
Curriculum Vitæ

Stephen K. Wismath

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Education

- B.Sc. (Honours, Mathematics), Queen's University, Ontario, 1975.
- B. Ed., Queen's University, 1976.
- M.Sc. (Computing Science), Queen's University, 1980.
- Ph.D. (Computer Science) UBC, 1989.

Work Experience

- Lecturer at the University of Lethbridge 1980-1981.
- Assistant Professor at the University of Lethbridge: 1983.
- Awarded tenure at the University of Lethbridge, Spring 1988.
- Promoted to Associate Professor, Spring 1990.
- Promoted to Professor, July 2006.

Research Funding

- N.S.E.R.C. 2 year operating grant awarded 1989.
- N.S.E.R.C. 3 year operating grant awarded 1991.
- N.S.E.R.C. equipment grant (with other dept members) awarded 1993.
- N.S.E.R.C. 3 year operating grant awarded 1994.
- N.S.E.R.C. 4 year operating grant awarded 1997.
- N.S.E.R.C. 4 year operating grant awarded 2001.
- N.S.E.R.C. 5 year discovery grant awarded 2005.
- N.S.E.R.C. RTI grant awarded 2005.

Publications

Papers in Refereed Journals

1. *Constrained Point-Set Embeddability of Planar Graphs*; E. Di Giacomo, W. Didimo, G. Liotta, H. Meijer, S. Wismath; *International Journal of Computational Geometry and Applications*, Vol. 20, Issue 5, Oct. 2010, pp. 577–600.
2. *Matched Drawability of Graph Pairs and of Graph Triples*; L. Grilli, S. Hong, G. Liotta, H. Meijer, S. Wismath; *Computational Geometry: Theory and Applications*, Volume 43, Issues 6-7, pp. 611-634, August 2010
3. *Universal Sets of n Points for 1-bend Drawings of Planar Graphs with n Vertices*; H. Everett, S. Lazard, G. Liotta, S. Wismath; *Discrete and Computational Geometry*, Vol 43, No. 2, pp. 272–288, March 2010.
4. *Point Set Embeddings of Trees with Edge Constraints*; E. Di Giacomo, W. Didimo, G. Liotta, H. Meijer, S. Wismath; *Computational Geometry: Theory and Applications*, Vol 42, Issues 6-7, pp. 664-676, 2009.
5. *Volume Requirements of 3D Upward Drawings*; E. Di Giacomo, G. Liotta, H. Meijer, S. Wismath; *Discrete Mathematics* 309 (2009), pp. 1824-1837
6. *k -Colored Point-Set Embeddability of Outerplanar Graphs*; E. Di Giacomo, W. Didimo, G. Liotta, H. Meijer, F. Trotta, S. Wismath; *Journal of Graph Algorithms and Applications*, (Special Issue), Vol 12, No. 1, pp. 29–49, 2008.
7. *Maintaining Visibility Information of Planar Point Sets with a Moving Viewpoint*; O. Devillers, V. Dujmović, H. Everett, S. Hornus, S. Whitesides, S. Wismath; *International Journal of Computational Geometry and Applications*, Vol 17, Issue 4, August 2007, pp. 297–304.
8. *Book Embeddability of Series-Parallel Digraphs*; E. Di Giacomo, W. Didimo, G. Liotta, S. Wismath; *Algorithmica*, Vol. 45, No. 4, August 2006, pp. 531–547.
9. *Drawing K_n in Three Dimensions with One Bend per Edge*; O. Devillers, H. Everett, S. Lazard, M. Pentcheva, S. Wismath; *Journal of Graph Algorithms and Applications*, Vol 10, No. 2, pp. 287-295, 2006.
10. *Curve-constrained Drawings of Planar Graphs*; E. Di Giacomo, W. Didimo, G. Liotta, S. Wismath; *Computational Geometry: Theory and Applications*, Vol 30, No. 1, pp. 1-23, Jan 2005.
11. *Straight Line Drawings on Restricted Integer Grids in Two and Three Dimensions*; S. Felsner, G. Liotta, S. Wismath; *Journal of Graph Algorithms and Applications* (Special Issue), Vol. 7, no. 4, pp. 363-398, 2003.
12. *Properties of Arrangement Graphs*; P. Bose, H. Everett, S.K. Wismath; *International Journal of Computational Geometry and Applications*, Vol. 13, No. 6, pp. 447-462, 2003.
13. *Orthogonal Polygon Reconstruction from Stabbing Information*; L. Jackson, S. Wismath; *Computational Geometry: Theory and Applications*, Vol 23, No. 1, pp. 69-83, 2002.

14. *Fully Dynamic 3-Dimensional Orthogonal Graph Drawing*; M. Closson, S. Gartshore, J. Johansen, S. Wismath; *Journal of Graph Algorithms and Applications*, Vol. 5, No. 2, pp. 1-34, Feb. 2001.
15. *Visibility Stabs and Depth-first Spiralling on Line Segments in Output-sensitive Time*; M. Keil, D. Mount, S. K. Wismath; *International Journal of Computational Geometry and Applications*, Vol. 10, No. 5, pp. 535-552, Oct. 2000.
16. *Point and Line Segment Reconstruction from Visibility Information*; S.K. Wismath; *International Journal of Computational Geometry and Applications*, Vol 10, No. 2, pp. 189-200, April 2000.
17. *Bounds For Orthogonal 3-D Graph Drawing*; T. Biedl, T. Shermer, S. Whitesides, S. Wismath; *Journal of Graph Algorithms and Applications* (Special Issue on New Trends in Graph Drawing), Vol. 3, no. 4, pp. 63-79, 1999.
18. *Determining Bar-Representability for Ordered Weighted Graphs*; D. Kirkpatrick, S.K. Wismath; *Computational Geometry: Theory and Applications*, **6** No. 2, pp. 99-122, May 1996.
19. *Computing the Full Visibility Graph of a Set of Line Segments*; S.K. Wismath; *Information Processing Letters* **42**, pp. 257-261, July 1992.
20. *Feature Selection by Interactive Clustering*; S. Akl, L. Soong, S.K. Wismath; *Journal of Pattern Recognition*, Vol. 14, pp. 75-80, 1981.

Refereed Conference Proceedings

It is traditional in Computer Science to present results at a conference and subsequently submit to a journal. Thus most of the results above appear below also.

- *On Line Sets Supporting Planar Graphs*; V. Dujmović, W. Evans, S. Kobourov, G. Liotta, C. Weibel, S. Wismath; accepted and presented at Graph Drawing 2010, Konstanz.
- *Matched Drawability of Graph Pairs and of Graph Triples*; L. Grilli, S. Hong, G. Liotta, H. Meijer, S. Wismath; WALCOM 2009, India. Accepted and presented.
- *Constrained Point-Set Embeddability of Planar Graphs*; E. Di Giacomo, W. Didimo, G. Liotta, H. Meijer, S. Wismath; Graph Drawing 2008, Crete. Springer-Verlag LNCS 5417, pp. 360–371
- *Point Set Embeddings of Trees with Edge Constraints*; E. Di Giacomo, W. Didimo, G. Liotta, H. Meijer, S. Wismath; Graph Drawing 2007, Sydney, Springer-Verlag Lecture Notes in Computer Science 4875, pp. 113–124.
- *Universal Sets of n Points for 1-bend Drawings of Planar Graphs with n Vertices*; H. Everett, S. Lazard, G. Liotta, S. Wismath; Graph Drawing 2007, Sydney, Springer-Verlag Lecture Notes in Computer Science 4875 pp. 345–351.
- *k -Colored Point-Set Embeddability of Outerplanar Graphs*; E. Di Giacomo, W. Didimo, G. Liotta, H. Meijer, F. Trotta, S. Wismath; Graph Drawing 2006, Karlsruhe, Germany, Sept. 2006. Springer-Verlag Lecture Notes in Computer Science 4372, pp. 318–329, 2007.

- *Drawing K_n in Three Dimensions with One Bend per Edge*; O. Devillers, H. Everett, S. Lazard, M. Pentcheva, S. Wismath; Graph Drawing 2005, Limerick Ireland, Sept. 2005. Springer-Verlag Lecture Notes in Computer Science, Vol. 3843, pp. 83–88.
- *Volume Requirements of 3D Upward Drawings*; E. Di Giacomo, G. Liotta, H. Meijer, S. Wismath; Graph Drawing 2005, Limerick Ireland, Sept. 2005. Springer-Verlag Lecture Notes in Computer Science, Vol. 3843, pp. 101–110.
- *GLuskap: Visualization and Manipulation of Graph Drawings in 3D*; B. Dyck, J. Joevenazzo, E. Nickle, J. Wilsdon, S. Wismath; Accepted poster at: Graph Drawing 2003, Perugia Italy, Sept. 2003.
- *Drawing Planar Graphs on a Curve*; E. Di Giacomo, W. Didimo, G. Liotta, S. Wismath; WG2003 - 29th Workshop on Graph Theoretic Concepts in Computer Science, June 2003, Proc. Springer-Verlag Lecture Notes in Computer Science, Vol. 2880, pp. 192-204, Oct. 2003
- *Book Embeddings and Point-Set Embeddings of Series-Parallel Digraphs*; E. Di Giacomo, W. Didimo, G. Liotta, S. Wismath; Graph Drawing 2002, Irvine, Aug. 2002; Springer-Verlag Lecture Notes in Computer Science, Vol. 2528, pp. 162-173.
- *Straight Line Drawings on Restricted Integer Grids in Two and Three Dimensions*; S. Felsner, G. Liotta, S. Wismath; Graph Drawing 01, Vienna, Sept. 2001; Springer-Verlag Lecture Notes in Computer Science, Vol. 2265, pp. 328-342.
- *Fully Dynamic 3-Dimensional Orthogonal Graph Drawing*; M. Closson, S. Gartshore, J. Johansen, S. Wismath; Graph Drawing 99 in Prague, Sept. 1999, Springer-Verlag Lecture Notes in Computer Science, Vol 1731, pp. 49-58.
- *3-D Orthogonal Graph Drawing*; T. Biedl, T. Shermer, S. Whitesides, S. Wismath; Graph Drawing 97, Rome, Italy, Sept. 1997, Springer-Verlag, Lecture Notes in Computer Science 1353, 1997, pp. 76-86.
- *Weighted Visibility Graphs of Bars and Related Flow Problems*; D.G. Kirkpatrick, S.K. Wismath; Proceedings of the 1989 Workshop on Algorithms and Data Structures (WADS), Ottawa, Springer-Verlag Lecture Notes in Computer Science 382, pp. 325-334.
- *Characterizing Bar Line-of-Sight Graphs*; S.K. Wismath; Proceedings of the Symposium on Computational Geometry, Baltimore, 1985, pp. 147-152.

Non-Refereed Conference Proceedings

- *A note on alpha-drawable k -trees*; S. Stolpner, J. Lencher, G. Liotta, D. Bremner, C. Paul, M. Pouget, S. Wismath; Proc. 20th Canadian Conference on Computational Geometry, Montreal, pp. 23–26 , Aug. 2008
- *Maintaining Visibility Information of Planar Point Sets with a Moving Viewpoint*; O. Devillers, V. Dujmović, H. Everett, S. Hornus, S. Whitesides, S. Wismath; Proc. 17th Canadian Conference on Computational Geometry, Windsor, pp. 291–294 , Aug. 2005
- *Drawing Series-Parallel Graphs on a Box*; E. Di Giacomo, G. Liotta, S. Wismath; Proc. 14th Canadian Conference on Computational Geometry, Lethbridge, pp. 149-153, Aug. 2002.

- *Properties of Arrangement Graphs*; P. Bose, H. Everett, S.K. Wismath; 14th European Workshop on Computational Geometry, Barcelona, Spain, Mar. 1998.
- *Orthogonal Polygon Reconstruction*; L. Jackson, S.K. Wismath; Proc. 8th Canadian Conference on Computational Geometry, Ottawa, pp. 44-49, Aug. 1996.
- *Reconstruction of Parallel Line Segments from Endpoint Visibility Information*; S.K. Wismath; Proc. 6th Canadian Conference on Computational Geometry, Saskatoon, pp. 369-374, Aug. 1994.
- *Computing the Visibility Polygons of the Endpoints of a Set of Line Segments in Output Sensitive Time*; M. Keil, S.K. Wismath; 4th Canadian Conference on Computational Geometry, St. John's, Aug. 1992.
- *Recent Results on Visibility Graphs*; S.K. Wismath; 25th Anniv. Symp. U.B.C., Oct. 1993.
- *Visibility Graphs of Bars*; S.K. Wismath; Workshop on Computational Algorithms, Simon Fraser U., 1987.

Refereed Videos/Animations

- *3D Upward Drawings of Trees (Animation)*; C. Wang, S. Wismath; Submitted to Graph Drawing 2005, Limerick Ireland.
- *Drawing Planar Graphs on a Curve (Animation)*, K. Hansen, S. Wismath; Proc. of the Symposium on Computational Geometry 2005 (Video/Multi-media session), Pisa Italy, June 2005, pp. 374–375.
- *Arrangement for an Upright Bass (Animation)*; K. Hansen, S. Wismath; Graph Drawing 2004 contest entry: Honorable Mention.
See <http://www.cs.uleth.ca/~vpak/contest04> and Springer-Verlag Lecture Notes in Computer Science, Vol. 3383, pp. 514–515.
- *Graph Drawing 2003 contest entry*, 2nd place (tied). Animation and stereogram.
See <http://www.cs.uleth.ca/~vpak/contest>

Software and Technical Reports

- *GLuskap User's Manual*; B. Dyck, S. Hanlon, S. Wismath; U. of Lethbridge Technical Report CS-03-04, October 2004, pp. 1-36.
- *ArrangePak3D User's Manual*; R. Dufresne, S. Wismath; U. of Lethbridge Technical Report CS-02-04, July 2004, pp. 1-24.
- *Drawing K_n in Three Dimensions with Two Bends Per Edge*; B. Dyck, J. Joevenazzo, E. Nickle, J. Wilsdon, S. Wismath; U. of Lethbridge Tech. Report CS-01-04, Jan. 2004, pp. 2-7.
- *Straight-Line Graph Drawing in Three Dimensions*; S. Wismath; U. of Lethbridge Technical Report TR-CS-01-02, pp. 1-11, Dec. 2002 – As presented at Journées de Géométrie Algorithmique.
- *Straight Line Drawings on Restricted Integer Grids in Two and Three Dimensions*; S. Felsner, G. Liotta, S. Wismath; U. of Lethbridge Technical Report, CS-01-01, May 2001.

- *Fully Dynamic 3-Dimensional Orthogonal Graph Drawing*; M. Closson, S. Gartshore, J. Johansen, S. Wismath; U. of Lethbridge Technical Report, CS-01-99, May 1999.
- *ArrangePak, OrthoPak and VisPak 2.0*; M. Closson, H. Everett, S. Gartshore, S. Wismath; U. of Lethbridge Technical Report, CS-01-98, Aug. 1998.
- *Some Properties of Arrangement Graphs*; P. Bose, H. Everett, S.K. Wismath; U. of Lethbridge Technical Report, CS-97-1, Sept. 1997; one of these results appeared earlier as: McGill technical report CS10-96, Dec. 1996, pp. 1-10.
- *VisPak: A Package of Visibility Algorithms Written in Leda*; L. Jackson, H. Pinto, S. Wismath; U. of Lethbridge Technical Report, CS-95-1, 1995.
- *Bar-Representable Visibility Graphs and a Related Network Flow Problem*; S.K. Wismath; Ph.D. thesis, Aug. 1989.
- *Triangulations: an Algorithmic Study*; S.K. Wismath; M.Sc. thesis and Queen's University Technical Report 80-19.

Research Student Supervision:

I have successfully supervised three M.Sc. students who graduated in Spring 1996, Fall 2005 and Spring 2006. The thesis titles were: *Reconstruction of Orthogonal Polygons from Visibility Information*, *Classes of Arrangement Graphs in Three Dimensions*, and *Three Dimensional Graph Visualization*.

Since 1995, I have hired 13 undergraduate students to work in my lab. Many of these students have received NSERC USRA or Chinook awards. Their duties have included software development, creating animations, reviewing research papers, and theoretical research as appropriate.

Conferences attended:

I hosted the 14th Canadian Conference on Computational Geometry in Lethbridge August 12-14, 2002. There were 39 accepted papers and 69 attendees from 9 different countries.

- Graph Drawing: 10 (Konstanz) – program committee), 08 (Crete – Program Committee), 07(Sydney – program committee), 06(Karlsruhe), 05(Limerick – program committee), 04 (New York), 03(Perugia – program committee) 02(Irvine), 01 (Vienna), 00 (Virginia – program committee), 99 (Prague), 98 (Montreal), 97 (Rome), 96 (Berkeley), 94 (Princeton).
- European Workshop on Computational Geometry: 01 (Berlin), 98 (Barcelona), 93 (Hagen).
- ACM Symp. on Computational Geometry: 05 (Pisa), 02 (Barcelona), 00 (Hong Kong), 99 (Miami), 97 (Nice), 95 (Vancouver), 92 (Berlin), 87 (Waterloo), 85 (Baltimore).
- Canadian Conference on Computational Geometry: 10(Manitoba – program committee), 09 (Vancouver – program committee), 08 (Montréal), 07 (Carleton – program committee), 06 (Queen's), 05 (Windsor – program committee), 04 (Montréal), 03 (Halifax – program committee), 02 (Lethbridge – PC chair), 01 (Waterloo), 00 (Fredericton- program committee), 99 (Vancouver), 98 (Montréal), 97 (Queen's), 96 (Ottawa), 95 (Québec), 94 (Saskatoon – program committee), 93 (Waterloo),
- WADS: 99(Vancouver), 98 (Montréal), (Ottawa)

- ESA04 (Bergen), STOC (Victoria), STACS 93 (Wuerzburg), FOCS (Portland), SODA (Orlando, Albuquerque).
- Journées de Géométrie Algorithmique 02 (Obernai, France – invited speaker).
- ICCSA04 (Assisi, Italy – program committee), ICCSA03 (Montréal – program committee)
- 3rd Cuban Workshop on Algorithms and Data Structures 2004 (Havana).
- 3rd McGill/INRIA workshop on Comp. Geom. in Comp. Graphics, France, 2004.
- Graphs with Altitude, Denver, 2005 – invited speaker.
- Bertinoro Workshop: 2006, 2007, 2008, 2009, 2010.

Journals that I have refereed papers for:

Computational Geometry: Theory and Applications, Information Processing Letters, International J. of Computational Geometry and Applications, Algorithmica, Discrete Mathematics and Theoretical Computer Science, Discrete Applied Mathematics, J. of Graph Algorithms and Applications, Math Reviews.

Editing Duties:

Co-edited a Special Issue for the journal *Computational Geometry: Theory and Applications*. Volume 28, Issue 1 [SPECIAL ISSUE], May-2004.

Seminars given in CS Depts:

U.B.C., S.F.U., U. of Calgary, U. of Alberta, U. of Saskatchewan, Brock, McGill, UQàM, UQàTR, Smith, U. Roma, U. Perugia, Freie U. (Berlin), U. Konstanz, U. Nancy, LORIA (France), HKUST (Hong Kong).

Teaching Experience

Previous to 2003, the teaching load was 5 courses per year. Currently, the teaching load is 4 courses per year. Graduate courses and Independent Studies are taught on overload. Courses taught at the University of Lethbridge:

- CS1000 - Introduction to Computer Science
- CS1620 - Introductory Programming (in Java, previously in Pascal, Basic)
- CS2620 - Advanced Programming (in Pascal, Mod-2, C++)
- CS2600 (no longer offered) - Assembly Language (in MACRO11, VAX-11)
- CS2610 - Introduction to Digital Systems
- CS2690 (no longer offered) - Systems Programming - Unix and C
- CS3620 - Data Structures and Algorithms
- CS3625 (no longer offered) - Algorithms
- CS3630 - Formal Languages and Automata
- CS3740 - Programming Languages - emphasis on Lisp, Prolog and SmallTalk
- CS3710 - Computer Graphics
- CS3750 - Artificial Intelligence
- CS4625 - Advanced Algorithms
- M1410 - Linear Algebra

- M2460 (no longer offered) - Linear programming and game theory
- CS4850 - Topics in CS - Computational Geometry
- CS3990/2990/4990/2980/3980 - Independent/Applied Studies - over 35 in various topics
- CS5850 & CS5851 - MSc reading courses: Art Gallery Theorems, Parallel Computational Geometry, Computational Geometry, Straight-line Graph Drawing, Scientific Visualization.

Service and Committee Work

I have been a member of many committees at different levels:

- University: Admissions Standards, University Budget Committee, Graduate Council Executive, university rep to NETERA.
- School of Grad Studies: executive, MSc program committee
- Faculty: Arts & Science Executive, Committee on Liberal Education, GLER, Search and Chair Selection for various depts (Biology, Geography, New Media, etc.)
- ULFA: Executive, Economic Benefits & negotiating team, Nominating.
- Dept: Search, STP, Access Coordinator, Transfer Credit, Curriculum, Grad Program Advisory, NSERC rep, various in-house committees over many years. Acting chair (July 2005-June 2006).
- Chair, Department of Mathematics & Computer Science (July 2006–July 2009).