

# Frédo Durand

## Professional Preparation

École Normale Supérieure de Paris	Bachelor (math and computer science)	1993
INPG, Grenoble, France	MS (computer science)	1994
Université J. Fourier, France	PhD (Computer Science)	1999

## Appointments

Massachusetts Institute of Technology	Professor of EECS	Jul. 2012 – present
Massachusetts Institute of Technology	Associate Professor of EECS	Jul. 2006 – 2012
Massachusetts Institute of Technology	Assistant Professor of EECS	Sep. 2002 – 2006
Massachusetts Institute of Technology	Post-doctoral fellow	Sep. 1999-Sep. 2002
Université J. Fourier, France	Teaching assistant	Sep. 1997-Sep. 1999

**Conference organization:** Co-organizer and paper co-chair of the first IEEE International Conference on Computational Photography.

Co-organizer (with Marc Levoy and Rick Szeliski) of the 2005 Symposium on Computational Photography and Video, Member of the advisory board of Image and Meaning 2, an interdisciplinary conference on scientific illustration and education

**Program Committees and Editorial Boards:** ACM SIGGRAPH, Eurographics Symp. on Rendering, Graphics Interface, Eurographics, NPAR, Symposium on Point-Based Rendering, ACM Transactions on Graphics, Foundations and Trends in Computer Graphics and Computer Vision.

## Awards

Eurographics Young Researcher Award 2004

NSF CAREER award 2005

Microsoft Research New Faculty Fellowship 2005

Sloan fellowship 2006

Spira award for distinguished teaching 2007

MIT Faculty Research and Innovation Fellowship 2012

Eurographics fellow 2014

ACM SIGGRAPH Computer Graphics Achievement Award 2016

ACM fellow 2016

ACM Siggraph Academy 2018

## Publications

### 1. Chapters in Books

- 1 Chan, Eric and Frédo Durand. Fast Prefiltered Lines. Chapter in *GPU Gems II* edited by Matt Pharr, Addison-Wesley Professional, March 2005 \*\*

### 2. Papers in Refereed Journals

1. Durand, Frédo, George Drettakis, and Claude Puech, "Fast and Accurate Hierarchical Radiosity Using Global Visibility," *ACM Transactions on Graphics* Volume 18, No. 2, pp. 128-170, April 1999.
2. Durand, Frédo, George Drettakis, and Claude Puech, "The 3D Visibility Complex," *ACM Transactions on Graphics*, 21(2), pp. 176-206, April 2002.
3. Durand, Frédo, Julie Dorsey, "Fast Bilateral Filtering for the Display of High-Dynamic-Range Images," *ACM Transactions on Graphics (Proceedings of SIGGRAPH)*, 21(3), pp. 257-266, July 2002.
4. Cohen-Or, Daniel, Yiorgos Chrysanthou, Claudio Silva and Frédo Durand, "A Survey of Visibility for Walkthrough Applications," *IEEE Transactions on Visualization and Computer Graphics*, 9(3), pp. 412-431, July-September 2003.
5. Décoret, Xavier, Frédo Durand, François X. Sillion, Julie Dorsey, "Billboard Clouds for Extreme Model Simplification," *ACM Transactions on Graphics (Proceedings of SIGGRAPH)*, 22(3), pp. 689-696, July 2003.
6. Jones, Thouis R., Frédo Durand, Mathieu Desbrun, "Non-Iterative, Feature-Preserving Mesh Smoothing," *ACM Transactions on Graphics (Proceedings of SIGGRAPH)*, 22(3), pp. 943-949, July 2003\*\*.
7. Semet, Yann, Una-May O'Reilly, Frédo Durand, "An Interactive Artificial Ant Approach to Non-photorealistic Rendering," *Lecture Notes in Computer Science*, Volume 3102, pp. 188-200, January 2004\*\*.
8. Jones, Thouis R., Frédo Durand, Matthias Zwicker, "Normal Improvement for Point Rendering," *IEEE Computer Graphics & Applications*, pp. 53-56, July/August 2004\*\*.
9. Eisemann, Elmar, Frédo Durand, "Flash photography enhancement via intrinsic relighting," *ACM Transactions on Graphics (Proceedings of SIGGRAPH)*, 23(3), pp. 673-678, 2004\*\*.
10. Willats, John and Frédo Durand, "Defining Pictorial Style: Lessons from Linguistics and Computer Graphics," *Axiomathes*, 15(2), pp. 319-351 January 2005
11. Durand, Frédo, Nicolas Holzschuch, Cyril Soler, Eric Chan, François X. Sillion, "A Frequency Analysis of Light Transport," *ACM Transactions on Graphics (Proceedings of SIGGRAPH)*, 24(3), pp. 1115-1126, July 2005.

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\*\* Outgrowth of Supervised Student Research

12. Liu, Ce, Antonio Torralba, William T. Freeman, Frédo Durand, Edward H. Adelson, "Motion Magnification," *ACM Transactions on Graphics (Proceedings of SIGGRAPH)*, 24(3), pp. 519-526, July 2005.
13. McGuire, Morgan, Wojciech Matusik, Hanspeter Pfister, John F. Hughes, and Frédo Durand, "Defocus Video Matting," *ACM Transactions on Graphics (Proceedings of SIGGRAPH)*, 24(3), pp. 567-576, July 2005.
14. Matusik, Wojciech, Matthias Zwicker, and Frédo Durand, "Texture design using a simplicial complex of morphable textures," *ACM Transactions on Graphics (Proceedings of SIGGRAPH)*, 24(3), pp. 787-794, July 2005.
15. Bae, Soonmin, Sylvain Paris, and Frédo Durand, "Two-scale Tone Management for Photographic Look." *ACM Transactions on Graphics (Proceedings of SIGGRAPH)*, 25(3), pp. 637-645, July 2006.\*\*
16. Kautz, Jan, Solomon Boulos, and Frédo Durand, "Interactive Editing and Modeling of Bidirectional Texture Functions" *ACM Transactions on Graphics (Proceedings of SIGGRAPH)*, 26(3), (8 pages), July 2007.
17. Levin, Anat, Rob Fergus, Frédo Durand, and William Freeman, "Image and Depth from a Conventional Camera with a Coded Aperture" *ACM Transactions on Graphics (Proceedings of SIGGRAPH)*, 26(3), (9 pages), July 2007.
18. Dachsbacher, Carsten, Marc Stamminger, George Drettakis, and Frédo Durand "Implicit Visibility and Antiradiance for Interactive Global Illumination" *ACM Transactions on Graphics (Proceedings of SIGGRAPH)*, 26(3), (10 pages), July 2007
19. Ragan-Kelley, Jonathan, Charlie Kilpatrick, Brian Smith, Doug Epps, Paul Green, Christophe Hery, and Frédo Durand, "The Lightspeed Automatic Interactive Lighting Preview System" *ACM Transactions on Graphics (Proceedings of SIGGRAPH)*, 26(3), (11 pages), July 2007. \*\*
20. Green, Paul, Wenyang Sun, Wojciech Matusik, and Frédo Durand, "Multi-aperture Photography" *ACM Transactions on Graphics (Proceedings of SIGGRAPH)*, 26(3), (7 pages), July 2007. \*\*
21. Chen, Jiawen, Sylvain Paris, and Frédo Durand, "Real-time Edge-Aware Image Processing with the Bilateral Grid" *ACM Transactions on Graphics (Proceedings of SIGGRAPH)*, 26(3), (9 pages), July 2007. \*\*
22. Judd, Tilke, Frédo Durand, and Edward H. Adelson, "Apparent Ridges for Line Drawing" *ACM Transactions on Graphics (Proceedings of SIGGRAPH)*, 26(3), (7 pages), July 2007. \*\*
23. Zwicker, Matthias, Anthony Vetro, Sehoon Yea, Wojciech Matusik, Hanspeter Pfister, Frédo Durand, "Signal Processing for Multi-View 3D Displays: Resampling, Antialiasing and Compression" *IEEE Signal Processing Magazine*, pp. 88-96, November 2007.

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24. Ben-Artzi, Aner, Kevin Egan, Ravi Ramamoorthi and Frédo Durand, “A Precomputed Polynomial Representation for Interactive BRDF Editing with Global Illumination” *ACM Transactions on Graphics*, 27(2) , (12 pages), April 2008.
25. Goldberg, Alexander, Matthias Zwicker and Frédo Durand, “Anisotropic Noise” *ACM Transactions on Graphics*, 27(3), (Proc.Siggraph), (8 pages), August 2008.
26. Hsu, Eugene, Tom Mertens, Sylvain Paris, Shai Avidan, Frédo Durand. “Light Mixture Estimation for Spatially Varying White Balance” *ACM Transactions on Graphics*, 27(3), (Proc.Siggraph), (7 pages), August 2008.\*\*
27. Lehtinen, Jaakko, Matthias Zwicker, Emmanuel Turquin, Janne Kontkanen, Frédo Durand, François Sillion, Timo Aila. “A Meshless Hierarchical Representation for Light Transport” *ACM Transactions on Graphics*, 27(3), (Proc.Siggraph), (9 pages), August 2008.
28. Paris, Sylvain, Will Chang, Wojciech Jarosz, Oleg Kozhushnyan, Wojciech Matusik, Matthias Zwicker, Frédo Durand. “Hair Photobooth: Geometric and Photometric Acquisition of Real Hairstyles” *ACM Transactions on Graphics*, 27(3), (Proc.Siggraph), (9 pages), August 2008.
29. Levin, Anat, Peter Sand, Taeg Sang Cho, Frédo Durand, William T. Freeman. “Motion Invariant Photography” *ACM Transactions on Graphics*, 27(3), (Proc.Siggraph), (9 pages), August 2008.
30. Paris, Sylvain and Frédo Durand. “A Fast Approximation of the Bilateral Filter using a Signal Processing Approach” *International Journal of Computer Vision*, 81(1), pp. 24-52, (IJCV'09), January 2009.
31. Soler, Cyril, Kartic Subr, Frédo Durand, Nicolas Holzschuch, François Sillion. “Fourier Depth of Field” *ACM Transactions on Graphics*, 28(2), (12 pages), April 2009.
32. Levin, Anat, Samuel W. Hasinoff, Paul Green, Frédo Durand, and William T. Freeman “4D Frequency Analysis of Computational Cameras for Depth of Field Extension” *ACM Transactions on Graphics*, 28(3), (Proc.Siggraph), (14 pages), August 2009.
33. Egan, Kevin, Yu-Ting Tseng, Nicolas Holzschuch, Frédo Durand, Ravi Ramamoorthi “Frequency Analysis and Sheared Reconstruction for Rendering Motion Blur” *ACM Transactions on Graphics*, 28(3), (Proc.Siggraph), (13 pages), August 2009.
34. Da Silva, Marco, Frédo Durand and Jovan Popovic “Linear Bellman Combination for Control of Character Animation” *ACM Transactions on Graphics*, 28(3), (Proc.Siggraph), (10 pages), August 2009.\*\*
35. Eisemann, Elmar, Sylvain Paris and Frédo Durand “A Visibility Algorithm for Converting 3D Meshes into Editable 2D Vector Graphics” *ACM Transactions on Graphics*, 28(3), (Proc.Siggraph), (8 pages), August 2009.
36. Subr, Kartic, Cyril Soler, Frédo Durand “Edge-preserving Multiscale Image Decomposition based on Local Extrema” *ACM Transactions on Graphics*, 28(5)-Article 147, (Proc. SIGGRAPH Asia 2009), (9 pages), December 2009.

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37. Whiting, Emily, John Ochsendorf, and Frédo Durand “Procedural Modeling of Structurally-Sound Masonry Buildings” *ACM Transactions on Graphics*, 28(5)-Article 112, (Proc. SIGGRAPH Asia 2009), (9 pages), December 2009.\*\*
38. Bousseau, Adrien, Sylvain Paris, and Frédo Durand, “User-Assisted Intrinsic Images” *ACM Transactions on Graphics*, 28(5)-Article 130, (Proc. SIGGRAPH Asia 2009), (10 pages), December 2009.
39. Paris, Sylvain, Pierre Kornprobst, Jack Tumblin, and Frédo Durand, “Bilateral Filtering: Theory and Applications, *Foundations and Trends in Computer Graphics and Vision*, 4(1), (73 pages), 2009
40. Hasinoff, Samuel W., Kiriakos N. Kutulakos, Frédo Durand, and William T. Freeman, “Time-Constrained Photography” *IEEE 12<sup>th</sup> International Conference on Computer Vision (ICCV)*, pp. 333-340, September-October 2009.
41. Judd, Tilke, Krista Ehinger, Frédo Durand, and Antonio Torralba, “Learning to predict where humans look” *IEEE 12<sup>th</sup> International Conference on Computer Vision (ICCV)*, pp. 2106-2113, September-October 2009.\*\*
42. Hasinoff, Samuel, Martyna Józwiak, Frédo Durand, and William T. Freeman, “Search-and-Replace Editing for Personal Photo Collections” *IEEE International Conference on Computational Photography (ICCP 2010)*, (8 pages), March 2010.
43. Cho, Taeg Sang, Anat Levin, Frédo Durand, and William T. Freeman, “Motion blur removal with orthogonal parabolic exposures” *IEEE International Conference on Computational Photography (ICCP 2010)*, (8 pages), March 2010.\*\*
44. Bae, Soonmin, Aseem Agarwala, and Frédo Durand, “Computational Rephotography” *ACM Transactions on Graphics*, 29(3) Article 24, (15 pages), June 2010. \*\*
45. Rivers, Alec, Takeo Igarashi and Frédo Durand, “2.5D Cartoon Models” *ACM Transactions on Graphics*, 29(4) Article 59, (Proc.Siggraph), (7 pages), July 2010.\*\*
46. Rivers, Alec, Frédo Durand, and Takeo Igarashi, “3D Modeling with Silhouettes” *ACM Transactions on Graphics*, 29(4) Article 109, (Proc.Siggraph), (8 pages), July 2010.\*\*
47. Baran, Ilya, Jiawen Chen, Jonathan Ragan-Kelley, Frédo Durand, and Jaakko Lehtinen, “A Hierarchical Volumetric Shadow Algorithm for Single Scattering” *ACM Transactions on Graphics*, 29(6)-Article 178, (Proc. SIGGRAPH Asia 2010), (9 pages), December 2010.\*\*
48. Grabli, Stéphane, Emmanuel Turquin, Frédo Durand, François Sillion, “Programmable rendering of line drawing from 3D scenes.” *ACM Transaction on Graphics*, Volume 29, Issue 2, Article 18 (20 pages) - March 2010
49. Ragan-Kelley, Jonathan, Jaakko Lehtinen, Jiawen Chen, Michael Doggett, and Frédo Durand, “Decoupled Sampling for Real-Time Graphics Pipelines” *ACM Transactions on Graphics*, (17 pages), 30(3), 2011.\*\*
50. Jaakko Lehtinen, Timo Aila, Jiawen Chen, Samuli Laine, Frédo Durand “Temporal Light Field Reconstruction for Rendering Distribution Effects” *ACM Transactions on Graphics*, 30(4), (Proc.Siggraph), (20 pages), August 2011.

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