dartmouth College), 1994-95  
Waterhouse Fellow (undergraduate research grant), 1994  
Member of the Association for Computing Machinery  
Member of the Institute of Electrical and Electronics Engineers  
Member of the Phi Beta Kappa Honor Society  
Member of the Golden Key Honor Society

## Steering Committees and Editorial Boards

Steering Committee, Graph Drawing, 2001–2004  
Editorial Board, Journal of Graph Algorithms and Applications  
Editorial Board, Graph Drawing E-print Archive

## Program Committee Service

PC member, 16th European Symposium on Algorithms (ESA), Karlsruhe, Germany 2008  
PC member, 17th ACM-SIAM Symposium on Discrete Algorithms (SODA), Miami, FL, 2006  
PC member, 3rd ACM Symposium on Software Visualization (SOFTVIS), Brighton, UK 2006  
PC member, 14th International Symposium on Graph Drawing, Karlsruhe, Germany 2006  
PC member, 16th International Symposium on Graph Drawing, Crete, Greece 2008  
PC member, 18th International Symposium on Graph Drawing, Konstanz, Germany 2010  
PC member, 3rd International Conference on Human Computer Interaction, Innsbruck, Austria, 2008

Co-chair, Dagstuhl Workshop on Graph Drawing & Algorithm Engineering, Dagstuhl, Germany, 2011  
Co-chair, Dagstuhl Workshop on User-Centered Graph Drawing, Dagstuhl, Germany, 2008  
Co-chair, Dagstuhl Workshop on Graph Drawing, Dagstuhl, Germany, 2005  
Co-chair, 10th International Symposium on Graph Drawing, Irvine, CA, 2002  
Chair, 13th Annual Graph Drawing Contest, Karlsruhe, Germany, 2006  
Chair, 12th Annual Graph Drawing Contest, Limerick, Ireland, 2005  
Chair, 11th Annual Graph Drawing Contest, New York, NY, 2004

### **Conference Committee Service**

Organizing Committee, 22nd ACM Symposium on Computational Geometry, Sedona, AZ, 2006  
Organizing Committee, 13th International Symposium on Graph Drawing, Limerick, Ireland, 2005  
Organizing Committee, 12th International Symposium on Graph Drawing, New York, NY, 2004

### **Journal Reviews**

SIAM Journal of Computing, ACM Transactions on Algorithms, ACM Transactions on Graphics, IEEE Transactions on Visualization and Computer Graphics, Journal of Algorithms, Journal of Discrete and Computational Geometry, International Journal of Computational Geometry and Applications, Journal of Graph Algorithms and Applications, Journal of Computational Geometry: Theory and Applications, Journal of Theoretical Computer Science, Journal of Combinatorics, Journal Algorithmica, International Journal of Foundations of Computer Science, Software Practice and Experience, Journal of Networks, Journal of Discrete Applied Mathematics, Rocky Mountain Journal of Mathematics, Journal of Naval Research Logistics, Journal of Social Structure

### **Conference Reviews**

Symposium on Graph Drawing (GD), ACM Symposium on Computational Geometry (SCG), ACM-SIAM Symposium on Discrete Algorithms (SODA), ACM Symposium on Theory of Computing (STOC), IEEE Symposium on Foundations of Computer Science (FOCS), European Symposium on Algorithms (ESA), Workshop on Algorithm Engineering and Experiments (ALENEX), IEEE Conference on Information Visualization (INFOVIS), IEEE Pacific Visualization Symposium (PacificVis), SPIE Conference on Visualization and Data Analysis (VDA), Conference on Current Trends in Theory and Practice of Informatics (SOFSEM), Foundations of Software Technology and Theoretical Computer Science (FSTTCS), Scandinavian Workshop on Algorithm Theory (SWAT)

### **Proposal Reviewer**

National Science Foundation Panelist: 2001, 2002, 2003, 2004  
German Science Foundation (DFG): 2005, 2006  
Engineering and Physical Sciences Research Council: 2006  
European Union Research Council: 2006, 2007  
Netherlands Research Foundation: 2007

### **Invited Talks**

1. Vienna Technical University, Vienna Austria, August 2000.
2. Max-Planck-Institut für Informatik, Saarbrücken Germany, September 2000.
3. Dagstuhl Seminar on Link Analysis and Visualization, Dagstuhl Germany, June 2001.
4. American Mathematical Society, Columbia South Carolina, February 2001.
5. 1st Arizona Workshop on Algorithms, Tempe Arizona, October 2001.
6. DIMACS Workshop on Geometric Graph Theory, Rutgers New Jersey, September 2002.
7. NSF/CBMS Conference on Geometric Graph Theory, Denton Texas, May 2002.
8. University of Miami, Coral Gables Florida, March 2004.
9. University of Texas – San Antonio, San Antonio Texas, September 2004.
10. AT&T Research Labs, Florham Park New Jersey, February 2005.
11. University of California – Irvine, Irvine California, February 2005.

12. Karlsruhe University, Karlsruhe Germany, May 2005.
13. Dagstuhl Seminar on Graph Drawing, Dagstuhl Germany, May 2005.
14. Dagstuhl Seminar on Multi-Version Program Analysis, Dagstuhl Germany, June 2005.
15. Universitat Politecnica de Catalunya, Barcelona Spain, July 2005.
16. University of Glasgow, Glasgow United Kingdom, September 2005.
17. Dagstuhl Seminar on Algorithmic Aspects of Large Networks, Dagstuhl Germany, September 2005.
18. Bertinoro Workshop on Graph Algorithms and Visualization, Bertinoro Italy, March 2006.
19. Karlsruhe University, Karlsruhe Germany, June 2006.
20. University of Tübingen, Tübingen Germany, July 2006.
21. University of Cologne, Cologne Germany, July 2006.
22. University of Dortmund, Dortmund Germany, July 2006.
23. Joint Statistical Meeting, Seattle Washington, August 2006.
24. University of Botswana, Gaborone Botswana, September 2006.
25. The Meraka Institute, Johannesburg South Africa, January 2007.
26. Bertinoro Workshop on Graph Drawing and Computational Geometry, Bertinoro Italy, March 2007.
27. University of Namibia, Windhoek Namibia, May 2007.
28. Google Pittsburgh, Pittsburgh Pennsylvania, July 2007.
29. NSF/CBMS Conference on Geometric Graph Theory, Denton Texas, November 2007.
30. Bertinoro Workshop on Visualization of Large Graphs, Bertinoro Italy, March 2008.
31. University of Roma III, Rome Italy, March 2008.
32. AT&T Research Labs, Florham Park New Jersey, April 2008.
33. Dagstuhl Seminar on User-Centered Graph Drawing, Dagstuhl Germany, May 2008.
34. SIAM Conference on Discrete Mathematics, Burlington Vermont, June 2008.
35. DIMACS Colloquium, Rutgers New Jersey, September 2008.
36. Dartmouth College, Hanover New Hampshire, October 2008.
37. Bertinoro Workshop Graph Drawing, Bertinoro Italy, March 2009.
38. Bio5 Institute, University of Arizona, September 2009.
39. INRIA-McGill Workshop on Computational Geometry, Barbados, January 2010.
40. Bertinoro Workshop on Graph Drawing, Bertinoro Italy, March 2010.
41. Les Houches Workshop on Data Driven Dynamical Networks, Les Houches France, October 2010.

### PhD Advisees

Cesim Erten, “Simultaneous Embedding and Visualization of Graphs,” April 2005  
 Alejandro Estrella-Balderramma, “Simultaneous Embedding and Level Planarity,” April 2009  
 Joe Fowler, “Unlabeled Level Planarity,” April 2009

### MS Advisees

Michael Stepp (MS), currently pursuing PhD at University of California - San Diego  
 Kevin Wampler (MS), currently pursuing PhD at University of Washington  
 Martin Stepp (MS), currently at Microsoft  
 Roman Yusufov (MS), currently at IBM  
 Chandan Pitta (MS), currently at Motorola  
 James Judd (MS), currently at IBM  
 Bennett Kankuzi (MS), University in Botswana  
 Kamogelo Isaac (MS), University in Botswana  
 Matt Landis (MS)

## BS Advisees

*(12 papers in refereed conference proceedings with undergraduate student co-authors)*

Jessica Miller (BS), currently pursuing PhD at University of Washington  
Ed Carter (BS), currently pursuing PhD at University of California-Berkeley  
Kelly Heffner (BS), currently pursuing PhD at Harvard  
Phil Harding (BS), currently pursuing PhD at University of California - Irvine  
Gary Yee (BS), currently pursuing PhD at University of Colorado  
Armand Navabi (BS), currently pursuing PhD at Purdue University  
Kyriacos Pavlou (BS), currently pursuing PhD at the University of Arizona  
Amanda Wixted (BS), currently a game programmer at Octopi  
Jacob Pitts (BS), currently at Microsoft  
David Forester (BS), currently at Microsoft  
Anand Iyer (BS), currently at Microsoft  
Steve Kobes (BS), currently at Google

## Collaborators

James Abello (DIMACS), Baruch Awerbuch (Johns Hopkins U), Richard Becker (AT&T Research), Terese Biedl (U Waterloo), Franz Brandenburg (U Passau), Ulrik Brandes (U Konstanz), Peter Brass (CUNY), Stina Bridgeman (Colgate U), Ramon Caceres (AT&T Research), Christine C. Cheng (U Wisconsin-Milwaukee), Christian Collberg (U Arizona), Saumya Debray (U Arizona), Erik Demaine (MIT), Walter Didimo (U Perugia), Christian A. Duncan (U Miami), Alon Efrat (U Arizona), Alejandro Estrella-Balderramma (Google), Cesim Erten (Kadiras U), David Eppstein (UC-Irvine), Fabrizio Frati (U Rome), Rudolf Fleischer (Hong Kong U), Pavel Gajer (Johns Hopkins U), Marcus Geyer (U Tübingen), Emden Gansner (AT&T Research), Hector H. González-Baños (Honda Research), Michael T. Goodrich (UC-Irvine), Carsten Gutwenger (U Dortmund), Seokhee Hong (U Sydney), Yifan Hu (AT&T Research), Sibren Isaacman (Princeton), Daniel Ismailescu (Hofstra), Michael Jünger (U Cologne), Michael Kaufmann (U Tübingen), Karsten Klein (U Dortmund), V. S. A. Kumar (Los Alamos National Labs), Giuseppe Liotta (U Perugia), Anna Lubiw (U Waterloo), Joseph S. B. Mitchell (Stony Brook), Petra Mutzel (U Dortmund), Jasvir Nagra (Google), James Rowland (AT&T Research), Michael Schulz (U Cologne), Antonios Symvonis (U Athens), Roberto Tamassia (Brown U), Clark Thomborson (U. Auckland), Alexander Varshavsky (AT&T Research), Chris Volinsky (AT&T Research), Dorothea Wagner (U Karlsruhe), Carola Wenk (U Texas-San Antonio), Suzanne Westbrook (U Arizona)

## Courses Taught and Developed

Algorithmic Information Visualization (developed and taught at Arizona)  
Analysis of Discrete Structures (developed and taught at Arizona)  
Automata Grammars and Languages (revised and taught at Arizona)  
Concepts in Computing (revised and taught at Dartmouth)  
Data Structures and Object Oriented Programming (revised and taught at Dartmouth)  
Data Structures in C++ (revised and taught at Hopkins)  
Design and Analysis of Algorithms (revised and taught at Arizona)  
Graph Theoretic Concepts in Computer Science (developed and taught at Arizona)  
Human Computer Interaction (developed and taught at Arizona)  
Introduction to Algorithms (revised and taught at Arizona)  
Algorithms and Data Structures (developed and taught at Botswana)  
Operating Systems (revised and taught at Dartmouth)  
Research Methods in Computer Science (developed and taught at Botswana)  
Theory of Computation (revised and taught at Arizona)

**Personal Data:** US Citizen