

John F. Hughes

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1. EDUCATION

Ph.D., Mathematics, University of California, Berkeley, 1982

Dissertation topic: “*Invariants of Bordism and Regular Homotopy of Low-dimensional Immersions.*”

Advisor: Robion C. Kirby

M.A., Mathematics, University of California, Berkeley, 1982

B.A., Mathematics, Princeton University, 1977

2. PROFESSIONAL APPOINTMENTS

| | |
|-----------|--|
| 2008- | Professor of Computer Science, Brown University |
| 1998-2008 | Associate Professor of Computer Science, Brown University |
| 1994-1998 | Assistant Professor of Computer Science, Brown University |
| 1991-1993 | Associate Professor (Research) of Computer Science and Mathematics, Brown University |
| 1989-1991 | Visiting Assistant Professor of Mathematics and Computer Science, Brown University |
| 1984-1988 | Tamarkin Assistant Professor of Mathematics, Brown University |
| 1982-1984 | Assistant Professor of Mathematics, Bryn Mawr College |

Consultancies

| | |
|---------------|---|
| 2005-2006 | Kenyon and Kenyon, NY |
| 1992-1994 | CoSA, Providence, RI |
| 1985-86, 1988 | Bay Resource Corporation, Cambridge, MA |
| 1985 | Kamine Engineering, Bayshore, NJ |
| 1985 | Stellar Computer, Newton, MA |
| 1984 | Boston Consulting Group, Boston, MA |

3. RESEARCH IN PROGRESS

Nonphotorealistic rendering and modeling: I am investigating how to relate the human visual system’s processing of drawings and other non-photorealistic imagery to methods of creating such imagery more effectively, and tools to make the modeling of “informal” 3D shapes easier.

Computational Topology: I am studying the applications of topology in graphics and visualization.

Rapid Prototyping: I am working on technology to allow very rapid printing of shapes in a “wire frame” form, even in cases where current methods fail due to exceptional geometric and topological situations.

4. PUBLICATIONS

Books and chapters

1. *Sketch-based Interfaces and Modeling*, Jorge, Joaquim and Samavati, Faramarz Famil (Eds.), to appear early 2011, Approx. 400 p., Hardcover ISBN: 978-1-84882-811-7. Chapter 9, *Inferring 3D free-form shapes from complex contour drawings*, by Olga Karpenko and John F. Hughes.
2. *Proceedings, Eurographics Workshop on Sketch-Based Interfaces and Modeling*, J. Jorge and J. Hughes, eds., EG Workshop Proceedings, ISBN 3-905673-16-9, 2004.
3. *Computer Graphics: Principles and Practice in C* (with A. van Dam, J. Foley, and S. Feiner), Addison-Wesley (1995).
4. *Introduction to Computer Graphics* (with A. van Dam, J. Foley, S. Feiner, and R. Phillips), Addison-Wesley (1994) (also in Spanish, Polish, Chinese, and French).
5. *Computer Graphics: Principles and Practice* (with A. van Dam, J. Foley, and S. Feiner), Addison- Wesley (1990) (also in German and Japanese).

Journal Articles

6. “Coloring 3D Line Fields Using Boy’s Real Projective Plane Immersion,” Cagatay Demiralp, John F. Hughes, and David H. Laidlaw, *IEEE Trans. on Visualization and Computer Graphics (Proc. Visualization ’09)*, 2009.
7. “Adaptive Smooth Surface Fitting with Manifolds” (with Cindy Grimm, Ly Phan, and Tao Ju) , *The Visual Computer*, special issue (Computer Graphics International), May 2009.
8. “Line drawings via abstracted shading” (with Y. Lee, L. Markosian, and S. Lee), Proceedings of ACM SIGGRAPH 2007, *ACM Transactions on Graphics*, 26 (3), 2007.
9. “Optical Splitting Trees for High-Precision Monocular Imaging” (with M. McGuire, W. Matusik, H. Pfister, S. Nayar, B. Chen), *IEEE Computer Graphics and Applications*, 27(2), March/April 2007, 32 – 42.
10. “A sketch-based interface for fashion design” (with Emmanuel Turquin, Jamie Wither, Laurence Boissieux, and Marie-Paule Cani), *IEEE Computer Graphics and Applications*, 27 (1), January/February, 2007, 72 – 81.
11. “SmoothSketch: 3D Free-Form Shapes from Complex Sketches,” (with Olga Karpenko), Proceedings of ACM SIGGRAPH 2006, *ACM Transactions on Graphics*, 25 (3), 2006, 589 – 598.
12. “Defocus Video Matting.” (with Morgan McGuire, Wojciech Matusik, Hanspeter Pfister, and Frédo Durand), Proceedings of ACM SIGGRAPH 2005, *ACM Transactions on Graphics*, 24 (3), 567 – 576.
13. “As-Rigid-As-Possible Shape Manipulation,” (with Takeo Igarashi and Tomer Moscovich), Proceedings of ACM SIGGRAPH 2005, *ACM Transactions on Graphics*, 24 (3), 1134 – 1141.
14. “WYSIWYG NPR: Drawing Strokes Directly on 3D Models” (with Robert D. Kalnins, Lee Markosian, Barbara J. Meier, Michael A. Kowalski, Joseph C. Lee, Philip L. Davidson, Matthew Webb, Adam Finkelstein), Proceedings of ACM SIGGRAPH 2002, *ACM Transactions on Graphics* , 21 (3), 755 – 762.
15. “Efficiently Building a Matrix to Rotate One Vector to Another” (with Tomas Möller), *Journal of Graphics Tools*, 4(4), 1999, 1 – 4.
16. “Building an Orthonormal Basis from a Unit Vector” (with Tomas Möller), *Journal of Graphics Tools*, 4(4), 1999, 33 – 36.
17. “Bordism and Regular Homotopy of Low-Dimensional Immersions,” *Pacific Journal of Mathematics*, 156(1), 1992, 155 – 184.
18. “On the Number of Multiplicative Partitions” (with J. Shallit), *American Mathematical Monthly*, 90(7), 1983.
19. “Immersion of Surfaces in 3-Manifolds” (with J. Hass), *Topology*, 24(1), 1985, 97 – 112.
20. “Another Proof that Every Eversion of the Sphere has a Quadruple Point,” *American Journal of Mathematics*, 1985, 501 – 505.
21. “The Smale Invariant of a Knot” (with P. Melvin), *Comm. Math. Helv.*, 60, 1985.
22. “Triple Points of Immersed $2n$ -Manifolds in $3n$ -Space,” *Oxford Q.J.M.* (2), 34, 1983.

Peer-Reviewed Conference Articles (SIGGRAPH before 2002)

1. “Art-Based Rendering of Fur, Grass, and Trees” (with Michael A. Kowalski, Lee Markosian, J. D. Northrup, Lubomir Bourdev, Ronen Barzel, and Loring S. Holden), *Proceedings of SIGGRAPH 99*, Computer Graphics Proceedings, Annual Conference Series, 433 – 438.
2. “Skin: A Constructive Approach to Modeling Free-form Shapes” (with Lee Markosian, Jonathan M. Cohen, and Thomas Crulli), *Proceedings of SIGGRAPH 99*, *Computer Graphics Proceedings, Annual Conference Series*, 393 – 400.
3. “Multiperspective Panoramas for Cel Animation” (with D. Wood, A. Finkelstein, C. Thayer, and D. Salesin), *Computer Graphics Proceedings, Annual Conference Series*, 1997, ACM SIGGRAPH, New York, 1997, 243 – 250.
4. “Real-Time Nonphotorealistic Rendering” (with L. Markosian, M. Kowalski, S. Trychin, L. Bourdev, and D. Goldstein), *Computer Graphics Proceedings, Annual Conference Series*, 1997, ACM SIGGRAPH, New York, 1997, 415 – 420.
5. “Orientable Textures for Image-Based Pen-and-Ink Illustration” (with M. Salisbury, M. Wong, and D. Salesin), *Computer Graphics Proceedings, Annual Conference Series*, 1997, ACM SIGGRAPH, New York, 1997, 401 – 406.
6. “SKETCH: An Interface for Sketching 3D Scenes” (with R. Zeleznik and K. Herndon), *Computer Graphics Proceedings, Annual Conference Series*, 1996, ACM SIGGRAPH, New York, 1996, 163 – 170.
7. “Modeling Surfaces of Arbitrary Topology” (with Cindy Grimm), *Computer Graphics Proceedings, Annual Conference Series*, 1995, ACM SIGGRAPH, New York, 1995, 359 – 368.
8. “Autocalibration for Virtual Environment Tracking Hardware” (with S. Gottschalk), *Computer Graphics Proceedings, Annual Conference Series*, 1993, ACM SIGGRAPH, New York, 1993, 65 – 72.
9. “An Interactive Toolkit for Constructing 3D Widgets” (with R. Zeleznik, K. Herndon, D. Robbins, N. Huang, T. Meyer, and N. Parker), *Computer Graphics Proceedings, Annual Conference Series*, 1993, ACM SIGGRAPH, New York, 1993, 81 – 84.
10. “Direct Manipulation of Free-Form Deformations” (with W. Hsu), *Computer Graphics*, 26(4), *SIGGRAPH Proceedings*, August 1992, 177 – 184.
11. “Scheduled Fourier Volume Morphing,” *Computer Graphics*, 26(4), *SIGGRAPH Proceedings*, August, 1992, 43 – 46.
12. “Smooth Interpolation of Orientations with Angular Velocity Constraints Using Quaternions” (with A. Barr, B. Currin and S. Gabriel), *Computer Graphics*, 26(4), *SIGGRAPH Proceedings*, August, 1992, 313 – 320.
13. “An Object-Oriented Framework for the Integration of Interactive Animation Techniques” (with R. Zeleznik, D. Conner, M. Wloka, D. Aliaga, N. Huang, P. Hubbard, B. Knep, H. Kaufman and A. van Dam), *Computer Graphics*, 25(4), *SIGGRAPH Proceedings*, July, 1991, 101 – 112.
14. “Sculpting: An Interactive Volumetric Modeling Technique” (with T. Galyean), *Computer Graphics*, 25(4), *SIGGRAPH Proceedings*, July, 1991, 267 – 274.
15. “Constructive Solid Geometry for Polyhedral Objects” (with D. Laidlaw and W. Trumbore), *Computer Graphics*, 20(4), *SIGGRAPH Proceedings*, August, 1986, 161 – 170.

Other Peer Reviewed Conference Articles

16. “Approximate Depth of Field Effects Using Few Samples per Pixel,” (with Kefei Lei), *2013 ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games*, 2013, (to appear).
17. “Indirect Mappings of Multi-touch Input Using One and Two Hands,” (with Tomer Moscovich), *Proceedings of CHI 2008*. Florence, Italy, April 2008.
18. “Multi-finger Cursor Techniques,” (with Tomer Moscovich), in *Graphics Interface Proceedings 2006*, Stephen Mann and Carl Gutwin (Editors), AK Peters, Boston, 2006, 1 – 7.
19. “Spatial Keyframing for Performance-driven Animation” (with Takeo Igarashi and Tomer Moscovich), *2005 ACM SIGGRAPH/Eurographics Symposium on Computer Animation*, 2005, 107 – 115.
20. “Sketching garments for virtual characters” (with M-P Cani and Emmanuel Turquin), in *Eurographics Workshop on Sketch-Based Interfaces and Modeling*, J. Jorge and J. Hughes, eds., August, 2004.
21. “Epipolar Methods for Multi-view sketching” (with Olga Karpenko and Ramesh Raskar), in *Eurographics Workshop on Sketch-Based Interfaces and Modeling*, J. Jorge and J. Hughes, eds., August, 2004.

22. Hardware Determined Edge Features. *Proceedings of the Non-Photorealistic Animation and Rendering 2004 (NPAR '04)*, Annecy, France, June 7-9, 2004, 135 – 147.
23. “Parameterizing n-holed Tori Using Hyperbolic Geometry,” with Cindy Grimm, 10th IMA Conference on the Mathematics of Surfaces, University of Leeds, UK; *Lecture Notes in Computer Science*, Volume 2768/2003, “*Mathematics of Surfaces*”, Springer Berlin/Heidelberg, 2003.
24. “Clothing Manipulation,” (with Takeo Igarashi) *15th Annual Symposium on User Interface Software and Technology, ACM UIST'02*, Paris, France, October 27-30, 2002, 91 – 100. (Best Paper)
25. “Programming Languages for Compressing Graphics,” (with Morgan McGuire, and Shriram Krishnamurthi), *Lecture Notes in Computer Science*, Springer-Verlag Heidelberg, ISSN:0302-9743, Volume 2305 / 2002, 68 – 82.
26. “Free-form Sketching with Variational Implicit Surfaces” (with O. Karpenko, R. Raskar), *Proceedings of Computer Graphics Forum*. 21 (3), 2002, 585 – 594.
27. “A Suggestive Interface for 3D Drawing,” (with Takeo Igarashi) *14th Annual Symposium on User Interface Software and Technology, ACM UIST'01*, Orlando, Florida, November 11-14, 2001, 173 – 181.
28. “Voice as Sound: Using Non-verbal Voice Input for Interactive Control,” (with Takeo Igarashi) *14th Annual Symposium on User Interface Software and Technology, ACM UIST'01*, Orlando, Florida, November 11-14, 2001, 155 – 156.
29. “User-Guided Composition Effects For Art-Based Rendering,” (with Michael A. Kowalski, Cynthia Beth Rubin, Jun Ohya), *2001 ACM Symposium on Interactive 3D Graphics*, 2001, 99 – 102.
30. “Harold: A World Made of Drawings,” (with Jonathan Cohen, and Robert Zeleznik, *Proceedings of NPAR 2000*, 2000, 83 – 89.
31. “Art-Based Rendering with Continuous Levels of Detail,” (with Lee Markosian, Barbara Meier, Michael Kowalski, Loring Holden, and J.D. Northrup), *Proceedings of NPAR 2000*, 2000, 59 – 65.
32. “An Interface for Sketching 3D curves” (with Jonathan Cohen, Lee Markosian, Robert Zeleznik, and Ronen Barzel), *Proceedings of the 1999 Symposium on Interactive 3D Graphics*, April 26 - 29, 1999, Atlanta, 17 – 21.
33. “Rapid Approximate Silhouette Rendering of Implicit Surfaces” (with D. Bremer), *Proc. of Implicit Surfaces '98*, a Eurographics/ACM SIGGRAPH workshop, held at Univ. of Washington, Seattle, 1998, 155 – 164.
34. “Collision Detection in Aspect and Scale Bounded Polyhedra” (with S. Suri and P. M. Hubbard), *Proc. 9th ACM-SIAM Annual Symp. on Discrete Algorithms (SODA 98)*.
35. “Developing an Interactive Illustration: Using Java and the Web to Make it All Worthwhile” (with J. Beall and A. Doppelt), 1996; in *The Internet in 3D: Information, Images, and Interaction*,” R. Earnshaw and J. Vince, eds., Academic Press, London, 1997, 55 – 63.
36. “Plausible Motion Simulation for Computer Animation” (with R. Barzel and D. Wood), in *Computer Animation and Simulation '96*, R. Boulic and G. Hegron, eds., Springer, New York, 1996, 183 – 195.
37. “Visual Interfaces for Solids Modeling” (with C. Grimm, D. Pugmire, M. Bloomenthal and E. Cohen), *UIST 95, Proceedings of the 1995 UIST*, November, 1995.
38. “Smooth Isosurface Approximation” (with Cindy Grimm) in *Eurographics Workshop on Implicit Surfaces*, Brian Wyvill and Marie-Paule Gascuel, eds., April, 1995, 57 – 77.
39. “Nonpolygonal Isosurface Rendering for Large Volume Datasets” (with James W. Durkin), *IEEE Visualization'94 Conference*, Tysons Corner, Virginia, 1994.
40. “An Annotation System for 3D Fluid Flow Visualization” (with Maria M. Loughlin), *IEEE Visualization '94 Conference*, Tysons Corner, Virginia, 1994.
41. “Volume Warping” (with T. True), *Proceedings, Visualization '92*, 1992.

Other

42. “Cycles of White Matter,” (with C. Demiralp and D. H. Laidlaw), presented at Dagstuhl, 2011, and in preparation for journal publication.

43. Using Boy's Real Projective Plane Immersion for Coloring DT-MRI Slices," (with C. Demiralp and D. H. Laidlaw), ISMRM 2008 (oral).
44. "Implementation Details of SmoothSketch: 3D Free-Form Shapes from Complex Sketches," (with Olga Karpenko), sketch as SIGGRAPH 2006.
45. "Inferring 3D Free-Form Shapes from Contour Drawings" (with Olga Karpenko), sketch at SIGGRAPH 2005.
46. "A Configurable, Single-Axis, Multi-Parameter Lens Camera," (with Morgan McGuire, Wojciech Matusik, Hanspeter Pfister, Frédo Durand, and Shree Nayar, Poster at Symposium on Computational Photography and Video, May 2005.
47. "Fast, practical and robust shadows," (with Morgan McGuire, Kevin Egan, Mark Kilgard, and Cass Everitt); Brown Univ. tech report, and posted on the nVidia website for developers.
48. "Differential Geometry of Implicit Surfaces, a Primer" Brown University Technical Report, Feb. 2003.

Book Reviews

49. "Oriented Projective Geometry: A Framework for Geometric Computation, by Jorge Stolfi," *SIAM Review*, 35(2), May, June 1993, 321 – 323.

Invited Lectures

- 2004
 - "Expressive Rendering: A look ahead," at Cartoon Future, Future of the 3D in the Animation Industry, La Coruña, Spain, April 2004.
 - "Polyhedral topology and geometry rediscovered", Max-Planck Institute, Saarbruecken, and ETH Zurich, June, 2004.
- 2003
 - "What can Computer Science Do For Archaeology (and vice versa)?", at ARCHAEO project final meeting, INRIA Sophia-Antipolis, December, 2003.
- 2001
 - Art, Perception, and Computer Graphics*, in two Distinguished Lecture Series at Princeton and Univ. of Wisconsin
- 2000
 - Probability and Computer Graphics*, Colloquium, iMAGIS, Grenoble.
- 1999
 - Whither Implicit Surfaces?* ACM/Eurographics Conference Implicit Surfaces 99. Keynote Talk.
- 1998
 - How Can Computational Geometry Matter To Computer Graphics?*, 3rd CGC Workshop On Computational Geometry. Invited Talk.
- 1996
 - User Interfaces for Steady Flow Visualization*, Institute for Computer Applications in Science and Engineering, NASA Langley Research, VA
 - Effective Interactive Illustrations*, University of Washington, Colloquium; invited talk at Microsoft.
 - Sketching: Past, Present, and Future*. Purdue University, Colloquium; Univ. of Southern California, Seminar; Stanford University, Graphics Seminar; Stanford University, HCI class; University of California, Berkeley, invited talk in Animation Class; Interval Research Colloquium.
 - How Can Hybrid Systems Serve Computer Graphics: A User's View*, 2nd Annual Hybrid Systems Conference, Ithaca, NY. Invited talk.
- 1995
 - Smoothing Singular Subdivision Surfaces*, University of Washington
 - Frontiers of Visualization*, Keynote address in workshop on visualization, at Conference on Visualization Technology to Find and Develop More Oil and Gas, sponsored by American Association of Petroleum Geologists.
 - The Limitations of Generality: Lessons for VRML from the Graphics and Visualization Center*, VRML 95, The First Annual Symposium on the Virtual Reality Modeling Language.
- 1994
 - Three Problems at the Mathematics/Graphics Interface*, Cornell University
- 1993
 - Computer Graphics and Scientific Visualization*, Brown University Early Identification Program (for underrepresented groups in academia)

- 1992 *Graphics Without Polygons*, SUNY Stonybrook, Columbia University, Brown University.
Randomness in Computer Simulations of Rigid Bodies, Holy Cross College, Worcester, MA.
Computer Graphics in Mathematics Education, Panel at SIGGRAPH '92.
Using Math to Make Things Move, or Why You Can't Juggle on a Windy Day, CS Departmental Undergraduate Group, Brown University.
Benefits and Pitfalls of Scientific Visualization, RI Chapter of Sigma Xi.
- 1991 *The Mathematics of 3D Computer-Based Sculpting*, Mathematics Association of America, NE Regional Meeting.
- 1989 *Polyhedral Models, Polynomial Models, and Fourier Analysis*, American Mathematical Society, Chairman's Conference, Washington, DC.
- 1988 *Polynomial Models for Smooth Immersions*, New York ACM SIGGRAPH
- 1986 *Software for Teaching Mathematics*, NERCOM.
- 1985 *Multiple points of immersions and the squares-in-circles theorem*, Bryn Mawr College, Drexel University.

Images

1. M. McGuire and J. Hughes, "Robot" and "Teapot," Proceedings of NPAR 2004, back cover.
2. Michael A. Kowalski, Lee Markosian, J. D. Northrup, Lubomir Bourdev, Ronen Barzel, and Loring S. Holden, "Truffula Scene," *Computer Graphics* Proceedings, Annual Conference Series, 1999, ACM SIGGRAPH, New York, 1999, front cover.
3. M. Salisbury, M. Wong, J. Hughes and D. Salesin, "Books," *Computer Graphics* Proceedings, Annual Conference Series, 1997, ACM SIGGRAPH, New York, 1997, front cover.
4. T. Galyean and J. Hughes, "Sculpted Thinker and Tree," *SuperASCII Magazine*, 2(10), October, 1991.
5. "Center Stage of Polynomial Sphere Eversion," *Science News*, 135(19), May, 1989, cover image. A second image is the header for an article by Ivars Peterson about work done (independently) by Bernard Morin and J. Hughes.

5. SERVICE

To the University

- 2016 Promotion committee for Gabriel Taubin (Brown U., Engineering)
- 2013 - Brown Faculty Mentoring Program; chair of Faculty Search in CS
- 2010 Promotion committee for Gabriel Taubin (Brown U., Engineering)
- 2009 Chair of Diversity working group for department self-evaluation
- 2008-2009 Chair of faculty search
- 2008- Advisor for Math/Computer Science concentration
- 2007- Department Curriculum Committee
- 2007-2008 Director of Industrial Partners Program in CS
- 2005-2007 Chair of graphics subcommittee for faculty search
- 2004-2006 Co-director of Industrial Partners Program in CS
- 2006 Dept. Development of new service course in Matlab (CS004-2)
- 2006 Programming Comprehensive Exam Committee
- 1984-2004 Primary advisor for Mathematics/Computer Science concentration.
- 1992-2003 Primary advisor for Applied Mathematics/Computer Science concentration

2002-2003 Chair, David Laidlaw's tenure review

1998-2003 Departmental Representative for Graduate Affairs

1998-1999 Organizer of Symposium in honor of Andy van Dam's 60th birthday

1997 Organized 20th IPP Symposium for C.S. Department

1995-1997 Committee to Oversee the Brown Special Studies Office

1993-1997 Committee on Prizes and Premiums

1994 Committee on Evaluating the Brown Learning Community

1992-1994 Advisor to Computer Science ACM Student Chapter

1993- Resource Faculty for Mellon Minority Fellows Program

1993 Sponsor of Summer Intern, Brown EIP program

To the Profession

2018 Search committee for new Editor in Chief of ACM Transactions on Graphics

2016-2019 Program committee, Expression 2016 – 2019.

2018 Search committee for new Editor in Chief of ACM Transactions on Graphics

2013 Reviewer for Korean-Swiss Science and Technology Program.

2011 External review committee for The Robotics Institute at Carnegie Mellon University.

2009-2010 Papers advisory board, SIGGRAPH Asia 2010, and member of technical papers committee.

2009, 2010 Program Committee, NPAR 2009, 2010

2008 Papers advisory board, SIGGRAPH Asia 2008

2008 Technical papers committee, SIGGRAPH Asia 2008

2008- Chair, ACM SIGGRAPH technical awards committee

2006-2018 Member, Papers Advisory Group, ACM SIGGRAPH.

2006-2009 Editorial Board, *Computers and Graphics*.

1982- Reviewing for *ACM Transactions on Graphics*, *IEEE Computer Graphics and Applications*, *InfoSciences*, *SIGGRAPH*, and *Computer Vision, Graphics and Image Processing*.

2005-2006 Program Committee, 2006 ACM SIGGRAPH Symposium on Interactive 3D Graphics & Games;
Program Committee, NPAR 2006.
Evaluation committee for INRIA on international collaboration programs.

2004-2005 Papers Committee Member, 2005 ACM SIGGRAPH Symposium on Interactive 3D Graphics & Games.
Papers Committee Member, SIGGRAPH '05, Los Angeles, CA.
Papers Advisory Board, SIGGRAPH '05.
Program Committee, Eurographics Workshop on Sketch-based Modeling and Interfaces, August 2005, Dublin, Ireland
Program Committee, 2005 ACM SIGGRAPH Symposium on Interactive 3D Graphics & Games

1995-2005 Associate Editor, Journal of Graphics Tools

2004 Review of teaching structures/practice at ENSIMAG, a university in Grenoble, France affiliated with INRIA.

Co-organizer of Eurographics Workshop on Sketch-based Modeling and Interfaces, August 2004, Grenoble, France.

2000-2002 Papers chair for SIGGRAPH '02, San Antonio, TX

2000-2001 Program Committee, SIGGRAPH '01, Los Angeles, CA
 Program Committee, NPAR 2000, Annecy France
 Papers co-chair for the ACM 2001 Symposium on Interactive 3D Graphics

1999-2000 Program Committee, SIGGRAPH '00, New Orleans, LA

1998-1999 Co-chair, Implicit Surfaces '99, joint ACM/Eurographics conference in Bordeaux, France.
 Program Committee, Symposium on Interactive 3D Graphics, Atlanta, GA.
 Program Committee, 1st Annual Conference on Non-Photorealistic Animation and Rendering, Annecy, France

1998 Program Committee, ACM/SIGGRAPH Symposium on Interactive 3D Graphics (I3D)

1997-1998 Reviewing, Graphics Interface '98.
 Program Committee, Implicit Surfaces '98, Seattle, WA.

1997-1998 Program Committee, SIGGRAPH '98, Orlando, FL (August)

1997 Program Committee, SIGGRAPH '97, Los Angeles, CA (August)

1993-1997 Associate Editor, *ACM Transactions on Graphics*

1995 Program Committee, SIGGRAPH '95, Los Angeles, California (July)

1994 Program Committee, SIGGRAPH '94, Orlando, Florida (July)

1993 Program Committee, SIGGRAPH '93, Anaheim, California (August)

1993 Reviewing for OOPSLA '93

6. ACADEMIC HONORS, RESEARCH GRANTS, FELLOWSHIPS AND HONORARY SOCIETIES

Research Grants

| | | |
|-----------|-----------|---|
| 2000- | Pixar | Gift (\$20,000 each year) in support of research in computer graphics. |
| 2008-2013 | NSF | "CPATH CB: Applied Computer Science for the Humanities and Social Sciences," (\$499,999). Co-PI with Steve Reiss, Shriram Krishnamurthi, and Tom Doepfner. |
| 1991-2003 | NSF/DARPA | "Science and Technology Center in Computer Graphics and Scientific Visualization," with CalTech, Cornell, University of North Carolina and University of Utah, \$14,600,000 with partial funding from DARPA and matching equipment and cash contributions from industry. (Co-PI with Donald P. Greenberg, Richard Riesenfeld, Henry Fuchs, Alan Barr, Andries van Dam, Frederick Brooks, and Elaine Cohen.) |
| 1999-2002 | Microsoft | "Research on Computer Graphics" (with A. van Dam, N. Pollard, and D. Laidlaw) \$100,000 |
| 1999-2001 | NSF | "Research on Image-Based Rendering" (Co-PI with Cindy Grimm (Brown Postdoc) and Steven Gortler (Harvard)) |
| 1991-1997 | DARPA/ONR | "High-Performance Design Environments," \$2,697,175. (Co-PI with Brown Computer Science Faculty) |
| 1991-1993 | Sun | "Collaborative Research on 4D Modeling," \$200,000. (Co-PI with Andries van Dam) |
| 1991-1993 | IBM | "A Framework for an Object-Oriented Time-Parameterized Modeling and Animation Platform," \$360,000. (Co-PI with Andries van Dam) |
| 1991-1992 | Sun | "Collaborative Research on 4D Modeling," \$100,000. (Co-PI with Andries van Dam) |

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| 1989-1992 | NCR | Computer Graphics Group Affiliate, \$300,000. (Co-PI with Andries van Dam) |
| 1990-1991 | IBM | “4D Modeling,” \$50,000. (Co-PI with Andries van Dam) |
| 1990-1991 | Sun | “Collaborative Research on 4D Modeling,” \$100,000. (Co-PI with Andries van Dam) |
| 1990 | IBM | “Demonstration of Animation,” \$25,000. (Co-PI with Andries van Dam) |
| 1989 | NCR | “Cooperative Research and Development,” \$75,000. (Co-PI with Andries van Dam) |
| 1988 | NCR | “Interactive User-Controlled Animation,” \$40,000. (Co-PI with Andries van Dam) |

Patents

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| 2005 | Applied for patent on Defocus Video Matting work with MERL; Priority date Mar 29, 2005 , patent number 7,599,555. |
| 2002 | "Free-Form Modeling of Objects with Variational Implicit Surfaces", (with Olga Karpenko and Ramesh Raskar of MERL) (allowed June 2, 2004, granted Tuesday September 21, 2004, patent number 6,795,069) |

Awards

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| 2002 | UIST | Best Paper Award |
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Societies

Currently or former member of the Association for Computing Machinery, ACM SIGGRAPH, Canadian Computer-Human Communications Society, IEEE (senior member). Previously elected to Sigma Xi.

7. TEACHING (SINCE 1994)

| | |
|-----------|---|
| 2015 | Integrated Introduction to Computer Science (CS0170). |
| 2012-2015 | Computational Topology (CS195-H) |
| 2015 | Introduction to Computation for the Social Sciences and Humanities (CS0931) [Overload] |
| 2011-2012 | Introduction to Computation for the Social Sciences and Humanities (CS0931) [Overload, during sabbatical] |
| 2010-2011 | Computational Topology (CS195-H) Interactive Computer Graphics (CS224) |
| 2009-2010 | Introduction to Computation for the Social Sciences and Humanities (CS0931) [Overload] |
| 2008-2010 | Data Structures and Algorithms (CS016) Interactive Computer Graphics (CS224) |
| 2007-2008 | Data Structures and Algorithms (CS016) Interactive Computer Graphics (CS224) |
| 2006-2007 | Data Structures and Algorithms (CS016) Introduction to Scientific Computing and Problem Solving in Matlab (CS004) |
| 2005-2006 | Integrated Introduction to Computer Science (CS017) Interactive Computer Graphics (CS224) Introduction to Scientific Computing and Problem Solving in Matlab (CS004-2) [Overload] |
| 2004-2005 | Integrated Introduction to Computer Science (CS017) Interactive Computer Graphics (CS224) |
| 2002-2003 | Integrated Introduction to Computer Science (CS017) |

Interactive Computer Graphics (CS224)

2001-2002 Integrated Introduction to Computer Science (CS017)
Integrated Introduction to Computer Science (CS018)
Interactive Computer Graphics (CS224) [Overload]

2000-2001 Integrated Introduction to Computer Science (CS017)
Interactive Computer Graphics (CS224) [Overload]

1999-2000 Interactive Computer Graphics (CS224)
Integrated Introduction to Computer Science (CS018)

1998-1999 Discrete Mathematics (CS022)
Interactive Computer Graphics (CS224)

1997 Discrete Mathematics (CS022)
Interactive Computer Graphics (CS224)
SIGGRAPH Review Seminar (CS295-1) [Overload]

1995-1996 Advanced Topics in Graphics (CS295X)

1994-1995 Interactive Computer Graphics (CS224)
Software Engineering (CS032)
Independent Study and UTRA with Samuel Trychin on *Simulation of Highly Viscous Fluid Flow for Animation*

Theses Directed

2010 Milagro Feijoo, Sc.M., *Improving Mobile Geo/Maps Apps with Expressive Rendering*, Patrick Doran, *Expressive Rendering with Watercolor*.

2006-2007 Tomer Moscovich, *Principles and Applications of Multi-touch Interaction*, Ph.D. defended 15 December 2006; Olga Karpenko, *Algorithms and Interfaces for Sketch-Based 3D Modeling*, Ph.D. defended May 2007.

2005 Andrea Fein, Sc.M., Disney Curves, Morgan McGuire, Ph.D., *Computational Videography with a Single Axis, Multi-Parameter Lens Camera* (dissertation defense August 2005, degree May 2006).

2004 Emmanuel Turquin, DEA (like U.S. M.Sc. degree), *Sketching garments for virtual characters*, co-advised with Marie-Paule Cani of INRIA, Grenoble.

2002 Steven Dollins, Ph.D., *Modeling for the Plausible Emulation of Large Worlds*

2000-2001 Andrew Reiff, Sc.M.

1999-2000 Lee Markosian, Ph.D., *Art-Based Modeling and Rendering for Computer Graphics*. J. Ho, Sc.M.

1998-1999 D. Guo, M. Kowalski, J. Stewart, J. White, D. Bhuphaibool, C. Dahloff – Sc.M.s granted

1997-1998 Z. Atanassova, D. Bremer, M. Ayers, L. Bourdev – Sc.M.s granted.

1996-1997 J. Beall, B. Chin, C. Luo, K. Drew, P. Lewis – Sc.M.s granted.

1996 Cindy Grimm, Ph.D., *Modeling Surfaces of Arbitrary Topology and Continuity*

1994 Philip Hubbard, Ph.D., *Collision Detection for Interactive Graphics Applications*

1993-1994 5 Sc.M. students (M. Laughlin, M. Corkum, H. Mamaysky, N. Thatte-Potter, M. Stevens)

1984-1992 5 Sc.M. theses (T. Galyean, P. Granger, W. Hsu, T. True, J. Durkin)

Thesis Committees

| | |
|-----------|---|
| 2017 | Rebecca Pankow (research comps committee, Brown) |
| 2013 | James McCrae (Ph.D. committee, University of Toronto) |
| 2011 | Loic Barthe (Habilitation à Diriger des Recherches, Univ. of Toulouse, France) |
| 2009 | Cagatay Demiralp (Brown University), James McCann (CMU), Jadrian Miles (Brown University) |
| 2008 | Joelle Thollot (Habilitation à Diriger des Recherches, INPG , Grenoble), Jamie Wither (Ph..D., UJF Grenoble and INRIA Rhone-Alpes) |
| 2007 | Andrew Nealen (T.U. Berlin) |
| 2006-2007 | Song Zhang (Brown University), Daniel Keefe (Brown University), Leon Sigal (Brown University), Stefan Roth (Brown University), Daniel Acevedo-Feliz (Brown University), Frank Wood (Brown University), Liz Marai (Brown University) |
| 2006 | Pascal Barla (Ph.D., INPG, Grenoble, France) |
| 2005 | Joseph LaViola (Brown University) |
| 2004 | David Johnson (Univ. of Utah), Jean Combaz (INRIA Grenoble) |
| 2004 | DEA (like US M.Sc. degree) reader for Emmanuel Turquin, Thomas Schneider, and Mathieu Coquerelle, INRIA, Grenoble, France, 2004. Jean Combaz, Ph.D., INRIA, Grenoble, France, 2004. |
| 2000 | Dongbai Guo (Brown Engineering) |
| 1998 | T.M. Murali (Duke/Brown) |
| 1995 | James Arvo, Yale University (outside examiner) |
| 1989 | Anne Verroust, Universite d'Orsay (outside examiner) |

Date of Preparation of this CV

Jan. 2019