

# CURRICULUM VITA

Joe Fowler

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## CONTACT INFORMATION

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## EDUCATION

- Present* **Pursuing Ph.D. in Computer Science** at the University of Arizona,  
*Advisor:* Associate Professor Stephen G. Kobourov.  
*Dissertation:* *Unlabeled Level Planarity.*
- 2002* **M.S. in Computer Science** at the University of Colorado at Denver,  
*Advisor:* Associate Professor Ross M. McConnell,  
*Thesis:* *Algorithmic Approaches to Solving the Rubik's Cube.*
- 1995* **B.S. in Engineering Physics** at the University of Colorado at Boulder.

## PROFESSIONAL EXPERIENCE

### Google

#### *Testing and Software Engineering Intern*

- Automated hierarchical graph layouts for internal application. 2008  
Created Java plugin for FitNesse, a web-based testing framework. 2007

### National Oceanic and Atmospheric Administration (NOAA)

#### *Web Development Intern*

- Redesigned and modernized natural hazards database web interface. 2005

### CIBER/IBM

#### *Full-time Web Programmer*

- Maintained billing, internal accounting, and DB2 applications. 2000–2001

### National Center of Atmospheric Research (NCAR)

#### *Full-time Software Engineer II*

- Automated satellite data retrieval, processing, delivery and archival. 1997–1999

## AWARDS

- Department of Computer Science Outstanding Teaching Assistant for 2006–2007.  
Department of Computer Science Exceptional Paper of 2007.  
Graduate College Fellowship 2005, 2008.  
Galileo Circle Scholar 2008.

## AFFILIATIONS

- ACM Special Interest Group on Algorithms and Computation Theory (SIGACT).  
American Mathematical Society (AMS).  
IEEE Computer Society (IEEE-CS).  
SIAM Activity Group (SIAG) in Computational Science and Engineering.

## RESEARCH INTERESTS

- Graph drawing and visualization, computational geometry, sensor networks, complexity theory, graph theory and algorithms, combinatorics, permutation groups.

REFEREED CONFERENCE PUBLICATIONS (authors in alphabetical order)

1. J. J. Fowler, C. Gutwenger, M. Jünger, P. Mutzel, and M. Schulz. “An SPQR-Tree Approach to Decide Special Cases of Simultaneous Embedding with Fixed Edges”. *16th Symposium on Graph Drawing (GD 2008)*. LNCS 5417, pp. 157-168, 2009.
2. A. Estrella-Balderrama, J. J. Fowler, and S. G. Kobourov. “Graph Simultaneous Embedding Tool”. *16th Symposium on Graph Drawing (GD 2008)*. LNCS 5417, pp. 169-180, 2009.
3. J. J. Fowler, M. Jünger, S. G. Kobourov, and M. Schulz. “Characterizations of Restricted Pairs of Planar Graphs Allowing Simultaneous Embedding with Fixed Edges”, *34th International Workshop on Graph-Theoretic Concepts in Computer Science (WG 2008)*. LNCS 5344, pp. 146–158, 2008.
4. J. J. Fowler, M. Jünger, S. G. Kobourov, and M. Schulz. “Characterizing Simultaneous Embedding with Fixed Edges”, *Topological & Geometric Graph Theory*. Electronic Notes in Discrete Mathematics. vol. 31, pp. 41–44, 2008.
5. J. J. Fowler, and S. G. Kobourov. “Characterization of Unlabeled Level Planar Graphs”, *15th Symposium on Graph Drawing (GD 2007)*. LNCS 4875, pp. 37–49, 2008.
6. J. J. Fowler, and S. G. Kobourov. “Minimum Level Nonplanar Patterns for Trees”, *15th Symposium on Graph Drawing (GD 2007)*. LNCS 4875, pp. 69–75, 2008.
7. U. Brandes, C. Erten, J. J. Fowler, S. G. Kobourov, F. Frati, M. Geyer, M. Kaufmann, C. Gutwenger, P. Mutzel, S.-H. Hong, G. Liotta and A. Symvonis. “Colored Simultaneous Geometric Embeddings”, *The 13th Annual International Computing and Combinatorics Conference (COCOON 2007)*. LNCS 4598, pp. 254–263, 2007.
8. A. Estrella-Balderrama, J. J. Fowler, and S. G. Kobourov. “Characterization of Unlabeled Level Planar Trees”, *14th Symposium on Graph Drawing (GD 2006)*. LNCS 4372, pp. 367–379, 2007.
9. J. Cappos, A. Estrella-Balderrama, J. J. Fowler, and S. G. Kobourov. “Simultaneous Graph Embedding with Bends and Circular Arcs”, *14th Symposium on Graph Drawing (GD 2006)*. LNCS 4372, pp. 95–107, 2007.

JOURNAL PUBLICATIONS (authors in alphabetical order)

1. A. Estrella-Balderrama, J. J. Fowler, and S. G. Kobourov. “Characterization of Unlabeled Level Planar Trees”, *Computational Geometry: Theory and Applications*. To appear 2009.
2. J. Cappos, A. Estrella-Balderrama, J. J. Fowler, and S. G. Kobourov. “Simultaneous Graph Embedding with Bends and Circular Arcs”. *Computational Geometry: Theory and Applications*. vol. 42, no. 2, pp 173–182, 2009.
3. J. J. Fowler, E. Gethner, D. Schattschneider, and S. Passiouras. “Combinatorial Enumeration of  $2 \times 2$  Ribbon Patterns”, *European Journal of Combinatorics*. vol. 28, no. 4, pp. 1276–1311, 2007.
4. J. J. Fowler and E. Gethner. “Counting  $m \times m$  Escher’s Ribbon Patterns”, *Journal for Geometry and Graphics*. vol. 10, no. 1, pp. 1–13, 2006.

WORKSHOPS

1. *Graph Drawing with Applications to Bioinformatics and Social Sciences*, Dagstuhl Seminar 08191, May 5th to 9th, 2008.
2. *Workshop on Algorithms, Combinatorics, and Geometry*, University of North Texas, Nov. 29 to Dec. 1, 2007.

PRESENTATIONS

1. “An SPQR-Tree Approach to Decide Special Cases of Simultaneous Embedding with Fixed Edges”, *16th Symposium on Graph Drawing*.
2. “Characterizations of Restricted Pairs of Planar Graphs Allowing Simultaneous Embedding with Fixed Edges”, *34th International Workshop on Graph-Theoretic Concepts in Computer Science*.
3. “Characterizing Simultaneous Embedding with Fixed Edges”, *Topological & Geometric Graph Theory*.
4. “Characterization of Unlabeled Level Planar Graphs”, *15th Symposium on Graph Drawing*.
5. “Minimum Level Nonplanar Patterns for Trees”, *15th Symposium on Graph Drawing*.
6. “Colored Simultaneous Geometric Embeddings”, *The 13th Annual International Computing and Combinatorics Conference*.
7. “Characterization of Unlabeled Level Planar Trees”, *14th Symposium on Graph Drawing*.
8. “Counting Escher’s  $2 \times 2$  Ribbon Patterns”, *University of Adelaide Institute for Geometry and its Applications Workshop on Incidence Geometry*, 2003.
9. “Counting  $m \times m$  Escher’s Ribbon Patterns”, *28th Australasian Conference on Combinatorial Mathematics and Combinatorial Computing*.

CONFERENCE REVIEWS

1. 16th Symposium on Graph Drawing (GD 2008).
2. 16th European Symposium on Algorithms (ESA 2008).
3. 14th Symposium on Graph Drawing (GD 2006).

TEACHING EXPERIENCE

**The University of Arizona**

*Instructor*

C SC 445 Algorithms Summer 2006

*Teaching Assistant*

C SC 473 Automata, Grammars and Languages Fall 2005  
 C SC 445 Algorithms Spring 2006  
 C SC 499 Independent Study Spring 2007  
 C SC 573 Theory of Computation Spring 2007

**University of Colorado at Denver**

*Instructor*

C SC 4034 Theoretical Foundations of Comp. Sci. Spring, Summer 2003, Spring 2004  
 C SC 4058 Introduction to Software Engineering Fall 2003, 2004  
 C SC 5728 Software Engineering Spring, Fall 2004

*Teaching Assistant*

C SC 3412 Algorithms II Spring 2002  
 C SC 3645 Discrete Linear Systems Spring 2004, 2005  
 C SC 5217 Information Theory Fall 2003  
 C SC 5451 Algorithms Fall 2002, 2003, 2004  
 C SC 7002 Computer Security Spring 2005