

fabio pellacini

associate professor

computer science, dartmouth college

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interests computer graphics

Interactive Rendering, Physically-Based Rendering, Appearance Models, Appearance Design

education

26 Aug 2002 **PhD, Computer Science**, Cornell University

A Perceptually-Based Decision Theoretic Framework for Interactive Rendering

Advisor: Donald P. Greenberg

27 May 2001 **MS, Computer Science**, Cornell University

Advisor: Donald P. Greenberg

22 Sept 1998 **Laurea, Physics**, University of Parma (Italy)

STM images of ab-initio molecular dynamics simulated cubic SiC(001) surfaces

Advisors: Pierpaolo Lottici, Alessandra Catellani

Summa Cum Laude

experience

2009 – now **Associate Professor**, Computer Science, Dartmouth College

2008 – 2009 **Consultant, Part-Time Visiting Faculty**, Creative Technologies Lab, Adobe Inc.

2005 – 2009 **Assistant Professor**, Computer Science, Dartmouth College

2004 – 2005 **Visiting Assistant Professor**, Information Science, Cornell University

2002 – 2004 **Graphics Software Engineer**, R&D, Pixar Animation Studios

2002 – 2004 **Research Assistant**, Computer Science, Cornell University

Summer 2000 **PhD Student Intern**, R&D, Pixar Animation Studios

1998 – 2000 **Teaching Assistant**, Computer Science, Cornell University

1997 – 1998 **Software Engineer**, R&D, Milestone s.r.l. (Electronic Arts' subsidiary)

awards

- 2009 Dartmouth College, *Gordon Russell 1955 Fellowship*
- 2009 Alfred P. Sloan Foundation, *Sloan Research Fellowship*
- 2008 National Science Foundation, *CAREER Award*
- 2007 Dartmouth College, *Junior Faculty Fellowship*
- 2000 Cornell University, *Outstanding Teaching Assistant Award*
- 1997 University of Parma, *Award for Academic Accomplishments*
- 1997 CNR (Italian National Research Institute), *Fellowship*
- 1993 – 1996 University of Parma, *Fellowships*

credits

- 2006 Pixar Animation Studios, *Cars*
- 2004 Pixar Animation Studios, *The Incredibles*
- 2003 Pixar Animation Studios, *Finding Nemo*

publications leading journal articles: siggraph & tog

- 2010 [S19] F. Pellacini. *EnvyLight: An Interface for Editing Natural Illumination*. ACM Transactions on Graphics (SIGGRAPH), 29 (4), pp. 34:1–34:8, 2010.
 - [S18] W. B. Kerr and F. Pellacini. *Toward Evaluating Material Design Interface Paradigms for Novice Users*. ACM Transactions on Graphics (SIGGRAPH), 29 (4), pp. 35:1–35:10, 2010.
 - [S17] Y. Dong, J. Wang, F. Pellacini, X. Tong, and B. Guo. *Fabricating Spatially-Varying Subsurface Scattering*. ACM Transactions on Graphics (SIGGRAPH), 29 (4), pp. 62:1–62:10, 2010.
- 2009 [S16] W. Matusik, B. Ajdin, J. Gu, J. Lawrence, H. P. Lensch, F. Pellacini, and S. Rusinkiewicz. *Printing Spatially-Varying Reflectance*. ACM Transactions on Graphics (SIGGRAPH Asia), 28 (5), pp. 128:1–128:9, 2009.
 - [S15] W. B. Kerr and F. Pellacini. *Toward Evaluating Lighting Design Interface Paradigms for Novice Users*. ACM Transactions on Graphics (SIGGRAPH), 28 (3), pp. 26:1–26:9, 2009.
 - [S14] Y. Song, X. Tong, F. Pellacini, and P. Peers. *SubEdit: A Representation for Editing Measured Heterogenous Subsurface Scattering*. ACM Transactions on Graphics (SIGGRAPH), 28 (3), pp. 31:1–31:10, 2009.
- 2008 [S13] E. Cheslack-Postava, R. Wang, O. Akerlund, and F. Pellacini. *Fast, Realistic Lighting and Material Design using Nonlinear Cut Approximation*. ACM Transactions on Graphics (SIGGRAPH Asia), 27 (5), pp. 128:1–128:10, 2008.
 - [S12] X. An and F. Pellacini. *AppProp: All-Pairs Appearance-Space Edit Propagation*. ACM Transactions on Graphics (SIGGRAPH), 27 (3), pp. 40:1–40:9, 2008.
- 2007 [S11] F. Pellacini and J. Lawrence. *AppWand: Editing Measured Materials using Appearance-Driven Optimization*. ACM Transactions on Graphics (SIGGRAPH), 26 (3), pp. 54:1–54:9, 2007.
 - [S10] M. Hašan, F. Pellacini, and K. Bala. *Matrix Row-Column Sampling for the Many-Light Problem*. ACM Transactions on Graphics (SIGGRAPH), 26 (3), pp. 26:1–26:10, 2007.
 - [S9] F. Pellacini, F. Battaglia, R. K. Morley, and A. Finkelstein. *Lighting with paint*. ACM Trans-

- actions on Graphics, 26 (2), pp. 9:1–9:14, 2007.
- 2006 [S8] M. Hašan, F. Pellacini, and K. Bala. *Direct-to-indirect transfer for cinematic relighting*. ACM Transactions on Graphics (SIGGRAPH), 25 (3), pp. 1089–1097, 2006.
- 2005 [S7] F. Pellacini. *User-configurable automatic shader simplification*. ACM Transactions on Graphics (SIGGRAPH), 24 (3), pp. 445–452, 2005.
- [S6] F. Pellacini, K. Vidimče, A. Lefohn, A. Mohr, M. Leone, and J. Warren. *Lpics: a Hybrid Hardware-Accelerated Relighting Engine for Computer Cinematography*. ACM Transactions on Graphics (SIGGRAPH), 24 (3), pp. 464–470, 2005.
- 2003 [S5] R. Dumont, F. Pellacini, and J. A. Ferwerda. *Perceptually-driven decision theory for interactive realistic rendering*. ACM Transactions on Graphics, 22 (2), pp. 152–181, 2003.
- 2002 [S4] F. Pellacini, P. Tole, and D. P. Greenberg. *A User Interface for Interactive Cinematic Shadow Design*. ACM Transactions on Graphics (SIGGRAPH), 21 (3), pp. 563–566, 2002.
- [S3] P. Tole, F. Pellacini, B. Walter, and D. P. Greenberg. *Interactive Global Illumination in Dynamic Scenes*. ACM Transactions on Graphics (SIGGRAPH), 21 (3), pp. 537–546, 2002.
- [S2] J. Kim and F. Pellacini. *Jigsaw Image Mosaics*. ACM Transactions on Graphics (SIGGRAPH), 21 (3), pp. 657–664, 2002. Selected for the frontispiece.
- 2000 [S1] F. Pellacini, J. A. Ferwerda, and D. P. Greenberg. *Toward a Psychophysically-Based Light Reflection Model for Image Synthesis*. In Proceedings of ACM SIGGRAPH 2000, Computer Graphics Proceedings, Annual Conference Series, 55–64, 2000.

other journal articles

- 2010 [J8] J. Ou and F. Pellacini. *SafeGI: Type Checking to Improve Correctness in Rendering Systems Implementation*. Computer Graphics Forum (Eurographics Symposium on Rendering), 29 (4), pp. 1269–1277, 2010.
- [J7] W. B. Kerr, F. Pellacini, and J. Denning. *BendyLights: Artistic Control of Direct Illumination by Curving Light Rays*. Computer Graphics Forum (Eurographics Symposium on Rendering), 29 (4), pp. 1467–1459, 2010.
- [J6] J. Obert, F. Pellacini, and S. Pattanaik. *iCheat: A Representation for Artistic Control of Indirect Cinematic Lighting*. Computer Graphics Forum (Eurographics Symposium on Rendering), 29 (4), pp. 1441–1449, 2010.
- [J5] X. An and F. Pellacini. *User Controllable Color Transfer*. Computer Graphics Forum (Eurographics), 29 (2), pp. 794–812, 2010.
- 2008 [J4] J. Obert, J. Křivánek, F. Pellacini, D. Sýkora, and S. Pattanaik. *iCheat: A Representation for Artistic Control of Indirect Cinematic Lighting*. Computer Graphics Forum (Eurographics Symposium on Rendering), 27 (4), pp. 1217–1223, 2008.
- [J3] M. Hašan, E. Velázquez-Armendáriz, F. Pellacini, and K. Bala. *Tensor Clustering for Rendering Many-Light Animations*. Computer Graphics Forum (Eurographics Symposium on Rendering), 27 (4), pp. 1105–1114, 2008.
- [J2] L. Lorigo, M. Haridasan, H. Brynjarsdóttir, L. Xia, T. Joachims, G. Gay, L. Granka, F. Pellacini, and B. Pan. *Eye tracking and online search: Lessons learned and challenges ahead*. Journal of the American Society for Information Science and Technology, 59 (7), pp. 1041–1052, 2008.
- 2007 [J1] L. Lorigo and F. Pellacini. *Frequency and structure of long distance scholarly collaborations in a physics community*. Journal of the American Society for Information Science and Technology, 58 (10), pp. 1497–1502, 2007.

conference articles (not published in journals)

- 2008 [C5] S. Bratus, A. Hansen, F. Pellacini, and A. Shubina. *Backhoe, a Packet Trace and Log Browser*. In Proceedings of VizSEC, 152–160, 2008.
- 2005 [C4] H. Li, F. Pellacini, and K. E. Torrance. *A Hybrid Monte Carlo Method for Accurate and Efficient Subsurface Scattering*. In Proceedings of Eurographics Symposium on Rendering, 283–290, 2005.
- 2003 [C3] F. Pellacini and J. A. Ferwerda. *Functional Difference Predictors (FDPs): Measuring Meaningful Image Differences*. In Proceedings of 37th Asilomar Conference on Signals, Systems, and Computers, vol. 2, 1388–1392, 2003.
- 2001 [C2] R. Dumont, F. Pellacini, and J. A. Ferwerda. *A Perceptually-Based Texture Caching Algorithm for Hardware-Based Rendering*. In Proceedings of 12th Eurographics Workshop on Rendering, 249–256, 2001.
- [C1] J. A. Ferwerda, F. Pellacini, and D. P. Greenberg. *A Psychophysically-Based Model of Surface Gloss Perception*. In Proceedings of SPIE Human vision and electronic imaging VI, 291–301, 2001.

book chapters

- 2007 [B3] F. Pellacini, M. Hašan, and K. Bala. *Interactive Cinematic Relighting with Global Illumination*. In H. Nguyen, ed., GPU Gems 3. Addison-Wesley, 2007.
- 2004 [B2] F. Pellacini and K. Vidimče. *Cinematic Lighting*. In R. Fernando, ed., GPU Gems. Addison-Wesley, 2004.
- [B1] M. Bunnell and F. Pellacini. *Shadow Map Antialiasing*. In R. Fernando, ed., GPU Gems. Addison-Wesley, 2004.

patents

- 2008 [P1] F. Pellacini, K. Vidimče, and A. Mohr. *Hybrid Hardware-Accelerated Relighting System for Computer Cinematography*. U.S. Patent 7,427,986, 2008.

refereed courses

- 2008 [T2] F. Pellacini. *Interactive Cinematic Lighting*. In Beyond Programmable Shading: In Action, SIGGRAPH Course, 2008.
- 2006 [T1] F. Pellacini. *Interactive Cinematic Shading*. In GPU Rendering and Shading, SIGGRAPH Course, 2006.

technical reports

- 2008 [R8] W. B. Kerr and F. Pellacini. *Toward Evaluating Lighting Design Interface Paradigms for Novice Users*. Tech. Rep. TR2008-636, Dartmouth College, Computer Science, 2008.
- 2007 [R7] A. W. Steinberg and F. Pellacini. *Lighting with Sketches*. Tech. Rep. TR2007-589, Dartmouth College, Computer Science, 2007.
- [R6] W. B. Kerr and F. Pellacini. *Light-Based Sample Reduction Methods for Interactive Relighting of Scenes with Minute Geometric Scale*. Tech. Rep. TR2007-600, Dartmouth College, Computer Science, 2007.

- 2006 [R5] F. Pellacini, L. Lorigo, and G. Gay. *Visualizing Paths in Context*. Tech. Rep. TR2006-580, Dartmouth College, Computer Science, 2006.
- 2005 [R4] F. Pellacini, M. Hašan, and K. Bala. *Real-time Hardware-accelerated Relighting with Approximate Indirect Illumination*. Tech. Rep. TR2005-1999, Cornell University, Computer And Information Science, 2005.
- [R3] H. Li, F. Pellacini, and K. E. Torrance. *A Hybrid Monte Carlo Method for Accurate and Efficient Subsurface Scattering*. Tech. Rep. TR-PCG-05-05, Cornell University, Program of Computer Graphics, 2005.
- [R2] H. Li, F. Pellacini, K. E. Torrance, and D. Karle. *Validation of Numerical Accuracy and Efficiency of the Hybrid Method*. Tech. Rep. TR-PCG-05-04, Cornell University, Program of Computer Graphics, 2005.
- 2002 [R1] F. Pellacini and J. A. Ferwerda. *Fdps: Functional Difference Predictors - Measuring Meaningful Image Differences*. Tech. Rep. TR-PCG-02-04, Cornell University, Program of Computer Graphics, 2002.

physics publications

- 1998 [F5] A. Catellani, G. Galli, F. Gygi, and F. Pellacini. *Influence of stress and defects on the silicon-terminated SiC(001) surface structure*. Phys. Rev. B, 57 (19), pp. 12255–12261, 1998.
- 1997 [F4] F. Pellacini, A. Catellani, G. Galli, and F. Gygi. *STM images of ab-initio molecular dynamics simulated cubic SiC(001) surfaces*. In Proceedings of National Conference on Theoretical and Solid State Physics, 1997.
- [F3] A. Catellani, G. Galli, F. Gygi, and F. Pellacini. *Influence of growth and preparation condition on the reconstruction of SiC(001) surfaces: a first principles study*. In Proceedings of 1997 Fall Meeting of Material Research Society, 1997.
- [F2] A. Catellani, G. Galli, F. Gygi, and F. Pellacini. *Reconstruction and thermal stability of cubic SiC(001) surfaces*. In Proceedings of ICSIII-N'97, 1997.
- [F1] A. Catellani, G. Galli, F. Gygi, and F. Pellacini. *Reconstruction and thermal stability of cubic SiC(001) surfaces*. In Proceedings of 6th International Conference on Formation of Semiconductor Interfaces, 1997.

funding

- 2009 Alfred P. Sloan Foundation, *Sloan Research Fellowship*, PI
- 2008 Intel Corp., *Interactive Realistic Lighting on Many-core Architectures*, PI
National Science Foundation, *CAREER: Intuitive Appearance Design*, PI
- 2007 National Science Foundation, *CRI: Digital Imaging Laboratory at Dartmouth*, Co-PI, with H. Farid (PI), D. Balkcom, L. Loeb
Google Inc., *A Tool for Visualizing Eye Tracking Data*, PI, with G. Gay
Institute for Security and Technology Studies, *Dist-Vis*, PI
- 2005 Pixar Animation Studios, *Interactive Lighting Design*, PI

mentoring graduate

- 2010 – now Dartmouth College, *Jonathan Denning, PhD student*
- 2009 – now Dartmouth College, *Jiawei Ou, PhD student*
- 2007 – now Dartmouth College, *Xiaobo An, PhD student*
- 2006 – now Dartmouth College, *William B. Kerr, PhD student*
- 2009 – 2010 Dartmouth College, *Jonathan Denning, MS student*
- 2005 – 2009 Cornell University, *Miloš Hašan, PhD student (advised by K. Bala), continued collaboration*

undergraduate

- 2010 Dartmouth College, *Zhiyuan Zhang, Senior Honors Thesis*
Dartmouth College, *Linden A. Vongsathorn, Senior Honors Thesis*
Dartmouth College, *Kate I. Schnippering, Senior Honors Thesis*
Dartmouth College, *Graham J. Baecher, Senior Honors Thesis*
Dartmouth College, *Shloka R. Kini, Women in Science Project (WISP)*
- 2009 Dartmouth College, *Thomas Y. Eastman, Senior Honors Thesis*
Dartmouth College, *Graham J. Baecher, Independent Study*
Dartmouth College, *Thomas P. Donahoe, Independent Study*
Dartmouth College, *Jennifer Huang, Independent Study*
Dartmouth College, *Amanda C. Lobel, Independent Study*
Dartmouth College, *Justin S. Slick, Independent Study*
- 2008 Dartmouth College, *Timothy Tregubov, Independent Study*
Dartmouth College, *Hannah Payne, Women in Science Project (WISP)*
- 2007 Dartmouth College, *Alexander Steinberg, Senior Honors Thesis*
- 2006 – 2007 Dartmouth College, *Elizabeth Greenberg, Presidential Scholar*
Dartmouth College, *Ruslan Dimov, Presidential Scholar*

thesis committees

- 2008 Dartmouth College, *Weihong Wang, PhD committee (advised by H. Farid)*
- 2007 Dartmouth College, *Kimo Johnson, PhD committee (advised by H. Farid)*

teaching university courses

- F05, F06, W08, F09 Dartmouth College, *Computer Graphics (Cosc 52)*
S06, W08 Dartmouth College, *Topics in Computer Graphics (Cosc 82/182)*
- S07, S08, S09, S10 Dartmouth College, *Projects in Digital Arts (Cosc 42)*
W10 Dartmouth College, *Programming for Interactive Digital Arts (Cosc 2)*
W07 Dartmouth College, *Concepts in Computing (Cosc 4)*
- S05 Cornell University, with D. P. Greenberg, *Advanced Computer Animation*
- F04 Cornell University, with D. P. Greenberg, *Computer Animation*

conference courses

- 2008 SIGGRAPH, *Interactive Cinematic Lighting*
- 2006 SIGGRAPH, *Interactive Cinematic Shading*

teaching assistantships

- S00 Cornell University, Head TA, *Introduction to Computer Graphics*
- S00 Cornell University, Head TA, *Computer Graphics Practicum*
- F99 Cornell University, TA, *Operating Systems*
- F98, S99 Cornell University, TA, *Introduction to Computer Programming*

service professional

- 2006, 2007, 2009, 2010 SIGGRAPH, *Papers Committee Member*
- 2006, 2007 SIGGRAPH, *Session Chair*
- 2011 EG, *Papers Committee Member*
- 2006, 2007, 2008 EGSR, *Papers Committee Member*
- 2008, 2009, 2010, 2011 I3D, *Papers Committee Member*
- 2001 – now SIGGRAPH, TOG, TVCG, EG, EGSR, PG, I3D, TAP, *Reviewer*

university

- 2005 – now Dartmouth College, *Digital Arts Minor Co-Founder*
- 2010 – now Dartmouth College, *Department Curriculum Committee Member*
- 2009 – 2010 Dartmouth College, *PhD Admission Chair*
- 2006 – 2008 Dartmouth College, *Digital Humanities Chair Search Committee Member*
Dartmouth College, *Department Curriculum Committee Member*
Dartmouth College, *Department Colloquium Chair*
Dartmouth College, *Department PhD Admissions Committee Member*

invited talks

- 2010 University of Utah, *Interactive and Intuitive Appearance Design*
- 2008 MIT, *Interactive and Intuitive Appearance Design*
Williams College, *Interactive and Intuitive Appearance Design*
Adobe Inc., *Interactive and Intuitive Appearance Design*
University of Southern California, *Interactive and Intuitive Appearance Design*
- 2007 Yale University, *Interactive and Intuitive Appearance Design*
NVIDIA Corp., *Interactive Cinematic Lighting*
Pixar Animation Studios, *Interactive Cinematic Lighting*
University of Pisa, *Interactive Cinematic Lighting*

- University of Parma, *Interactive Cinematic Lighting*
- 2006 INRIA/REVES, *Toward Interactive Cinematic Lighting*
CSR4, *Toward Interactive Cinematic Lighting*
- 2005 Cornell University, *Making Computer Graphics Accessible to Artists*
Cornell University, *Is Artist-Friendly 3D graphics possible?*
UC Davis, *Toward Interactive and User Friendly Digital Lighting Design*
University of Bologna, *Interactive lighting*
University of Parma, *Interactive lighting*
CNR Pisa, *Interactive lighting*
Pixar Animation Studios, *Interactive lighting*
- 2000 Cornell University, *Renderman: a virtual machine for computer graphics*
Cornell University, *Computer Animation*
Pixar Animation Studios, *Towards a Psychophysically-based Light Reflection Model*
Cornell University, *The Renderman shading language*
- 1999 University of Parma, *Realistic Image Synthesis*