HUGUES HOPPE

hhoppe+private@gmail.com http://hhoppe.com/ mobile +1.206.276.1674

Employment

Research Manager and Principal Researcher, Microsoft Research, 2009-present.
Principal Researcher, Microsoft Research, 2006-2009.
Senior Researcher, Microsoft Research, 2002-2006.
Researcher, Microsoft Research, 1994-2002.
Research assistant, University of Washington, 1990-1994.

Education

Ph.D., Computer Science and Engineering, University of Washington, 1994.
M.S., Computer Science and Engineering, University of Washington, 1991.
B.S. summa cum laude, Electrical Engineering, University of Washington, 1989.

Awards

ACM Fellow, 2011.
ACM SIGGRAPH Computer Graphics Achievement Award, 2004.
Finalist, Discover Magazine Awards for Technological Innovation, 1995.
IBM Graduate Fellowship, 1993.
University of Washington Undergraduate Merit Scholarship, 1987, 1988, 1989.

Professional service

Technical papers chair, ACM SIGGRAPH 2011.
Editor-in-chief, ACM Transactions on Graphics, 2009-2011.
Associate editor, ACM Transactions on Graphics, 2003-2008.
Editorial board, Foundations and Trends in Computer Graphics and Vision, 2004-present.
Founding co-chair, Eurographics Symposium on Geometry Processing, 2003.
Co-chair, Eurographics 2004.
ACM SIGGRAPH Papers Advisory Group, 2014-2019.
Papers advisory board, ACM SIGGRAPH, 2010, 2012, 2014.
Papers advisory board, ACM SIGGRAPH Asia, 2011, 2015.
Papers committee, ACM SIGGRAPH, 1998, 1999, 2002, 2004, 2005, 2007, 2008, 2010, 2013, 2015.
Papers committee, ACM SIGGRAPH Asia, 2009, 2010.
Papers committee, ACM Symposium on Interactive 3D Graphics and Games, 1999, 2007, 2008, 2009.
Papers committee, Graphics Interface, 1999.
Papers committee, IEEE Visualization, 1999, 2002.
Papers committee, Eurographics, 2000, 2001, 2014, 2015.
Papers committee, Shape Modeling International, 2004, 2009.
Papers committee, Eurographics Symposium on Geometry Processing, 2004, 2005, 2006, 2007, 2008, 2009.
Papers committee, Pacific Graphics, 2006.
Papers committee, SIAM Conference on Geometric and Physical Modeling, 2013.
Organizing committee, SIAM Conference on Geometric Design, 1999.
Papers committee, Symposium on 3D Data Processing, Visualization and Transmission, 2008.

Technology transfers

Mesh simplification in Softimage 3D, 1997.
Optimized mesh traversal and progressive meshes in Microsoft DirectX 9 SDK, 2003.
Parallel texture synthesis code licensed to Weta Digital (and later adopted by Disney), 2006.
Poisson surface reconstruction method widely adopted (e.g. in MeshLab, VTK, CGAL), 2007.
Geometry clipmaps and texture synthesis licensed to Electronic Arts, 2007.
Seamless stitching of the terapixel Worldwide Telescope Digitized Sky Survey, 2010.
Real-time dance gesture recognition in Kinect Star Wars, 2012.
Mesh processing including topology repair in Microsoft Holo-Capture pipeline, 2015.
Open-source release of mesh processing library on GitHub, 2016.
Fast video looping in Microsoft Pix iOS app, 2016.

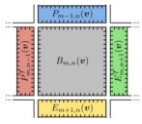
Selected publications

(See citations in Google Scholar.)

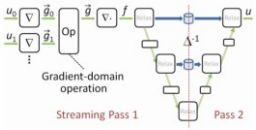
High-quality streamable free-viewpoint video.
Alvaro Collet, Ming Chuang, Pat Sweeney, Don Gillett, Dennis Evseev, David Calabrese, Hugues Hoppe, Adam Kirk, Steve Sullivan.
ACM Trans. Graphics (SIGGRAPH), 34(4), 2015.

Automating image morphing using structural similarity on a halfway domain.
Jing Liao, Rodolfo Lima, Diego Nehab, Hugues Hoppe, Pedro Sander, Jinhui Yu.
ACM Trans. Graphics, 33(5), 2014.

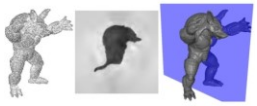
Automated video looping with progressive dynamism.
Zicheng Liao, Neel Joshi, Hugues Hoppe.
ACM Trans. Graphics (SIGGRAPH), 32(4), 2013.



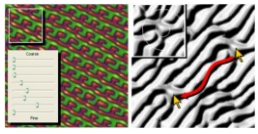
GPU-efficient recursive filtering and summed-area tables.
Diego Nehab, André Maximo, Rodolfo Lima, Hugues Hoppe.
ACM Trans. Graphics (SIGGRAPH Asia), 30(6), 2011.



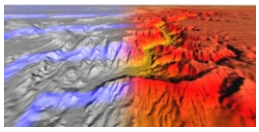
Streaming multigrid for gradient-domain processing on large images.
Michael Kazhdan, H. Hoppe.
ACM Trans. Graphics (SIGGRAPH), 27(3), 2008.



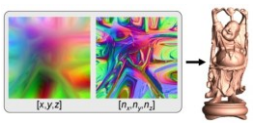
Poisson surface reconstruction.
Michael Kazhdan, Matthew Bolitho, Hugues Hoppe.
Symposium on Geometry Processing 2006.



Parallel controllable texture synthesis.
Sylvain Lefebvre, Hugues Hoppe.
ACM Trans. Graphics (SIGGRAPH), 24(3), 2005.



Geometry clipmaps: terrain rendering using nested regular grids.
Frank Losasso, Hugues Hoppe.
ACM Trans. Graphics (SIGGRAPH), 23(3), 2004.

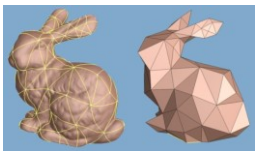


Geometry images.
Xianfeng Gu, Steven Gortler, Hugues Hoppe.
ACM Trans. Graphics (SIGGRAPH), 21(3), 2002.

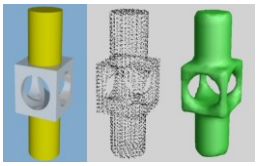
[Displaced subdivision surfaces](#).
Aaron Lee, Henry Moreton, Hugues Hoppe.
ACM SIGGRAPH 2000.

[Texture mapping progressive meshes](#).
Pedro Sander, John Snyder, Steven Gortler, Hugues Hoppe.
ACM SIGGRAPH 2001.

[Progressive meshes](#).
Hugues Hoppe.
ACM SIGGRAPH 1996.



[Multiresolution analysis of arbitrary meshes](#).
Matthias Eck, Tony DeRose, Tom Duchamp, H. Hoppe, Michael Lounsbery, Werner Stuetzle.
ACM SIGGRAPH 1995.

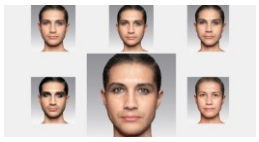


[Surface reconstruction from unorganized points](#).
Hugues Hoppe, Tony DeRose, Tom Duchamp, John McDonald, Werner Stuetzle.
ACM SIGGRAPH 1992.

Other publications

[Gigapixel panorama video loops](#).
Mingming He, Jing Liao, Pedro Sander, H. Hoppe.
Under review.

[Motion graphs for unstructured textured meshes](#).
Fabian Prada, M. Kazhdan, Ming Chuang, Alvaro Collet, H. Hoppe.
ACM Trans. Graphics (SIGGRAPH), 35(4), 2016.

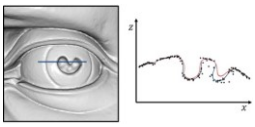


[New controls for combining images in correspondence](#).
J. Liao, D. Nehab, H. Hoppe, P. Sander.
IEEE Trans. Vis. Comput. Graphics, 22(7), 2016.

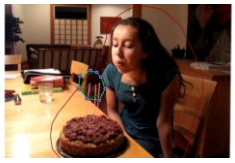
[Semi-automated video morphing](#).
Jing Liao, Rodolfo Lima, Diego Nehab, Hugues Hoppe, Pedro Sander.
Eurographics Symposium on Rendering, 2014.

[A fresh look at generalized sampling](#).
Diego Nehab, Hugues Hoppe.
Foundations and Trends on Computer Graphics and Vision, 8(1), 2014.

[Fast computation of seamless video loops](#).
J. Liao, M. Finch, H. Hoppe.
ACM Trans. Graphics (SIGGRAPH Asia), 34(6), 2015.



Screened Poisson surface reconstruction.
Michael Kazhdan, Hugues Hoppe.
ACM Trans. Graphics, 32(3), 2013.



Cliplets: Juxtaposing still and dynamic imagery.
Neel Joshi, Matt Uyttendaele, Steven Drucker, Hugues Hoppe, Michael Cohen, Sisil Mehta, Bill Freeman.
UIST 2012.

A subdivision-based representation for vector image editing.
Zicheng Liao, Hugues Hoppe, David Forsyth, Yizhou Yu.
IEEE Trans. Vis. Comput. Graphics, 2012.

Freeform vector graphics with controlled thin-plate splines.
Mark Finch, John Snyder, Hugues Hoppe.
ACM Trans. Graphics (SIGGRAPH Asia), 30(6), 2011.

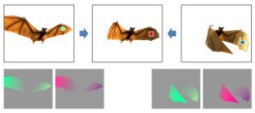
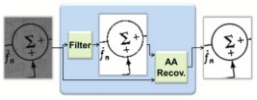
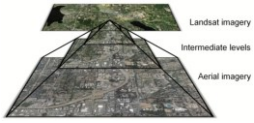


Image-space bidirectional scene reprojection.
Lei Yang, Yu-Chiu Tse, Pedro Sander, Jason Lawrence, Diego Nehab, Hugues Hoppe, Clara Wilkins.
ACM Trans. Graphics (SIGGRAPH Asia), 30(6), 2011.

Real-time classification of dance gestures from skeleton animation.
Michalis Raptis, Darko Kirovski, Hugues Hoppe.
Symposium on Computer Animation 2011.



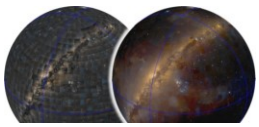
Antialiasing recovery.
Lei Yang, Pedro Sander, Jason Lawrence, Hugues Hoppe.
ACM Trans. Graphics, 30(3), 2011.



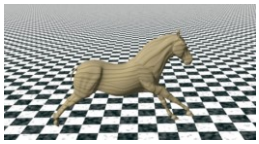
Optimizing continuity in multiscale imagery.
C. Han, H. Hoppe.
ACM Trans. Graphics (SIGGRAPH Asia), 29(6), 2010.

Metric-aware processing of spherical imagery.
M. Kazhdan, H. Hoppe.
ACM Trans. Graphics (SIGGRAPH Asia), 29(6), 2010.

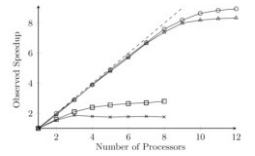
Seamless montage for texturing models.
R. Gal, D. Cohen-Or, Y. Wexler, E. Ofek, H. Hoppe.
Eurographics 2010.



Distributed gradient-domain processing of planar and spherical images.
M. Kazhdan, D. Surendran, H. Hoppe.
ACM Trans. Graphics, 29(2), 2010.



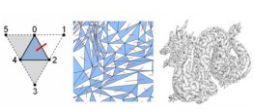
Amortized supersampling.
Lei Yang, D. Nehab, P. Sander, P. Sitthi-amorn, J. Lawrence, H. Hoppe.
ACM Trans. Graphics (SIGGRAPH Asia), 28(5), 2009.



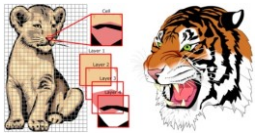
[Parallel Poisson surface reconstruction].
M. Bolitho, M. Kazhdan, R. Burns, H. Hoppe.
ISVC 2009.

[Parallel view-dependent level-of-detail control].
Liang [Nicky] Hu, P. Sander, H. Hoppe.
IEEE Trans. Vis. Comput. Graphics, 16(5), 2010.

[Parallel view-dependent refinement of progressive meshes].
Liang [Nicky] Hu, P. Sander, H. Hoppe.
Symposium on Interactive 3D Graphics and Games 2009.



[Efficient traversal of mesh edges using adjacency primitives].
P. Sander, D. Nehab, E. Chlamtac, H. Hoppe.
ACM Trans. Graphics (SIGGRAPH Asia), 27(5), 2008.



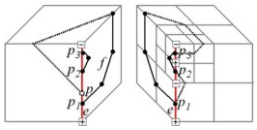
[Random-access rendering of general vector graphics].
D. Nehab, H. Hoppe.
ACM Trans. Graphics (SIGGRAPH Asia), 27(5), 2008.

[Factoring repeated content within and among images].
H. Wang, Y. Wexler, E. Ofek, H. Hoppe.
ACM Trans. Graphics (SIGGRAPH), 27(3), 2008.

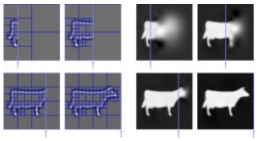
[Multi-view stereo for community photo collections].
M. Goesele, N. Snavely, B. Curless, H. Hoppe, S. Seitz.
ICCV 2007.

[Design of tangent vector fields].
M. Fisher, P. Schröder, M. Desbrun, H. Hoppe.
ACM Trans. Graphics (SIGGRAPH), 26(3), 2007.

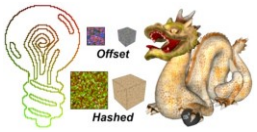
[Compressed random-access trees for spatially coherent data].
S. Lefebvre, H. Hoppe.
Symposium on Rendering 2007.



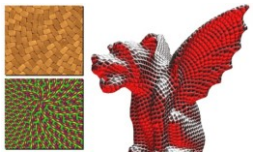
[Unconstrained isosurface extraction on arbitrary octrees].
M. Kazhdan, A. Klein, K. Dalal, H. Hoppe.
Symposium on Geometry Processing 2007.



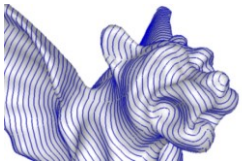
[Multilevel streaming for out-of-core surface reconstruction].
M. Bolitho, M. Kazhdan, R. Burns, H. Hoppe.
Symposium on Geometry Processing 2007.



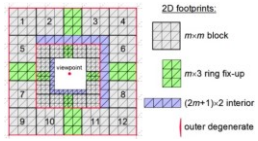
[Perfect spatial hashing].
S. Lefebvre, H. Hoppe.
ACM Trans. Graphics (SIGGRAPH), 25(3), 2006.



[Appearance-space texture synthesis].
S. Lefebvre, H. Hoppe.
ACM Trans. Graphics (SIGGRAPH), 25(3), 2006.



[Fast exact and approximate geodesics on meshes](#).
V. Surazhsky, T. Surazhsky, D. Kirsanov, S. Gortler, H. Hoppe.
ACM Trans. Graphics (SIGGRAPH), 24(3), 2005.

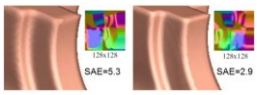


[Terrain rendering using GPU-based geometry clipmaps](#).
A. Asirvatham, H. Hoppe.
In GPU Gems 2, M. Pharr and R. Fernando (eds.), Addison-Wesley, March 2005.

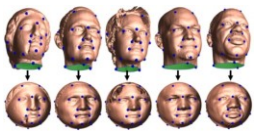
[Digital photography with flash and no-flash image pairs](#).
G. Petschnigg, M. Agrawala, H. Hoppe, R. Szeliski, M. Cohen, K. Toyama.
ACM Trans. Graphics (SIGGRAPH), 23(3), 2004.

[Inter-surface mapping](#).
J. Schreiner, A. Asirvatham, E. Praun, H. Hoppe.
ACM Trans. Graphics (SIGGRAPH), 23(3), 2004.

[Removing excess topology from isosurfaces](#).
Z. Wood, H. Hoppe, M. Desbrun, P. Schröder.
ACM Trans. Graphics, 23(2), 2004.

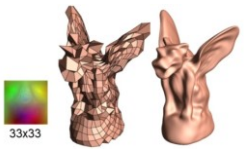


[Signal-specialized parameterization for piecewise linear reconstruction](#).
G. Tewari, J. Snyder, P. Sander, S. Gortler, H. Hoppe.
Symposium on Geometry Processing 2004.



[Consistent spherical parameterization](#).
A. Asirvatham, H. Hoppe, E. Praun.
Computer Graphics and Geometric Modeling (CGGM) 2005 Workshop.

[Shape compression using spherical geometry images](#).
H. Hoppe, E. Praun.
In *Advances in Multiresolution for Geometric Modelling*, N. Dodgson, M. Floater, M. Sabin (eds.), Springer-Verlag, 2005.

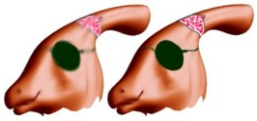


[Smooth geometry images](#).
F. Losasso, H. Hoppe, S. Schaefer, J. Warren.
Symposium on Geometry Processing 2003.

[Spherical parametrization and remeshing](#).
E. Praun, H. Hoppe.
ACM Trans. Graphics (SIGGRAPH), 22(3), 2003.

[Multi-chart geometry images](#).
P. Sander, Z. Wood, S. Gortler, J. Snyder, H. Hoppe.
Symposium on Geometry Processing 2003.

[Geometry videos: A new representation for 3D animations](#).
H. Briceño, P. Sander, L. McMillan, S. Gortler, H. Hoppe
Symposium on Computer Animation 2003.



[Signal-specialized parametrization].
P. Sander, S. Gortler, J. Snyder, H. Hoppe.
Eurographics Workshop on Rendering 2002.

[Fine tone control in hardware hatching].
M. Webb, E. Praun, A. Finkelstein H. Hoppe.
International Symposium on Non-Photorealistic Animation and Rendering 2002.

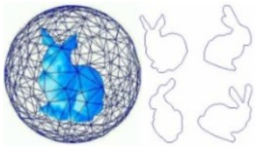
[Real-time hatching].
E. Praun, H. Hoppe, M. Webb, A. Finkelstein.
ACM SIGGRAPH 2001.

[Real-time fur over arbitrary surfaces].
J. Lengyel, E. Praun, A. Finkelstein, H. Hoppe.
Symposium on Interactive 3D Graphics 2001.

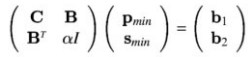
[Lapped textures].
E. Praun, A. Finkelstein, H. Hoppe.
ACM SIGGRAPH 2000.

[Discontinuity edge overdraw].
P. Sander, H. Hoppe, J. Snyder, S. Gortler,
Symposium on Interactive 3D Graphics 2001.

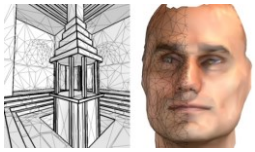
[Silhouette clipping].
P. Sander, X. Gu, S. Gortler, H. Hoppe, J. Snyder.
ACM SIGGRAPH 2000.



[Silhouette mapping].
X. Gu, S. Gortler, H. Hoppe, L. McMillan, B. Brown, A. Stone.
Technical Report TR-1-99, Department of Computer Science, Harvard University, March 1999.

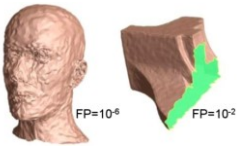


[Efficient minimization of new quadric metric for simplifying meshes with appearance attributes].
H. Hoppe, S. Marschner.
Microsoft Research Technical Report MSR-TR-2000-64, June 2000.



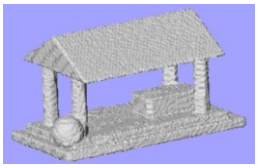
[New quadric metric for simplifying meshes with appearance attributes].
H. Hoppe.
IEEE Visualization 1999.

[Optimization of mesh locality for transparent vertex caching].
H. Hoppe.
ACM SIGGRAPH 1999.

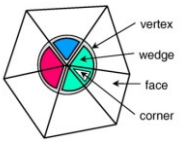


[Robust mesh watermarking].
E. Praun, H. Hoppe, A. Finkelstein.
ACM SIGGRAPH 1999.

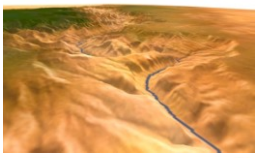
[View-based rendering: visualizing real objects from scanned range and color data](#).
K. Pulli, M. Cohen, T. Duchamp, H. Hoppe, L. Shapiro, W. Stuetzle.
Eurographics Workshop on Rendering 1997.



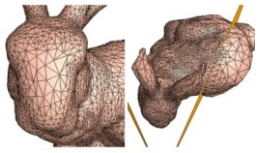
[Robust meshes from multiple range maps](#).
K. Pulli, T. Duchamp, H. Hoppe, J. McDonald, L. Shapiro, W. Stuetzle.
International Conference on Recent Advances in 3-D Digital Imaging and Modeling, May 1997.



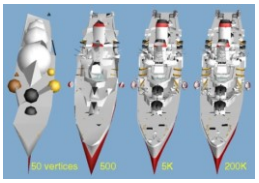
[Efficient implementation of progressive meshes](#).
H. Hoppe.
Computers & Graphics, 22(1), 1998.



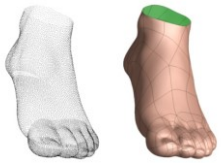
[Smooth view-dependent level-of-detail control and its application to terrain rendering](#).
H. Hoppe.
IEEE Visualization 1998.



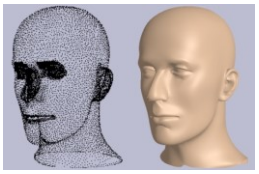
[View-dependent refinement of progressive meshes](#).
H. Hoppe.
ACM SIGGRAPH 1997.



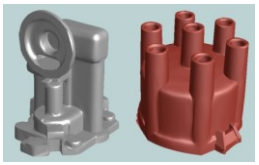
[Progressive simplicial complexes](#).
J. Popovic, H. Hoppe.
ACM SIGGRAPH 1997.



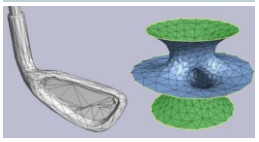
[Automatic reconstruction of B-spline surfaces of arbitrary topological type](#).
M. Eck, H. Hoppe.
ACM SIGGRAPH 1996.



[Surface reconstruction from unorganized points](#).
H. Hoppe.
PhD Thesis, Dept. of Computer Science and Engineering, University of Washington, June 1994.



[Piecewise Smooth Surface Reconstruction](#).
H. Hoppe, T. DeRose, T. Duchamp, M. Halstead, H. Jin, J. McDonald, J. Schweitzer, W. Stuetzle.
ACM SIGGRAPH 1994.



[Mesh optimization](#).
H. Hoppe, T. DeRose, T. Duchamp, J. McDonald, W. Stuetzle.
ACM SIGGRAPH 1993.

Selected talks

Keynote, Interactive 3D Graphics and Games, 2015.
Keynote, Eurographics, 2013.
Keynote, Pacific Graphics, 2010.
Distinguished lecture, UIUC, 2009.
Invited speaker, Symposium on Solid and Physical Modeling, 2008.
Invited speaker, IMAGINA, 2007.
Distinguished lecture, University of Maryland, 2006.
Invited speaker, SIAM Conference on Imaging Science, 2006.
Invited speaker, Mathematical Methods for Curves and Surfaces, 2004.
Invited speaker, Symposium on Geometry Processing, 2004.
Invited speaker, International Meshing Roundtable, 2002.
Invited speaker, Symposium on Computational Geometry, 1998.

Patents

53 issued patents.

Students advised

Fabian Prada Nino (Johns Hopkins University), Summer intern, 2015, 2016.
Jing Liao (Hong Kong University of Science and Technology), Summer intern, 2014.
Zicheng Liao (UIUC), Summer intern, 2012, 2013.
Connelly Barnes (Princeton University), Summer intern, 2010.
Charles Han (Columbia University), Summer intern, 2009.
Ran Gal (Tel-Aviv University), Summer intern, 2008.
Shubho Sengupta (UC Davis), Summer intern, 2008.
Diego Nehab, 2-year post-doc, 2007-2009.
Huamin Wang (Georgia Tech), Summer intern, 2007.
Diego Nehab (Princeton University), Summer intern, 2006
Sylvain Lefebvre, 1-year post-doc, 2005.
Arul Asirvatham (University of Utah), Summer intern, 2004.
Sylvain Lefebvre (INRIA Rhone-Alpes), Summer intern, 2004.
Frank Losasso (Stanford University), Summer intern, 2003.
Zoë Wood (Caltech), Summer intern, 2001, 2002.
Pedro Sander (Harvard University), Summer intern, 2000, 2001, 2002.
Aaron Lee (Princeton University), Summer intern, 1999.
Emil Praun (Princeton University), Summer intern, 1999, 2001.
Jovan Popovic (Carnegie Mellon University), Summer intern, 1997.
Matthew Richardson (University of Washington), Summer intern, 1997.
Sameer Nene (Columbia University), Summer intern, 1997.
Jovan Popovic (Carnegie Mellon University), Summer intern, 1996.
Jonathan Shade (University of Washington), Summer intern, 1995.

Thesis committees

Zicheng Liao (UIUC), PhD Thesis committee, 2014.
Charles Han (Columbia University), PhD Thesis committee, 2011.
Arul Asirvatham (University of Utah), Master's Thesis committee, 2005.
Zoë Wood (Caltech), PhD Thesis committee, 2003.
Pedro Sander (Harvard University), PhD Thesis committee, 2003.

Xavier Décoret (University of Grenoble), PhD Thesis committee, 2002.
Chris Prince (University of Washington), Master's Thesis committee, 2000.
Peter Lindstrom (Georgia Tech), PhD Thesis committee, 2000.
Kari Pulli (University of Washington), PhD Thesis committee, 1997.