Curriculum Vitæ

John C. Hart

Director
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Professor
Siebel School of Computing and Data Science
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ꕥ Experience ꕥ

Education

- **Ph.D.** Electrical Engineering and Computer Science Dept., University of Illinois at Chicago, 1991. Thesis title: ``Computer Display of Linear Fractal Surfaces." Advisor: Thomas A. DeFanti.
- **M.S.** EECS Dept., University of Illinois at Chicago, 1989. Thesis title: ``Image Space Algorithms for Visualizing Quaternion Julia Sets." Advisor: Thomas A. DeFanti.
- **B.S.** College of Liberal Arts and Science, Aurora University, 1987. Major: Computer Science.

Academic Positions

- **Director, Office of Professional Education**, University of Illinois at Urbana-Champaign, 2021-.
- **Director of Online Programs**, Dept. of Computer Science, UIUC, 2018-2021.
- **Director**, Master of Computer Science in Data Science program, UIUC CS, 2016-2017.
- **Executive Associate Dean.** Graduate College, UIUC, 2015-2021.
- **Associate Dean.** Graduate College, UIUC, 2014-2015.
- **Director for Graduate Studies.** UIUC CS, 2013.
- **Full Professor**. UIUC CS, 2006-.
- **Area Chair**, Graphics, Visualization and Human-Computer Interaction, UIUC CS, 2004-2011.
- **Associate Professor**. UIUC CS, 2000-2006.
- **Associate Professor**. School of Electrical Engineering and Computer Science, Washington State University, 1998-2000.
- **Assistant Professor.** School of EECS, Washington State University, 1992-1998.
- **Postdoctoral Research Associate.** Electronic Visualization Laboratory, University of Illinois at Chicago, and National Center for Supercomputing Applications, University of Illinois at Urbana-Champaign, 1991-1992.

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- **Research Assistant.** Electronic Visualization Laboratory, Electrical Engineering and Computer Science Dept., University of Illinois at Chicago, 1988-1991.
- **Teaching Assistant.** Analog & digital circuit design courses, EECS Dept. University of Illinois at Chicago, 1987-1988.

Awards and Honors

- **The Excellence in Online & Distance Teaching Award**. UIUC, 2021.
- **Fellow.** Academic Leadership Program, Big Ten Academic Alliance, 2016-2017.
- **Outstanding Advisor.** College of Engineering, 2010 and 2015.
- **Winner.** 2004 Fantasy Graphics League.
- **Champion.** SIGGRAPH Bowl II, SIGGRAPH 94. Captain of the EVL Alumni Team.
- **First Runner-Up.** Truevision Videographics Competition, SIGGRAPH 90.
- **Graduate Fellowship.** Graduate College, University of Illinois at Chicago, 1990-1991.

Industry Consulting

- **Intrinsic Medical Imaging LLC**, Bloomfield Hills, MI. Consultant, 2012-13. Mesh construction and simulation of coronary arterial blood flow.
- **Pratt & Whitney**, Hartford, CT. Consultant, 2011. Flux estimation in a lensed system.
- **Science Applications International Corp. (SAIC),** Champaign, IL. Consultant, 2008. Ray-NURBS intersection.
- **Adobe Systems, Inc.,** Seattle, WA. Visiting Researcher, 2007. Project: Rendering meshed objects as stylized vector art.
- **The Teaching Company,** Chantilly, VA. Consultant, 2003. Produced custom educational video elements on the platonic solids.
- **Evans & Sutherland Computer Corp.,** Salt Lake City, Utah. Consultant, 1999-2000. Project: Design of the Evans & Sutherland Multi-Texturing Language.
- **Blue Sky | VIFX, Inc.,** Culver City, California. Consultant, 1998. Project: development of a custom software plug-in for the Houdini procedural animation package to polygonize a feature film villain modeled as a complex implicit surface.
- **Evans & Sutherland Computer Corp.,** (group formerly known as Silicon Reality, Inc.) Federal Way, Washington. Consultant, 1997-8. Project: design of graphics hardware to support antialiased procedural solid texturing.
- **Kleiser-Walczak Construction Company (a visual effects production company).** Lennox, Massachussetts. Consultant, 1992-1993. Project: development of a new fractal-based video transition effect for an attraction at the Luxor Hotel, Las Vegas.
- **AT&T Pixel Machines.** AT&T Bell Laboratories, Holmdel, New Jersey. Summer Intern, 1990.
- **IBM T.J. Watson Research Center.** Hawthorne, New York. Summer Intern, 1989.

Expert Testimony

(Only includes disclosed engagements.)

- **VusionGroup SES Imagotag**, IPR 2024-00118 on Patent 11,405,669. Retained by Perkins Coie. July, 2024 – ongoing. Authored expert decl.
- **Advanced Micro Devices (AMD)** v.RealTek, TCL. US International Trade Commission Case #337-TA-1318. Retained by Mintz, Levin, Cohn, Ferris, Glovsky and Popeo PC. Testified at Markman Hearing 9/6/22. Deposed Jan. 2023. Testified Mar. 2023. Authored declarations for IPRs 2023-00564 and 2023-00687. Deposed Apr. 4th & 5th, 2023.
- **LG Electronics, Inc.** v. TCL. US District Court, Eastern District of Texas, Marshall Division. C.A. No. 2:22-cv-122-JRG. Retained by Baker Botts, LLP. Authored expert decl. on claim construction, 4/18/23. Settled.
- **Interactive Graphics Solutions** v. Microsoft, US District Court, Western District of Washington, C.A. No. 2:2022cv00554. Retained by Nelson Bumgardner Conroy. Oct. 2021 – Aug. 2022. Authored declaration in support of claim construction.
- **Stratos Audio**, IPR's and trials regarding Patents 8,200,203, 8,688,028 and 8,903,307. Retained by White & Case LLP. Dec. 2021 – July 2022.. Deposed 3/31/22, 7/8/22, 7/12/22 and 7/20/22.
- **Intellectual Pixels,** Inter Partes Review for Patent 10,681,109. Retained by Armond Wilson. Jul. 2021 – June 2022. Authored declaration. Deposed 6 Nov. 2021.
- **Infernal Technologies** v. Sony Interactive Entertainment, US District Court, Eastern District of Texas Marshall Division, C.A. No. 2:19-cv-248-JRG. Retained by Beuther, Joe & Counselors. Authored expert reports on infringement (Aug. 2020) and validity (Sep. 2020). Testified in jury trial Oct. 2021.
- **Intellectual Pixels,** Inter Partes Review for Patent 8,667,093. Retained by Armond Wilson. Mar. 2021 – June 2022. Authored declaration. Deposed 18 June 2021.
- **CorePhotonics**, Inter Partes Reviews for Patents 10,225,479 and 10,230,898. Retained by Russ, August & Kabat. Jan. 2021. Authored declarations. Deposed 29 Apr. 2021 and 21 May 2021. Authored invalidity rebuttal and infringinement reports for CorePhotonics v. Apple 3:18-cv-06457-JD on Jan. 2024. Settled.
- **LG Electronics Inc.**, US District Court, Central District of California, Western Division. Case No. 2:19-cv-09474-JAK. Retained by Sidley Austin Jan. 2020. Authored Sep 2020 expert report on claim construction.
- **Align Technology, Inc.**, US District Court for the District of Delaware, C.A. No. 17-1647-LPS-CJB. Retained by Morrison Foerester Mar. 2019. Authored infringement report and reply report on validity. Deposed 19 June 2020. Settled Feb. 2022.
- **Adsync Technologies**, Middle District of Florida, Orlando Division, Case 6:18-cv-1176-Orl-40TBS. Retained by Akerman Jun. 2019. Declaration in defense of Amended Complaint from Adacel and in support of counter complaint from Adsync. Deposed 24 Jan 2020. Settled Jan. 2021.
- **ZiiLabs** (subsidiary of Creative Technology), Certain Graphics Processors and Products Containing the Same, US International Trade Commission Case #337-TA-1099. Retained by Pepper Hamilton Sep. 2017. Deposed 12 Nov. 2018.
- **Samsung.** - FotoNation Ltd. et al. v. Samsung Electronics. Co., Ltd., et al., No. 2:17-cv-00669 (E.D. Tex.). Retained by O'Melveny & Myers Oct. 2017. Settled, Jan. 2019.
- **Samsung**, Inter Partes Reviews for of patents filed by Image Processing Technologies LLC: 6,717,518, 6,959,293, 7,650,015, 8,805,001, 8,983,134 and 8,989,445. Retained by O'Melveny & Myers Oct. 2016. Deposed Dec. 2017.

- **ZiiLabs** (subsidiary of Creative Technology), Certain Graphics Processors, DDR Memory Controllers, and Products Containing the Same, US International Trade Commission Case #337-TA-1037, for Pepper Hamilton LLP, Sep. 2016 – July 2017. Testified to the International Trade Commission for Markman hearing.
- **Advanced Silicon Technology**, Certain Computing or Graphics Systems, Components Thereof, and Vehicles Containing Same, US International Trade Commission Case #337-TA-984, for Mintz, Levin, Cohn, Ferris, Glovsky and Popeo PC, Aug. 2015 – Aug. 2016. Testified to the International Trade Commission for Markman hearing and authored validity report. Written declarations submitted for IPR2016-00894, -00897 and 01060).
- **ZiiLabs** (subsidiary of Creative Technology), Eastern District of Texas, Marshall Division, Case 2:14-cv-00203, for Heim, Payne & Chorush LLP and Susman Godfrey LLP. Sep. 2014 – Dec. 2015. Prepared invalidity rebuttal report for four patents and damages report for nine patents, all on graphics hardware. Deposed over two sequential days on both reports.
- **Graphics Property Holdings** (formerly SGI), Certain Consumer Electronics with Display and Processing Capabilities, US International Trade Commission Case #337-TA-884, for Mintz, Levin, Cohn, Ferris, Glovsky and Popeo . Graphics hardware expert on floating point rasterization, Authored report on patent validity. Deposed Feb. 2014. Testified to the International Trade Commission Apr. 2014.
- **Microsoft XBox**, Illinois Northern District Court (Eastern Division) Case #08-C-393, for Sidley Austin LLP. Dec. 2009 – May 2010. Prepared non-infringement rebuttal report and invalidity report.
- **NVIDIA & AMD (ATI)**, California Northern District Court Case # 3:07-cv-00302, for Cooley Godward Kronish LLP. July 2008 – Sep. 2008. Provided expertise on graphics hardware and insight into the industry-wide process for the deployment of innovative features.
- **Broadcom**, California Southern District Court Case #06-CV-0660, for McAndrews, Held & Malloy, Ltd, Dec. 2006 – Mar. 2007.

Research Funding

From Industry

- **Caterpillar,** through the **Digital Manufacturing & Design Innovation Institute**. $410,000, Co-PI with Placid Ferreira and Shiv Kapoor.
- **Intel.** Intel Illinois Parallelism Center. $2,500,000, Co-PI, 2011-2012.
- **Intel.** Leveraging Larrabee's Programmable Rasterization. $130,000, 2009-2011.
- **Intel/Microsoft.** Universal Parallel Computing Research Center. $18,000,000, Co-PI, 2008-2012.
- **NAVTEQ**. "Surface Classification and Reconstruction from LIDAR and images." $60,000, 2008.
- **Thomas M. Siebel.** "MethMorph: Visual Simulation of Methamphetamine Addiction." $35,000, Spring 2006.
- **NVidia Corp.** $15,000 annually though the UIUC CS Affiliates Program, 2004–, and $125,000 total to date in Ph.D. student fellowships ($25K directly to the student to support one year of Ph.D. research): Nate Carr: 2002 & 2003, Jesse Hall: 2003 & 2004, Jared Hoberock: 2005 & 2008.
- **Microsoft Research.** "Precomputed Radiance Transfer Compression." $15,000, Sep. 2002.
- **Evans & Sutherland Computer Corp.** "Real Time Procedural Solid Texturing." $83,246, June 1999 – May 2000.

- **Evans & Sutherland Computer Corp. and Washington Technology Center.** "APST: Computer Graphics Hardware for Antialiased Procedural Solid Texturing." $77,089. Aug. 16, 1998 - Aug. 15, 1999.
- **Intel Natural Data Types Group. "**Procedural Modeling." $43,000. Aug. 16, 1997 - Aug. 15, 1998.
- **Intel Natural Data Types Group.** "Recurrent Modeling -- Beyond Fractal Block Coding." (Co-PI with P. Flynn.) $93,000. Apr. 1, 1995 - Mar. 31, 1997.

From Government Agencies

- **NSF**. #OAC-1550554 "SI2-SSI: Collaborative Research: ParaTreet: Parallel Software for Spatial Trees in Simulation & Analysis" (co-PI with Laxmikant Kale), $170,000, Sep. 2016 – Aug. 2018.
- **NSF**. #OCI-1216788 "Collaborative Research: Conceptualizing an Institute for Using Inter-Domain Abstractions to Support Inter-Disciplinary Applications" (co-PI with David Padua and Philippe Geubelle, and other collaborators at Purdue and UT-Austin), $135,000, Oct. 2012 – Sep. 2016.
- **NSF**. #EF-1115112 "Collaborative Research: Digitization TCN: InvertNet--An Integrative Platform for Research on Environmental Change, Species Discovery and Identification" (co-PI with Christopher Dietrich, Christopher Taylor, Nahil Sobh and Umberto Ravaioli), $2,809,463, July 2011-June 2015.
- **NSF**. #OCI-1047764 "SI2-SSE: Collaborative Research: Lagrangian Coherent Structures for Accurate Flow Structure Analysis" (co-PI with Shawn Shadden) $251,643, Sep. 2010 – Aug. 2013.
- **NSF**. #IIS-0534485 "Analysis and Visualization of Complex Graphs" (co-PI with Michael Garland) $300,000, Sep. 2006 – Aug. 2009.
- **UIUC Critical Research Initiative.** "A New Approach to Bone Replacement." (Co-PI with Russ Jamison, Michael Goldwasser, Ben Grosser, Matei Stroila and Amy Wagoner Johnson.) $100,000, Sep. 2005 – Aug. 2006.
- **NSF Small Grant for Exploratory Research.** "Application Directed Surface Parameterization." $97,868, Jan. 2005 – Dec. 2005.
- **NSF/DARPA CARGO (Computational and Algorithmic Representations of Geometric Objects) Award.** "Robust Lagrangian Surface Propagation with Topological Control." (Lead PI, with Michael Heath, Jim Jiao and John Sullivan), $400,000, May 2003 – May 2006.
- **NSF Information Technology Research.** #NSG-0219594 "Making 3D Visibility Practical." (Co-PI with Steve LaValle, Jeff Erickson, Fredo Durand) $499,923. Aug. 2002 – Aug. 2005.
- **CNRS (Centre National de la Recherche Scientifique).** Supplement to "Making 3D Visibility Practical" to support UIUC – INRIA collaboration, $7,000, 2003-5.
- **NSF Information Technology Research.** #ACI-0113968 "Multipass Programming for Personal High-Performance Computing." $489,671, Aug. 2001 – July 2006.
- **NSF Information Technology Research.** #ACI-0121288 "Procedural Representation and Visualization Enabling Personalized Computational Fluid Dynamics." (Co-PI with David Ebert, David Marcum, Kelly Gaither and Penny Rheingans) $3,989,773. Aug. 2001 – July 2006.
- **NSF.** #NSG-9732379 "Applications of Morse Theory and Catastrophe Theory to Computer Graphics." (Co-PI with R. Lewis.) $220,541. Aug. 16, 1997 – Aug. 15 2000.
- **NSF.** #CCR-9529809 "Recurrent Modeling." (Co-PI with P. Flynn.) $206,435. June 15, 1996 - May 31, 1999. Research Experience for Undergraduates Supplement: $5,000. Jan. 1, 1998 - May. 31, 1999.
- **NSF Research Initiation Award.** #CCR-9309210 "Modeling, Rendering and Animation of Implicit Surfaces." $97,925. July 1, 1993 - June 30, 1996. Research Experience for Undergraduates Supplement: $4,885. Jan. 1, 1995 - Dec. 31, 1995.

Education Projects

- **Nokia University Cooperation Funding.** "Teaching Mobile Augmented Reality on the Windows Phone Platform." $11,377.64. 2013.
- **UIUC College of Engineering Strategic Instructional Initiatives Program.** Improvement of key ME courses (Statics, Dynamics and Solid Mechanics), $450,000, with MechSE Profs. Tortorelli, Dullerud Keane and West, 2012-2014.
- **NSF Special Project.** #EIA-9911033 "The Story of Computer Graphics Documentary Project." $48,000. Sept. 15, 1999 – Aug. 31, 2000.

Equipment Grants and Donations

- **Nokia**. Two Velodyne LIDAR scanners, 2013.
- **NVidia.** K20 graphics card, 2012.
- **Intel.** Dell XPS 12, $1,000, 2012.
- **Intel.** Two Knights Ferry development workstations, $4,940, 2009.
- **NVidia**. Various graphics cards, 2002-4.
- **ATI**. One graphics card, 2002.
- **Tektronix Phaser 340 Color Printer.** Tektronix. $5,000. Oct. 1995.
- **High-Performance Networking and Computing Infrastructure for Imaging Research.** (Co-PI with T. Fischer, P. Flynn and R. Bamberger.) NSF Research Instrumentation and Infrastructure. CISE Instrumentation Program, Office of Cross-Disciplinary Activites. $100,000. March 1, 1994 - April 30, 1996. Awarded: Jan. 1995.
- **Silicon Graphics Inc. Workstation Upgrade.** $9,000. Apr. 1993.
- **XAOS Tools.** Software Donation. Pandemonium and n-title. $6,500. Feb. 1993.
- **Karen Guzak.** Art Donation. 12 Prints. $4,800. May 1995.

ꕥ Publications ꕥ

Most of the following publications are available online via
http://graphics.cs.illinois.edu/~jch/papers.

Reviewed Publications

1. A.I. Ellis, W. Hunt and J.C. Hart. Real-Time Analytic Antialiased Text for 3-D Environments. Proc. High-Performance Graphics, Computer Graphics Forum 38(8), 2019, pp. 23-32.
2. A.J. Christensen, V. Srinivasan, J.C. Hart and A. Marshall-Colon. Use of computational modeling combined with advanced visualization to develop strategies for the design of crop ideotypes to address food security. Nutrition Reviews 76(5), May 2018, pp. 332-347.
3. P-C Wang, A.I. Ellis, J.C. Hart, C-H Hsu. Optimizing next-generation cloud gaming platforms with planar map streaming and distributed rendering. Proc. NetGames (15th Annual Workshop on Network and Systems Support for Games), 2017.

4. A. Marshall-Colon, S.P. Long, D.K. Allen, G. Allen, D.A. Beard, B. Benes, S. von Caemmerer, A.J. Christensen, D.J. Cox, J.C. Hart, P.M. Hirst, K. Kannan, D.S. Katz, J.P. Lynch, A.J. Millar, B. Panneerselvam, N.D. Price, P. Prusinkiewicz, D. Raila, R.G. Shekar, S. Shrivastava, D. Shukla, V. Srinivasan, M. Stitt, M. Turk, E.O Voit, Y. Wang, X. Yin, X. Zhu. Crops in silico: Generating Virtual Crops Using an Integrative and Multi-scale Modeling Platform. Frontiers in Plant Science, May 2017.
5. M. Chen, J.C. Hart and S. Shadden. Hierarchical Watershed Ridges for Visualizing Lagrangian Coherent Structures. Reviewed, accepted and presented at TopoInVis: Topology-Based Methods in Visualization, 2015. Published in: Topological Methods in Data Analysis and Visualization IV, H. Carr, C. Garth, T. Weinkauf, Eds. Springer Mathematics and Visualization Series, 2017, pp. 237-252.
6. A.I. Ellis, Warren Hunt and J.C. Hart. "SVGPU: Real Time 3D Rendering to Vector Graphics Formats." Proc. High Performance Graphics, 2016.
7. M. Chen, S. Shadden and J.C. Hart. "Fast Coherent Particle Advection through Time-Varying Unstructured Flow Datasets." IEEE Transactions on Visualization and Computer Graphics 22(8), pp. 1959-1972, 2016.
8. J. Kratt, M. Spicker, A. Guayaquil, M. Fiser, S. Pirk, O. Deussen, J.C. Hart, B. Benes. Woodification: User-Controlled Cambial Growth Modeling. Proc. Eurographics, Computer Graphics Forum 23(2), May 2015, pp. 361-372.
9. V. Lu, J.C. Hart. Multicore Construction of k-d Trees for High Dimensional Point Data. Proc. Advances in Big Data Analytics, July 2014.
10. P.R. Khorrami, V.V. Le, J.C. Hart, T.S. Huang. A System for Monitoring the Engagement of Remote Online Students using Eye Gaze Estimation. Proc. IEEE ICME Workshop on Emerging Multimedia Systems and Applications, July 2014.
11. V. Lu, I. Endres, M. Stroila and J.C. Hart. Accelerating Arrays of Linear Classifiers Using Approximate Range Queries. Proc. Winter Conference on Applications of Computer Vision, Mar. 2014.
12. D. Mayerich, J.C. Hart, Volume Visualization of Serial Electron Microscopy Images Using Local Variance. Proc. BioVis (IEEE Symposium on Biological Data Visualization), pp. 9-16, Oct. 2012
13. C. Dietrich, J. Hart, D. Raila, U. Ravaioli, N. Sobh, O. Sobh, C. Taylor. InvertNet: a new paradigm for digital access to invertebrate collections. ZooKeys 209, July 2012, pp. 165-181.
14. Y. Jia, M. Garland, and J.C. Hart. Social Network Clustering and Visualization using Hierarchical Edge Bundles. Computer Graphics Forum 30(8), Dec. 2011, pp. 2314–2327.
15. Y. Jia, V. Lu, J. Hoberock, M.J. Garland, J.C. Hart. Edge v. Node Parallelism for Graph Centrality Metrics. GPU Computing Gems – Jade Edition, Oct. 2011, pp 15-28.
16. M. Kamali, F.N. Iandola, H. Fang, J.C. Hart. MethMorph: Simulating Facial Deformation due to Methamphetamine Usage. Proc. International Symposium on Visual Computing. Sep. 2011.
17. M. Kamali, J. Cho, M. Stroila, E. Shaffer, J.C. Hart. Robust Classification of Curvilinear and Surface-like Structures in 3D Point Cloud Data. Proc. International Symposium on Visual Computing. Sep. 2011.
18. M. Kamali, E. Ofek, F. Iandola, I. Omer, J.C. Hart Linear Clutter Removal from Urban Panoramas. Proc. International Symposium on Visual Computing. Sep. 2011.
19. K. Karsch, J.C. Hart. Snaxels on a Plane. Proc. Non-Photorealistic and Artistic Rendering, Aug. 2011.
20. J. Hoberock, J.C. Hart. Arbitrary Importance Functions for Metropolis Light Transport. Computer Graphics Forum 29(6), 2010, pp. 1993-2003.
21. S. Shi, M. Kamali, K. Nahrstedt, J.C. Hart, R. Campbell. High-Quality Zero-Delay Remote Rendering System for 3D Video. Proc. Multimedia, Oct. 2010.
22. B. Choi, R. Komuravelli, V. Lu, H. Sung, R.L. Bochino, S.V. Adve, J.C. Hart. Parallel SAH k-D Tree Construction. Proc. High Performance Graphics, June. 2010.
23. Y. Jia, X. Ni, E. Lorimer, M. Mullan, R. Whitaker, J.C. Hart. RBF Dipole Surface Evolution. Proc. Shape Modeling International, June 2010.

24. W.-W. Feng, B.-U. Kim, Y. Yu, L. Peng, J.C. Hart, Feature-Preserving Triangular Geometry Images for Level-of-Detail Representation of Static and Skinned Meshes, ACM Transactions on Graphics 29(2), March 2010, Article 11.
25. J. Hoberock, V. Lu, Y. Jia, J.C. Hart. Stream Compaction for Deferred Shading. Proc. High Performance Graphics, Aug. 2009.
26. J.C Hart. Assistive Technology for the Aesthetically Impaired. Proc. CHI Workshop on Computational Creativity Support, Apr. 2009.
27. J. Hoberock, S. Hornus, J.C. Hart. On Constructing and Visualizing the Topological Structure of the Visibility and Radiance of Architectural Models. Proc. TopoInVis: Topological Methods in Data Analysis and Visualization, Feb. 2009.
28. Y. Jia, J. Hoberock, M. Garland, J.C. Hart. On the Visualization of Social and other Scale-Free Networks. (Proc. Infovis), IEEE Transactions on Visualization and Computer Graphics 14(6), Nov. 2008, pp. 1285-1292.
29. A. Godiyal, J. Hoberock, M. Garland, J.C. Hart. Rapid Multipole Graph Drawing on the GPU. Proc. Graph Drawing, Sep. 2008.
30. E. Eisemann, H. Winnemoller, J.C. Hart, D. Salesin. Stylized Vector Art from 3D Models with Region Support. (Proc. Eurographics Rendering Symposium), Computer Graphics Forum 27(4), June 2008, pp. 1199-1207.
31. M. Stroila, E. Eisemann, J.C. Hart. Clip Art Rendering of Smooth Isosurfaces. IEEE Transactions on Visualization and Computer Graphics 14(1), Jan. 2008, pp. 71-81.
32. H. Fang, J.C. Hart. Detail Perserving Shape Deformation in Image Editing. Proc. SIGGRAPH, ACM Transactions on Graphics 26(3), Aug. 2007, #12.
33. T. Bergstrom, K. Karahalios, J.C. Hart. Isochords: Visualizing Structure in Music. Proc. Graphics Interface, May 2007.
34. H. Fang, J.C. Hart. RotoTexture: Automated Tools for Texturing Raw Video. IEEE Transactions on Visualization and Computer Graphics 12(6), Nov. 2006, pp. 1580-1589.
35. X. Jiao, A. Colombi, X. Ni, J.C. Hart. Anisotropic Mesh Adaptation for Evolving Triangulated Surfaces. Proc. Meshing Rountable, Sept. 2006, pp. 173-190.
36. S. Dong, P.-T. Bremer, M. Garland, V. Pascucci, J.C. Hart. Spectral Surface Quadrangulation. Proc. SIGGRAPH, ACM Transactions on Graphics 25(3), July 2006, pp. 1057-1066.
37. N.A. Carr, J. Hoberock, K. Crane, J.C. Hart. Rectangular Multi-Chart Geometry Images. Proc. Sym. on Geom. Proc., July 2006, pp. 181-190.
38. N.A. Carr, J. Hoberock, K. Crane, J.C. Hart. Fast GPU Ray Tracing of Dynamic Meshes using Geometry Images. Prof. Graphics Interface, May 2006, pp. 203-209.
39. P.-T. Bremer, J.C. Hart. A Sampling Theorem for MLS Surfaces. Proc. Point Based Graphics, June 2005.
40. J.O. Talton, N.A. Carr, J.C. Hart. Voronoi Rasterization of Sparse Point Sets. Proc. Point Based Graphics, June 2005.
41. W. Su, J.C. Hart, A Programmable Particle System Framework for Shape Modeling, Proc. Shape Modeling International, June 2005.
42. S. Zelinka, H. Fang, M. Garland, J.C. Hart. Interactive Material Replacement in Photographs. Proc. Graphics Interface, May 2005.
43. S. Hornus, J. Hoberock, S. Lefebvre and J.C. Hart. ZP+: Correct Z-pass Stencil Shadows. Proc. ACM Symposium on Interactive 3-D Graphics and Games, Apr. 2005. **(Highest ranked paper according to review score.)**
44. H. Fang, J.C. Hart, "Textureshop: Texture Synthesis as a Photograph Editing Tool," ACM Transactions on Graphics 23(3) (also in Proc. SIGGRAPH 2004), Aug. 2004, pp. 354-359.

45. X. Ni, M. Garland, J.C. Hart, "Fair Morse Functions for Extracting the Topological Structure of a Surface Mesh," ACM Transactions on Graphics 23(3) (also in Proc. SIGGRAPH 2004), Aug. 2004, pp. 613-622. **(Second highest ranked paper according to tertiary review score.)**
46. N. Carr, J.C. Hart, "Painting Detail," ACM Transactions on Graphics 23(3) (also in Proc. SIGGRAPH 2004), Aug. 2004, pp. 845-852.
47. N. Carr, J.C. Hart, "Dynamic Clustering of Meshed Surfaces," Proc. Symposium on Geometry Processing, July 2004.
48. O.S. Lawlor, J.C. Hart, "Bounding Recursive Procedural Models using Convex Optimization," Proceedings of Pacific Graphics 2003, October 2003, pp. 283-292.
49. P-P. Sloan, J. Hall, J. Hart, J. Snyder. Clustered Principal Components for Precomputed Radiance Transfer. (Proc. SIGGRAPH 2003) ACM Transactions on Graphics 22(3), July 2003.
50. N.A. Carr, J.D. Hall and J.C. Hart, GPU Algorithms for Radiosity and Subsurface Scattering, Proc. Graphics Hardware, July 2003.
51. John C. Hart, Jeyprakash Michaelraj, Brent Baker. Structural Simulation of Tree Growth. The Visual Computer 19(2-3), May 2003, pp. 151-163.
52. P. Sherman, J.C. Hart. Direct Manipulation of Recurrent Models. Computers & Graphics 27(1), Feb. 2003, pp. 143-151.
53. A. Sheffer, J.C. Hart. Seamster: Inconspicuous Low-Distortion Texture Seam Layout. Proc. Visualization 2002, Oct. 2002.
54. N.A. Carr, J.D. Hall and J.C. Hart. The Ray Engine. Proc. Graphics Hardware 2002, Sep. 2002.
55. H. Fang, J. Hart. Randomly Accessible Procedural Animation of Physically Approximate Turbulent Motion. Proc. Computer Animation 2002, June 2002.
56. J. Hart, E. Bachta, W. Jarosz, T. Fleury. Using Particles to Sample and Control More Complex Implicit Surfaces. Proc. Shape Modeling International 2002, May 2002, pp. 129-136.
57. N. Carr, J. Hart. Meshed Atlases for Real-Time Procedural Solid Texturing. ACM Transactions on Graphics 21(2), Apr. 2002.
58. J.C. Hart. Perlin Noise Pixel Shaders. *Proc. Graphics Hardware 2001*, Aug. 2001.
59. W. Cochran, R. Lewis, J. Hart. The Normal of a Fractal Surface. *The Visual Computer 17*(4), 2001, pp. 209-218.
60. J.C. Hart. Using the CW-Complex to Represent the Topological Structure of Implicit Surfaces and Solids. *Proc. Implicit Surfaces '99*, Sept. 1999, pp. 107-112.
61. J.C. Hart, N. Carr, M. Kameya, S.A. Tibbitts, T.J. Coleman. Antialiased Parameterized Solid Texturing Simplified for Consumer-Level Hardware Implementation. *Proc. Graphics Hardware 99*, Aug. 1999, pp. 45-53.
62. J.C. Hart, A. Durr and D. Harsch. Critical points of polynomial metaballs. *Proc. Implicit Surfaces '98*, June 1998, pp. 69-76.
63. J.C. Hart. Morse Theory for Implicit Surface Modeling. In *Mathematical Visualization,* H-C Hege and K. Polthier, Eds., Springer-Verlag, Berlin, Oct. 1998, pp. 257-268. (Reviewed paper presented at VisMath '97, Berlin, 1997.)
64. W.O. Cochran, J.C. Hart, P.J. Flynn. On Approximating Rough Curves with Fractal Functions. *Proc. Graphics Interface '98,* June 1998, pp. 65-72.
65. A.K. Dunker, E. Garner, S. Guilliot, P. Romero, K. Albrecht, J. Hart, Z. Obradovic, C. Kissinger and J.E. Villafranca. Protein Disorder and the Evolution of Molecular Recognition: Theory, Predictions and Observations. *Pacific Symposium on Biocomputing 3:* 435-446, Jan. 1998.
66. B. Stander, J.C. Hart. Guaranteeing the Topology of an Implicit Surface Polygonization. *Computer Graphics Annual Conference Series* (Proc. SIGGRAPH 97) Aug., 1997, pp. 279-286.

67. J.C. Hart. Implicit formulations of rough surfaces. *Computer Graphics Forum 16*(2), June 1997, pp. 91-99.

68. B. Burch, J.C. Hart. Linear Fractal Shape Interpolation. *Proc. Graphics Interface '97.* May, 1997, pp. 155-162.

69. J.C. Hart, P.J. Flynn, W.O. Cochran. Similarity Hashing: A model-based vision solution to the inverse problem of recurrent iterated function systems. *Fractals 5*, Apr. 1997, pp. 39-50.

70. W.O. Cochran, J.C. Hart, P.J. Flynn. Fractal volume compression. *IEEE Transactions on Visualization and Computer Graphics 2*(4) Dec. 1996, pp. 313-322.

71. J.C. Hart. Sphere tracing: A geometric method for the antialiased ray tracing of implicit surfaces. *The Visual Computer 12*(10), Dec. 1996, pp. 527-545.

72. S. Worley, J.C. Hart. Hyper-rendering of hyper-textured surfaces. Proc. of *Implicit Surfaces '96,* Oct. 1996, pp. 99-104.

73. J.C. Hart, B. Baker. Implicit Modeling of Tree Surfaces. Proc. of *Implicit Surfaces '96,* Oct. 1996. pp. 143-152.

74. J.C. Hart. Fractal image compression and the inverse problem of recurrent iterated function systems. *IEEE Computer Graphics and Applications 16*(4) July 1996, pp. 25-33.

75. K. Albrecht, J. Hart, A. Shaw, and A.K. Dunker. Quaternion contact ribbons: A new tool for visualizing intra- and intermolecular interactions in proteins. *Pacific Symposium on Biocomputing 1:* 41-52, Jan. 1996.

76. D. Hepting, J.C. Hart. The escape buffer: Efficient computation of escape time for linear fractals. Proc. of *Graphics Interface '95*, May 1995. pp. 204-214.

77. J.C. Hart. Implicit formulations of rough surfaces. Proc. *Implicit Surfaces '95,* Apr. 1995, pp. 33-44.

78. B.T. Stander, J.C. Hart. A Lipschitz method for accelerated volume rendering. Proc. of the *1994 Symposium on Volume Visualization,* Oct. 1994. pp. 107-114.

79. J.C. Hart. Distance to an Ellipsoid. Chapter in: Graphics Gems IV, P. Heckbert, Ed., Academic Press, 1994, pp. 113-119.

80. J.C. Hart, G.K. Francis, L.H. Kauffman. Visualizing quaternion rotation. *ACM Transactions on Graphics 13*(3) July 1994, pp. 256-276.

81. J.C. Hart. On recording virtual environments. Proc. of *IEEE Visualization '93 Symposium on Research Frontiers in Virtual Reality,* Nov. 1993, pp. 80-83.

82. J.C. Hart, G.W. Lescinsky, D.J. Sandin, T.A. DeFanti, L.H. Kauffman. Scientific and artistic investigation of multidimensional fractals on the AT&T Pixel Machine. *Visual Computer 7*(9) July 1993, pp. 346-355.

83. C. Cruz-Niera, D.J. Sandin, T.A. DeFanti, R.V. Kenyon, J.C. Hart. The CAVE audio visual experience automatic virtual environment. *Communications of the ACM 35*(6) June 1992, pp. 64-72.

84. J.C. Hart. The object instancing paradigm for linear fractal modeling. Proc. of *Graphics Interface '92,* Morgan Kauffman, May 1992, pp. 224-231.

85. J.C. Hart, T.A. DeFanti. Efficient antialiased rendering of 3-D linear fractals. *Computer Graphics 25*(3) (Proc. SIGGRAPH 91) Aug. 1991, pp. 91-100.

86. J.C. Hart, L.H. Kauffman, D.J. Sandin. Interactive visualization of quaternion Julia sets. Proc. of *Visualization '90.* IEEE Computer Society Press. Oct. 1990, pp. 209-218.

87. J.C. Hart, A. Norton. Use of curves in rendering fractures. Proc. of *SPIE/SPSE Symposium on Curves and Surfaces in Computer Vision and Graphics.* Feb. 1990.

88. J.C. Hart, D.J. Sandin, L.H. Kauffman. Ray tracing deterministic 3-D fractals. *Computer Graphics 23*(3) (Proc. SIGGRAPH 89) Aug. 1989, pp. 289-296.

Books, Invited Book Chapters and Edited Course Notes

89. J. Torrellas, S.V. Adve, V.S. Adve, D. Dig, M.N. Do, M.J. Garzaran, J.C. Hart, T.S. Huang, W.W. Hwu, S.T. King, D. Marinov, K. Nahrstedt, D.A. Padua, M. Parthasarathy, S.J. Patel, M. Snir. "Making Parallel Programming Easy: Research Contributions from Illinois," Sep. 2013.
90. M. Olano, W. Heidrich, J. Hart and M. McCool, Real Time Shading, AK Peters, July 2002.
91. J.C. Hart, "Procedural Geometry," Chapter in Modeling and Texturing, a Procedural Approach, 3rd Edition, D. Ebert, Editor, Morgan Kauffman, November 2002.
92. J.C. Hart, "Real-Time Procedural Solid Texturing," Chapter in Modeling and Texturing, a Procedural Approach, 3rd Edition, D. Ebert, Editor, Morgan Kauffman, November 2002.
93. D. Ebert and J. Hart, Editors, "Procedural Implicit Techniques for Modeling and Texturing," ACM SIGGRAPH 1998 Course Notes, July 1998.
94. D. Ebert and J. Hart, Editors, "New Frontiers in Modeling and Texturing," ACM SIGGRAPH 1997 Course Notes, August 1997.
95. J. Hart and D. Saupe, Editors, "Fractal Models for Image Synthesis, Compression and Analysis," ACM SIGGRAPH 1996 Course Notes, August 1996.
96. J. Hart, Editor, "New Directions for Fractal Modeling in Computer Graphics," ACM SIGGRAPH 1994 Course Notes, July, 1994.
97. J. Hart and K. Musgrave, Editors, "Fractal Modeling in 3-D Computer Graphics and Imaging," ACM SIGGRAPH 1991 Course Notes, July 1991.

Patents

98. H. Fang and J.C. Hart, Methods and Systems for Image Modification. #7,365,744. Filed: 26 July 2004, Granted: 29 April 2008.
99. S. Tibbitts, T. Coleman and J.C. Hart. Antialiased Procedural Solid Texturing Hardware. Provisional Patent #60,088,879. Evans & Sutherland, 1998.

Invited Papers, Articles, Tech Reports and Other Publications

100. S.V. Adve, V.S. Adve, G. Agha, M.I. Frank, M.J. Garzaran, J.C. Hart, W.W. Hwu, R.E. Johnson, L.V. Kale, R. Kumar, D. Marinov, K. Nahrstedt, D. Padua, M. Parthasarathy, S.J. Patel, G. Rosu, D. Roth, M. Snir, J. Torrellas, C. Zilles. Parallel Computing Research at Illinois: The UPCRC Agenda. Whitepaper, Nov. 2008.
101. S. Dong, P.-T. Bremer, M. Garland, V. Pascucci and J.C. Hart. Quadrangulating a Mesh using Laplacian Eigenvectors. Tech Rep. UIUCDCS-R-2005-2583, June 2005.
102. P. Lacz and J.C. Hart. Procedrual Geometric Synthesis on the GPU. Poster (with accompanying manuscript) for SIGGRAPH 2004 and GP2: The ACM Workshop on General Purpose Computing on Graphics Processors, Aug. 2004.
103. J.D. Hall and J.C. Hart. GPU Acceleration of Iterative Clustering. Poster (with accompanying manuscript) for SIGGRAPH 2004 and GP2: The ACM Workshop on General Purpose Computing on Graphics Processors, Aug. 2004.
104. M. Mullan, R. Whitaker and J.C. Hart. Procedural Level Sets. Manuscript presented at NSF/DARPA CARGO Annual Meeting, May 2004.
105. J.D. Hall, N.A. Carr and J.C. Hart. Cache and Bandwidth Aware Matrix Multiplication on the GPU. Tech. Report UIUCDCS-R-2003-2328, May 2003.

106. M. Kameya, and J.C. Hart. Bresenham noise. SIGGRAPH 2000 Conference Abstracts and Applications, July 2000.

107. J.J. Kim and J.C. Hart. Contour-Based Polygonization of Regular Grid Terrain Data. Proc. Western Computer Graphics Symposium. Mar. 1999.

108. A. Aceves, K. Hammil and J.C. Hart. Proposal and Partially Implemented: The Studio: A Large High Resolution Immersive Projection System for Research and Education. Proc. Western Computer Graphics Symposium. Mar. 1999.

109. M. Kameya and J.C. Hart. Bit Width Necessary for Solid Texturing Hardware. Proc. Western Computer Graphics Symposium. Mar. 1999.

110. N. Carr and J.C. Hart. APST Antialiased Procedural Texturing Interface for OpenGL. Proc. Western Computer Graphics Symposium. Mar. 1999.

111. C. Kulratanayan and J.C. Hart. Restructuring the Scene Graph for Efficient Visibility of Natural Scenes. Proc. Western Computer Graphics Symposium. Mar. 1999.

112. J.C. Hart. Computational Topology for Shape Modeling. Invited Talk and Paper. Proc. Shape Modeling International '99, Univ. Aizu, Japan, Mar. 1999, pp. 36-45.

113. J.C. Hart. Morse Theory for Computer Graphics. WSU Technical Report EECS-97-002. Chapter in ``New Frontiers in Modeling and Texturing," SIGGRAPH '97 course notes, J. Hart, D. Ebert eds., Aug. 1997.

114. I.M. Danciu, J.C. Hart. Fractal Color Image Compression in the L*a*b* Uniform Color Space. Poster. Abstract in: Proc. of Data Compression Conference '97. IEEE Computer Society Press, Apr. 1997, p. 434.

115. B.T. Stander, J.C. Hart. Topologically Guaranteed Blobby Surface Polygonization. Proceedings of Western Computer Graphics Symposium. Mar. 1996. pp. 1-9.

116. J.C. Hart. On the Hyperbolic Plane and Chinese Checkers. Proceedings of Western Computer Graphics Symposium. Mar. 1996. pp. 69-75

117. W.O. Cochan, J.C. Hart, P.J. Flynn. Similarity and Affinity Hashing. Proceedings of Western Computer Graphics Symposium. Mar. 1996. pp. 89-98.

118. B.T. Stander, J.C. Hart. Interactive re-polygonization of blobby implicit curves. Proceedings of Western Computer Graphics Symposium. Mar. 1995.

119. W.O. Cochran, J.C. Hart, P.J. Flynn. Principal component classification for fractal volume compression. Proceedings of Western Computer Graphics Symposium. Mar. 1995.

120. J.C. Hart. Sphere tracing: simple robust antialiased rendering of distance-based implicit surfaces. WSU Technical Report EECS-93-015. Chapter in ``Design, Visualization and Animation of Implicit Surfaces," SIGGRAPH '93 course notes, J. Bloomenthal, B. Wyvill, eds., Aug. 1993.

121. J.C. Hart. Ray Tracing Implicit Surfaces. WSU Technical Report EECS-93-014. Chapter in ``Design, Visualization, and Animation of Implicit Surfaces," SIGGRAPH '93 intermediate course notes, J. Bloomenthal and B. Wyvill, eds., Aug. 1993.

122. T.A. DeFanti, J.C. Hart, D.J. Sandin, L.H. Kauffman. Visualization of multidimensional fractals. Proceedings of the Argonne National Lab. Seventh International Conference on Advanced Science and Technology. Mar. 1991, pp. 289-298.

123. T.A. DeFanti, D.J. Sandin, G.W. Lescinsky, J.C. Hart, M.D. Brown, L.H. Kauffman. Simulacra/Stimulacra::Fractal. Art Futura, Jan. 1991.

124. J.C. Hart. Parallel algorithms for visualization of multidimensional fractal objects (extended abstract.) Electronic Imaging East '90. Nov. 1990, pp. 459-462.

125. D.J. Sandin, J.C. Hart, L.H. Kauffman. Interactive visualization of complex, stacked and quaternion Julia sets. Proceedings of Ausgraph '90, Sep. 1990. (Invited paper.)

126. T.A. DeFanti, D.J. Sandin, J.C. Hart, G.W. Lescinsky. One picture's worth a thousand gigaflops (One animation's worth a thousand teraflops). Pixel 1(3) July 1990, pp. 40-41.

127. J.C. Hart, A. Norton. Use of curves in rendering fractures. IBM Technical Report. Aug. 1989.

Film and Animation Credits

128. Executive Producer (with C. Machover). “The Story of Computer Graphics.” A SIGGRAPH Production of a feature-length documentary on the human struggle to bring computer graphics from the inspired revelation that computers can be used to draw pictures to the present, where low-cost graphics and the Internet combine to provide virtual environments for people to communicate. Premiered at a special event in the Shrine Auditorium, LA, as part of the SIGGRAPH 99 Computer Animation Festival.

129. Contributor. “Air on the Dirac Strings.” Produced by L.H. Kauffman, G.K. Francis, D.J. Sandin. SIGGRAPH '93 Electronic Theater. SIGGRAPH Video Review 93, Aug. 1993.

130. Producer. “SIGGRAPH 93 Technical Session Sampler.” SIGGRAPH '93 Electronic Theater. Video compilation, narrated by J. Blinn. SIGGRAPH Video Review 91, Aug. 1993

131. Producer. “Highlights from the SIGGRAPH '92 Technical Session.” SIGGRAPH '92 Electronic Theater. Video compilation, narrated by J. Blinn.

132. Producer/Director/Animator. “Fun with Octrees: Graph Topologies on the Recurrent Cube.” SIGGRAPH '92 Animation Screening Room. SIGGRAPH Video Review 87, Aug. 1992. Appears in: ``The Fractal Universe: Animation," Media Magic, 1993.

133. Producer/Director/Animator. “unNatural Phenomena.” SIGGRAPH '91 Electronic Theater. SIGGRAPH Video Review 71, Aug. 1991. Appears in: ``The Fractal Universe: Animation," Media Magic, 1993. Excerpts appear in: ``Beyond The Minds Eye," Mirimar, and ``Prime Time Live," ABC.

134. Producer/Director/Animator (with S. Das.). “Sierpinski Blows His Gasket.” SIGGRAPH '90 Animation Screening Room. SIGGRAPH Video Review 61, 1990. First Runner-Up, Truevision Videographics Competition, 1990. Appears in: ``The Fractal Universe: Animation," Media Magic, 1993.

135. Producer/Director/Animator. “Dynamics in the Quaternions.” SIGGRAPH Video Review 42, 1989. Appears in: ``The Fractal Universe: Animation," Media Magic, 1993.

☙ Educational Activities ❧

Postdoctoral Associates

- Moussa Mansour, 2015-6. Visiting from Univ. Sao Paolo.
- Matei Stroila, 2005-6. Research Scientist, Navteq, Nokia, Here.
- Peer-Timo Bremer, 2004-6. Research Scientist, Lawrence Livermore National Labs.
- Nate Carr, 2004-5. Senior Research Scientist, Adobe.

Ph.D. Students

- Apollo Ellis. Apple Internship 2016.
- Mingcheng Chen (2016). Currently at Google.
- Victor Lu (2013). Currently at Nokia.

- Mahsa Kameya (2012). Currently at Microsoft. MSR Internship 2010.
- Yuntao Jia (2010). Currently at Facebook.
- Jared Hoberock (2008). Research Scientist, Nvidia. NVidia Fellowship 2005,2007. NVidia Internship 2005.
- Xinli Ni (2007). Currently at Google, Microsoft Internship 2005.
- Hui Fang (2006). Currently at Google. Adobe Internship 2005.
- Nate Carr (2004). Senior Research Scientist, Adobe. NVidia Fellowship 2002 and 2003. Intel Internship 1999. NVidia Internship 2002.
- Wayne Cochran (1998). Assistant Professor, School of Engineering and Computer Science, Washington State University, Vancouver.
- Bart Stander (1997), Full Professor, Computer and Information Technology, Dixie State College of Utah.

M.S. Students

- 2023: Sharon Lam. "MWEPI-VIZ: An Interactive Visualization Dashboard for Ensemble Simulations in Computational Epidemiology."
- 2017: Yiwen Xu.
- 2015: Jared Saul.
- 2013: JohnMark Lau.
- 2011: Rajesh Bhasin.
- 2009: Apeksha Godiyal. Microsoft Visio.
- 2005: Jerry Talton (Ph.D. Stanford, 2012), Tony Kaap (Alias), Matei Stroila (NAVTEQ).
- 2004: Jesse Hall (NVidia, Microsoft Research Internship 2002. NVidia Fellowship 2003 and 2004), Patrick Lacz (RadTIME), Wen Su (NVidia).
- 2002: Hui Fang (continued), Ed Bachta (visualization programmer at IUPUI)
- 2000: Nate Carr (continued), Jay Kim.
- 1999: Chanikarn Kulratanayan.
- 1998: Jeyprakash Michaelraj (Alias).
- 1997: Paul Sherman (Periphery Consulting).
- 1996: Ioana Danciu. (Adobe), Brandon Burch (WSU Instructor), Yingjun Yu (Nokia), Wenbiao Jiang (CFD Research), Kurt Albrecht.
- 1994: Anand Ramagapalrao (Microsoft), Wayne Cochran (continued).
- 1992: Yongqi Yang (Adobe).

Courses Taught

UIUC Courses

- CS 498 Data Visualization (via the Coursera platform for the MCS-DS program)
- ENG 198 Grand Challenges (Fall 2012)

- CS 418 Interactive Graphics
- CS 419 Production Graphics
- CS 519 Scientific Visualization
- CS 497 JCH Advanced Shape Modeling (Fall 2000)
- CS 498 Procedural Modeling and Shading in Computer Graphics (Fall 2002)
- CS 498 Particle System Programming (Spring 2004, voluntary addition to course load)
- CS 498 Shape Modeling (Fall 2004)
- CS 498 Mobile Augmented Reality (Fall 2013, with Matei Stroila)
- CS 598 JCH Surface Reconstruction (2008)
- CS 491 EH Computational Topology Seminar (co-organized with J. Erickson)
- CS 491 GHY Graphics Seminar (co-organized with M. Garland, Y. Yu)

WSU Courses

- CptS 330 Numerical Computing
- CptS 442 Computer Graphics
- CptS 443 Computer-Human Interaction
- CptS 548 Advanced Computer Graphics

Coursera Courses

- Data Visualization, July-Aug. 2015. Enrollment: 88,399 from 198 different countries, including 1,197 with signature track credit toward the Data Mining certificate.

SIGGRAPH Reviewed One-Day Courses

- 2005: "Modern Techniques for Implicit Modeling" (Terry Yoo, James O'Brien), and "GPU Shading and Rendering" (Marc Olano)
- 2004: "Real Time Shading" (Marc Olano)
- 2003: "Beyond Blobs: Recent Advances in Implicit Surfaces" (Terry Yoo, Greg Turk) and "Real Time Shading" (Marc Olano)
- 2002: "Beyond Blobs: Recent Advances in Implicit Surfaces" (Terry Yoo and Greg Turk, org.) and "Real Time Shading" (Marc Olano).
- 2001: "Real Time Shading" (Marc Olano)
- 2000: "Approaches for Procedural Shading on Graphics Hardware" (Marc Olano)
- 1998: "Procedural Implicit Techniques for Modeling and Texturing" (Co-organizer with D. Ebert)
- 1997: "New Frontiers in Modeling and Texturing" (Co-organizer with D. Ebert.)
- 1996: "Fractal Models for Image Synthesis, Compression and Analysis" (Co-organizer with D. Saupe), "Procedural Modeling, Texturing, and Animation Techniques" (D. Ebert) and "Implicit Surfaces for Geometric Modelling and Computer Graphics (Jai Menon and Brian Wyvill)
- 1995: "Procedural Modeling, Texturing, and Animation Techniques" (D. Ebert).

- 1994: "New Directions for Fractal Modeling in Computer Graphics" (Course organizer).
- 1993: "Design, Visualization and Animation of Implicit Surfaces" (J. Bloomenthal, B. Wyvill).
- 1992: "Fractals: from Folk Art to Hyperreality" (P. Prusinkiewicz).
- 1991: "Fractal Modeling in 3-D Computer Graphics and Imaging" (Co-organizer with K. Musgrave).

Other

- Adler Planerarium, Scientific Visualization by Supercomputer. Chicago, Sept.-Nov. 1988.

Invited Colloquia and Presentations

Note: colloquia presented for the purpose of interviewing have been omitted.

- **Symposium on the Future of Data Analytics of the American & Canadian Societies of Animal Science**, invited talk on "Data Visualization," July 2018.
- **Workshop High Throughput Phenotyping and Data Analytics**, invited talk on "Data Visualization," Univ. Maryland, Nov. 2017.
- **31st Discovery Conference on Big Data Dairy Management**, invited talk on "Data Visualization," Nov. 2016.
- **University of Lorraine,** June 2014.
- **University of Notre Dame,** Center for Research Computing, "High Performance Computer Vision, An Oxymoron?," May 2012.
- **Graphics Interface Conference,** Keynote: Assistive Technology for the Aesthetically Impaired," May 2011.
- **University of Iowa Computing Conference,** organized and invited by U. Iowa students, "Assistive Technology for the Aesthetically Impaired," Feb. 2010.
- **AMS MathViz09**, U. Illinois, "It's Nice to See This Stuff Actually Used for Something," Mar. 2009. Host: George Francis.
- **INRIA**, Grenoble, France, "Assistive Technology for the Aesthetically Impaired," Sep. 2009. Host: Elmar Eisemann.
- **Texas A&M University.** Distinguished Lecture: "Assistive Technology for the Aesthetically Impaired," Feb. 2008. Host: Scott Schaeffer.
- **NAVTEQ.** "Industry Collaborations," Nov. 2007, Chicago, IL. Host: Matei Stroila.
- **Adobe-MIT Research Retreat.** "Textureshop Redux," Oct. 2007, Cambridge, MA. Host: David Salesin and Fredo Durand.
- **University of Konstanz Summerschool**. "Computational Topology of Implicit Surfaces" and "Computational Topology of Meshes," Sep. 2006, Gaschurn, Austria. Host: Dietmar Saupe.
- **Wolfram Research.** "Mathematical Visualization," May 2006, Champaign, IL. Host: Roger Germundsson.
- **Carnegie-Mellon University.** "Surface Constrained Particle Systems" and "Global Illumination on the GPU," Feb. 2005. Host: Doug James.
- **Imagina.** "Global Illumination on the GPU," Monaco, Feb. 2005.
- **3D Festival.** "Global Illumination on the GPU," Copenhagen, Denmark, May 2004.

- **INRIA**, Grenoble, France, "Global Illumination on the GPU," Mar. 2004, Host: Samuel Hornus.
- **University of Utah.** "Global Illumination on the GPU," Oct. 2003, Host: Chuck Hansen.
- **NVidia U.** Keynote speaker. July 2003, Host: Herbert Hu.
- **Army High Performance Computing Research Center (AHPCRC) Workshop on Graphics Modeling, Simulation and Visualization**. "Harnessing the Supercomputer in your PC's Graphics Card," June 2003. Host: Boquan Chen.
- **University of Illinois at Chicago (Math Dept.).** "Computational Topology for Computer Graphics." Apr. 2002. Host: Anatoly Libgober.
- **Colorado Springs SIGGRAPH Chapter**. "The Quest for Real-Time Procedural Solid Texturing." Mar. 2001. Host: Dino Schweitzer.
- **Northwestern University**. "The Quest for Real-Time Procedural Solid Texturing." Oct. 2000. Host: Benjamin Watson.
- **Shape Modeling International.** Invited Speaker, Aizu, Japan, March 1999.
- **Universität Freiburg.** "Recurrent Modeling." Sep. 1997. Host: Dietmar Saupe.
- **University of Utah.** "The Topology of Implicit Surfaces." Feb. 1997. Host: Chuck Hansen.
- **University of Illinois at Chicago (EECS Dept.).** "The Topology of Implicit Surfaces." Feb. 1997. Host: Tom DeFanti.
- **Interval Research.** "Recurrent Modeling." July 1996. Host: Sally Rosenthal.
- **University of Washington.** "Recurrent Modeling." Dept. of Computer Science and Engineering. Jan. 1996. Host: Linda Shapiro.
- **Boeing Information & Support Services.** "Why Fractal Image Compression Isn't Fractal." Computer Graphics & Multimedia Group. Jan. 1996. Host: David Kerlick.
- **University of Idaho.** "Why Fractal Image Compression Isn't Fractal." Computer Science Dept. Nov. 1995. Host: Deborah Frincke.
- **NATO Advanced Study Institute** on Fractal Image Compression and Image Analysis. "Similarity Hashing: A model-based vision solution to the inverse problem of recurrent iterated function systems." July 1995.
- **Simon Fraser University.** "Recurrent Modeling." School of Computing Science. July 1995. Host: F. David Fracchia.
- **University of Calgary.** "Procedural Geometric Instancing." Dept. of Computer Science. Jan. 1994. Host: Przemyslaw Prusinkiewicz.
- **Purdue University.** "Linear Fractals in Computer Graphics." Computer Science Dept. June 1992. Host: Chandrajit Bajaj.

ꕥ Professional Activities ꕥ

Editorships and Papers Chairships

- Area Editor (Visual Computing) and Editorial Board Member, ACM Books 2014-2022.
- Papers Co-Chair (with Scott Schaefer), Shape Modeling International, 2012.
- Editor-in-Chief, ACM Transactions on Graphics, 2002-2008. Past EiC, 2008-2011.

- Associate Editor, ACM Transactions on Graphics, 2000-2002.
- Guest Editor, Communications of the ACM 35(6) June 1992.
- Guest Editor, SIGGRAPH Video Review 96, ``Video Supplement to the Conference Proceedings," Aug. 1993.
- Guest Editor (with E.E. Catmull), SIGGRAPH Video Review 86, ``Video Supplement to the Conference Proceedings," July 1992.

Professional Organization Leadership

- SIGGRAPH Specialized Conferences Committee, 2010-20.
- Chair, SIGGRAPH Service Award, 2005-8.
- ACM SIGGRAPH Advisory Board, 2005.
- Director for Communications, SIGGRAPH Executive Committee, 1996-9.
- Director at Large, SIGGRAPH Executive Committee, 1994-6.

Review Panels

- King Abdullah University of Science and Technology, Mar. 2012.
- Science Foundation Ireland, Oct. 2006.
- INRIA Systemes Cognitifs D, May 2006.
- Texas A&M University Dept. of Computer Science, Oct. 2024.

Conferences Chaired

- Co-Chair (with A. Marshall-Colon, S.P. Long and E.H. DeLucia), Plants-in-Silico, NCSA, UIUC, 2016.
- Co-Chair (with S. Gao, J. Jorge, K. Polthier and W. Wang), Shape Modeling International, Hong Kong, Oct. 2014.
- Co-Chair (with Marie-Paule Cani), Shape Modeling International, MIT, June 2005.
- Co-Chair (with K. van Overveld), Implicit Surfaces, Eindhoven, Netherlands, 1996.
- Chair. Western Computer Graphics Symposium, Panorama, BC, 1996.

Program Committees

- SIGGRAPH Papers Committee: 2001, 2006, 2007, 2010
- SIGGRAPH Asia Papers Committee, 2008.
- SIGGRAPH Sketches Jury: 1998, 1999.
- Symposium on Geometry Processing, since 2006.
- Interactive 3D Graphics and Games, since 2005.
- Pacific Graphics, since 2002.

- Shape Modeling International, since 1997.
- Implicit Surfaces (all).
- Eurographics 2004.
- Graphics Hardware, since 2004.
- Web3D 2003.
- IEEE Virtual Reality 2000, 2001, 2002.
- Virtual Reality Annual International Symposium 1998.
- Visualization and Mathematics 1997.
- Supercomputing 1991-3, 1995.

Memberships

- Association for Computing Machinery
- ACM Special Interest Group on Computer Graphics and Interactive Techniques (SIGGRAPH)
- IEEE Computer Society

University of Illinois Committees

University of Illinois System

- Steering Committee, Start MyResearch Portal for university system-wide research management software, 2014-2016.
- University Technology Management Team, 2012-2013.

Urbana-Champaign Campus

- Ex-Officio (Graduate College Representative), Senate Educational Policy Committee, 2014-21.
- Chair, Senate Subcommittee on IT, 2013-6, Member, 2008-10.
- University Senate Executive Committee, 2013-6.
- IT Governance Executive Committee, 2012-5.
- Chair, IT Governance Research Subcommittee, 2012-5.
- Chair, Stewarding Excellence IT Project Team, 2010.
- Human Factors Transition Committee, 2008-9.
- Senate, 2007-14,

College of Engineering

- Chair, Promotion & Tenure Committee, 2013, Member 2012-2013.
- Vice-Chair, Executive Committee, 2013. Secretary, 2012-2013. Member, 2011-2013.

- Chair, Engineering IT Steering Committee, 2010-11.

Dept. of Computer Science

- Department Head Search Committee, 2007-9.
- Advisory Committee (peer elected), 2005-2006.
- Industry Relations Committee, 2005-2007.
- Technology, Facilities and Services Committee (CS), 2005-2012.
- Engineering Open House CS Representative (CS), 2001-2006.
- Recruiting Committee, 2004, 2005.
- Curriculum Committee, 2002-3.
- Chair, Distinguished Lecture Series 2001-2002, Member 2000-2002.
- Computer Systems (CS), 2000-2001.
- Fellowships, Assistantships and Admissions, 2000-2001.

WSU

- School of EECS Computer Science Area Chair, 1998-2000.
- School of EECS Computer Science Accreditation Coordinator, 1999-2000.
- School of EECS Curriculum Committee 1998- (Chair, 1999-2000).
- School of EECS Graduate Studies Committee 1993-8.
- School of EECS Laboratory Committee 1994-6.
- WSU Center for Visualization, Analysis and Design in the Molecular Sciences (VADMS) Advisory Board 1994-2000.