

# Steven M. Seitz

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## Work Address

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13760 40th Ave. NE  
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## Education

|      |       |                                    |                               |
|------|-------|------------------------------------|-------------------------------|
| 1997 | Ph.D. | University of Wisconsin, Madison   | Computer Sciences             |
| 1991 | B.A.  | University of California, Berkeley | Computer Science, Mathematics |

## Work Experience

|           |   |  |
|-----------|---|--|
| 2005-     | Short-Dooley Career Dev. Assoc. Professor | Department of Computer Science and Engineering, University of Washington |
| 2003-     | Associate Professor                       | Dept. Comp. Sci. and Eng., University of Washington                      |
| 2000-2003 | Assistant Professor                       | Dept. Comp. Sci. and Eng., University of Washington                      |
| 2000-2005 | Adjunct Assistant Professor               | The Robotics Institute, Carnegie Mellon University                       |
| 1997-2000 | Assistant Professor                       | The Robotics Institute, Carnegie Mellon University                       |
| 1999      | Consultant                                | Vision Technology Group, Microsoft Research                              |
| 1997-1998 | Postdoctoral Researcher                   | Vision Technology Group, Microsoft Research                              |
| 1993      | Summer Intern                             | Advanced Technology Group, Apple Computer                                |

## Awards

|      |   |
|------|---|
| 2005 | Short-Dooley Career Development Associate Professorship   |
| 2002 | Alfred P. Sloan Fellowship  |
| 2002 | Office of Naval Research Young Investigator Award   |
| 2001 | David Marr Prize, for the best paper at the 8 <sup>th</sup> International Conference on Computer Vision |
| 2000 | National Science Foundation CAREER Award  |
| 1999 | David Marr Prize, for the best paper at the 7 <sup>th</sup> International Conference on Computer Vision |
| 1998 | Best Graduate Student Researcher Award, Dept. of Computer Sciences, Univ. Wisconsin                     |
| 1991 | Graduation With Special Honors, University of California, Berkeley                                      |
| 1987 | Chancellor's Scholarship, University of California, Berkeley  |

## Keynote and Distinguished Lecture Talks

|      |                       |   |
|------|-----------------------|---|
| 2007 | Keynote               | Interactive Computer Vision Workshop, Oct.                                      |
| 2007 | Keynote               | Virtual Reps. and Modeling of Large-scale Environs Workshop, Oct.               |
| 2007 | Distinguished Lecture | Adobe, May.   |
| 2006 | Distinguished Lecture | University of Toronto, Dec.   |
| 2006 | Keynote               | Brazilian Symp. on Comp. Graphics and Image Proc., Manaus, Oct.                 |
| 2005 | Keynote               | Imagina, Monte-Carlo, Feb.  |
| 2005 | Distinguished Lecture | University of British Columbia, Jan.  |
| 2004 | Distinguished Lecture | University of Michigan, Mar.  |
| 2003 | Keynote               | IMA Conf. on Vision, Video and Graphics, Bath, England, Jun.                    |
| 2002 | Keynote               | Indian Conf. on Computer Vision, Graphics and Image Proc., Dec.                 |
| 2002 | Distinguished Lecture | University of Utah, Depart of Computer Science, Nov.                            |
| 2002 | Keynote               | 1 <sup>st</sup> Int. Symp. on 3D Data Proc. Vis. and Trans. Padova, Italy, Jun. |

## Professional Activities

### Editorships

|                  |   |
|------------------|---|
| Associate Editor | IEEE Transactions on Pattern Analysis and Machine Intelligence, 2001-2006   |
| Editorial Board  | The Visual Computer, International Journal of Computer Graphics, Springer, 2000-2005  |
| Editorial Board  | Graphical Models, Academic Press, 2002-2005   |
| Guest Editor     | ACM Computer Graphics Special Issue on Applications of Computer Graphics for Computer Vision, November, 1999, with Richard Szeliski |

### Program Committees

|                   |  |
|-------------------|--|
| Area Chair        | CVPR (Computer Vision and Pattern Recognition Conf.), 2008                           |
| Area Chair        | CVPR, 2007   |
| Area Chair        | ICCV (International Conf. on Computer Vision), 2005                                  |
| Program Committee | SIGGRAPH, 2005   |
| Area Chair        | CVPR, 2004   |
| Area Chair        | ECCV (European Conf. On Computer Vision), 2004                                       |
| Program Committee | NIPS (Neural Information and Processing Systems), 2003                               |
| Program Committee | ICCV, 2003   |
| Area Chair        | CVPR, 2003   |
| Program Committee | AAAI (American Association for Artificial Intelligence Conf.), 2002                  |
| Program Committee | ICCVGIP (Indian Conference on Computer Vision, Graphics, and Image Processing), 2002 |
| Program Committee | International Symposium on 3D Data Processing Visualization and Transmission, 2002   |
| Program Committee | SIGGRAPH, 2001   |
| Program Committee | International Conference on 3D Digital Imaging and Modeling, 2001                    |
| Co-organizer      | CVPR Course on "3D Photography", with Brian Curless, 1999                            |
| Program Committee | CVPR, 2000   |
| Program Committee | Workshop on 3D Structure from Multiple Images of Large-scale Environments, 2000      |
| Program Committee | ICCVGIP, 2000  |
| Program Committee | SIGGRAPH, 2000   |
| Program Committee | IEEE Workshop on Multi-View Modeling & Analysis of Visual Scenes, 1999               |
| Program Committee | IEEE Workshop on Photometric Modeling for Computer Vision and Graphics, 1999         |
| Co-organizer      | SIGGRAPH Course on "3D Photography", with Brian Curless, 1999                        |
| Co-organizer      | CVPR Course on "3D Photography", with Brian Curless, 1999                            |
| Program Committee | CVPR, 1998   |

### Grant Review

|          |   |
|----------|---|
| Panelist | NSF Panel on Symbolic, Numeric, and Geometric Computing |
| Panelist | NSF Panel on Robotics and Human Augmentation            |
| Panelist | NSF Panel on Computer Vision                            |

### Professional Societies

|               |   |
|---------------|---|
| Senior Member | Institute of Electrical and Electronics Engineers |
| Member        | Association for Computing Machinery               |

## Ph.D. Students Advised and Co-Advised

Rahul Garg, expected 2012

Ryan Kaminsky, expected 2012

Ian Simon, expected 2009  
Keith (“Noah”) Snavely, expected 2008 (with Rick Szeliski)  
Daniel Goldman, *A Framework for Video Annotation, Visualization, and Interaction*, 2007 (with Brian Curless, David Salesin), *Current employment, Adobe*.  
Jiwon Kim, (with Maneesh Agrawala)  
Li Zhang, *Spacetime Stereo and Its Applications*, 2005 (with Brian Curless), *Current employment: Assistant Professor, Wisconsin*  
Kiran Bhat, *Creating Realistic Simulations from Video*, 2004 (CMU, with Pradeep Khosla, Jessica Hodgins), *Current employment: Industrial Light and Magic, San Francisco*.  
Daniel Wood, *Surface Light Fields for 3-D Photography*, 2004 (with Brian Curless, Werner Stuetzle, Tom DuChamp), *Current employment: Microsoft*  
Jovan Popovic, *Interactive Design of Rigid-Body Simulations for Computer Animation*, 2001 (CMU, with Michael Erdmann). *Current employment: Associate Professor, MIT*

### **Postdocs Advised and Co-Advised**

Eli Shechtman, 2007-  
Sameer Agrawal, 2006-  
Michael Goesele, 2005-2007, *Current employment: Assistant Professor, University of Darmstadt, Germany*  
Aaron Hertzmann, 2001-2002, *Current employment: Associate Professor, Toronto*

### **Other Students Advised and Co-Advised**

Kevin Chiu, UW undergraduate 2006-2007  
Andy Hou, UW undergraduate 2006-2007  
Gordon Hempton, UW undergraduate 2006-2007  
Robert Carroll, UW undergraduate 2005-2007  
Terri Moore, UW undergraduate 2004  
David Dewey, UW undergraduate 2003  
Thomas Kang, (with Jianbo Shi), CMU Masters 2002  
Christopher Twigg, UW B.A. 2002  
Guillaume Dugas-Phocion, UW visiting researcher, 2002  
Jean-Sebastien Samson, CMU visiting researcher, 2000

### **Thesis Committees**

Jue Chen, UW EE  
Harlan Hile, UW CSE  
Adrien Treuille, UW CSE  
Aseem Agarwala, UW CSE, Ph.D. 2006  
Karen Liu, UW CSE, Ph.D. 2005  
Matthew Brown, Univ. British Columbia, Ph.D. 2005  
Vivek Kwatra, Georgia Tech, Ph.D. 2005  
Jonathan Shade, UW CSE, Ph.D. 2004  
Daniel Wood, UW CSE, Ph.D. 2004  
John Isidoro, Boston University, Ph.D. 2004  
Daniel Huber, CMU Robotics Institute, Ph.D. 2002  
Sundar Vedula, CMU Robotics Institute, Ph.D. 2001  
Liang Zhao, CMU Robotics Institute, Ph.D. 2001  
Andrew Willmott, CMU CSD, Ph.D. 2000  
Mei Chen, CMU RI, Ph.D. 1999

### **Patents**

1. "Photorealistic scene reconstruction by voxel coloring", with C. R. Dyer, U.S. Patent No. 6,363,170, March 26, 2002
2. "Method and system for obtaining visual information from an image sequence using visual tunnel analysis", with S. B. Kang, P. J. Sloan, U.S. Patent No. 6,642,924, November 4, 2003

## Publications

### Journal Articles

1. L. Zhang and S. M. Seitz, Estimating optimal parameters for MRF stereo from a single image pair, *IEEE Trans. on Pattern Analysis and Machine Intelligence (PAMI)*, vol. 29, no. 2, 2007, pp. 331-342.
2. N. Snavely, S. M. Seitz, and R. Szeliski, Photo tourism: exploring photo collections in 3D. in *ACM Trans. on Computer Graphics (SIGGRAPH Proceedings)*, vol. 25, no. 3, 2006, pp. 835-846.
3. D. B. Goldman, B. Curless, D. Salesin, and S. M. Seitz, Schematic storyboarding for video visualization and editing, *ACM Trans. on Computer Graphics (SIGGRAPH Proceedings)*, vol. 25, no. 3, 2006, pp. 862-871.
4. A. Hertzmann and S. M. Seitz. Example-based photometric stereo: shape reconstruction with general, varying BRDFs, *IEEE Trans. on Pattern Analysis and Machine Intelligence (PAMI)*, vol. 27, no. 8, 2005, pp. 1254-1264.
5. L. Zhang, N. Snavely, B. Curless, and S. M. Seitz. Spacetime Faces: High-resolution capture for modeling and animation, in *ACM Trans on Computer Graphics (SIGGRAPH Proceedings)*, vol. 23, no. 3, 2004, pp. 548-558.
6. A. Agarwala, A. Hertzmann, D. H. Salesin, and S. M. Seitz, Keyframe-based tracking for rotoscoping and animation, in *ACM Trans on Computer Graphics (SIGGRAPH Proceedings)*, vol. 23, no. 3, 2004, pp. 584-591.
7. K. S. Bhat, S. M. Seitz, J. Hodgins and P. Khosla. Flow-based video synthesis and editing, in *ACM Trans on Computer Graphics (SIGGRAPH Proceedings)*, vol. 23, no. 3, 2004, pp. 360-363.
8. J. Popovic, S. M. Seitz, and M. Erdmann, Motion sketching for control of rigid-body simulation", *ACM Transactions on Graphics*, vol. 22, no. 4, 2003, pp. 1034-1054
9. L. Zhang, G. Dugas-Phocion, J.-S. Samson, and S. M. Seitz, Single view modeling of free-form scenes, *Journal of Visualization and Computer Animation*, 2002, vol. 13, no. 4, pp. 225-235 (Invited paper)
10. S. M. Seitz, A. Kalai, and H. Shum, Omnivergent stereo, *International Journal of Computer Vision*, 2002, vol. 48, no. 3, pp. 159-172.
11. S. M. Seitz and K. N. Kutulakos, Plenoptic image editing, *International Journal of Computer Vision*, 2002, vol. 48, no. 2, pp. 115-129.
12. S. M. Seitz and J. Kim, The space of all stereo images, *International Journal of Computer Vision, Marr Prize Special Issue*, 2002, vol. 48, no. 1, pp. 21-38
13. F. Dellaert, S. M. Seitz, C. E. Thorpe, and S. Thrun, EM, MCMC, and chain flipping for structure from motion with unknown correspondence, *Machine Learning, special issue on Markov chain Monte Carlo methods*, 2003, vol. 50, pp. 45-71
14. K. N. Kutulakos and S. M. Seitz, A theory of shape by space carving, *International Journal of Computer Vision, Marr Prize Special Issue*, 2000, vol. 38, no. 3, pp. 199-218
15. J. Gemmell, C. L. Zitnick, T. Kang, K. Toyama, and S. M. Seitz, Gaze-awareness for Videoconferencing: A Software Approach, *IEEE Multimedia*, vol. 7, no. 4 2000
16. S. M. Seitz and C. R. Dyer, Photorealistic scene reconstruction by voxel coloring, *International Journal of Computer Vision*, vol. 35, no. 2, 1999, pp. 151-173

17. S. M. Seitz and C. R. Dyer, View-invariant analysis of cyclic motion, *International Journal of Computer Vision*, 1997, vol. 25, no. 3, 1997, pp. 231-251

### **Book Chapters**

1. S. M. Seitz and C. R. Dyer, Cyclic motion analysis using the period trace, *Motion-Based Recognition*, M. Shah and R. Jain, eds., Kluwer, Boston, 1997

### **Invited Conference Papers**

1. J. Kim, S. M. Seitz, and M. Agrawala, The Office of the Past: Document Discovery and Tracking from Video, *Proc. IEEE Workshop on Real-Time Vision for Human-Computer Interaction*, 2004, to appear
2. S. M. Seitz, Toward interactive scene walkthroughs from images, *Proc. Computer Vision for Virtual Reality Workshop*, 1998, pp. 14-19
3. S. M. Seitz, Implicit scene reconstruction from probability density functions, *Proc. Image Understanding Workshop*, 1998
4. S. M. Seitz and C. R. Dyer, Photorealistic scene reconstruction by voxel coloring, *Proc. Image Understanding Workshop 1997*, pp. 935-942
5. S. M. Seitz and C. R. Dyer, Uniquely predicting scene appearance from basis images, *Proc. Image Understanding Workshop*, 1997, pp. 881-887
6. S. M. Seitz, Bringing photographs to life with view morphing, *Proc. INA Imagina 97*, 1997, pp. 153-158

### **Refereed Conference Papers**

1. M. Goesele, N. Snavely, B. Curless, H. Hoppe, and S. M. Seitz. Multi-view stereo for community photo collections, *International Conf. on Computer Vision.*, 2007.
2. I. Simon, N. Snavely, and S. M. Seitz. Scene summarization for online image collections. *Proc. International Conf. on Computer Vision.*, 2007.
3. R. Carroll and S. M. Seitz. Rectified Surface Mosaics, *Proc. Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA)*, 2007.
4. I. Simon and S. M. Seitz. A probabilistic model for object recognition, segmentation, and non-rigid correspondence. *Proc. Computer Vision and Pattern Recognition Conf.*, 2007.
5. S. M. Seitz, B. Curless, J. Diebel, D. Scharstein, and R. Szeliski. A comparison and evaluation of multi-view stereo reconstruction algorithms, *Proc. Computer Vision and Pattern Recognition Conf.*, 2006, pp. 519-526.
6. M. Goesele, S. M. Seitz and B. Curless. Multi-View Stereo Revisited, *Proc. Computer Vision and Pattern Recognition Conf.*, 2006, pp. 2402-2409.
7. A. Troccoli, S.B. Kang, and S. M. Seitz, Multi-view multi-exposure stereo, *Proc. Symposium. on 3D Data Processing, Visualization, and Transmission (3DPVT)*, Chapel Hill, NC, 2006.
8. D. B. Goldman, B. Curless, A. Hertzmann and S. M. Seitz. Shape and spatially-varying BRDFs from photometric stereo, *Proc. International Conference on Computer Vision*, 2005, pp. 341-348.
9. S. M. Seitz, Y. Matsushita and K. N. Kutulakos. A theory of inverse light transport, *Proc. International Conference on Computer Vision*, 2005, pp. 1440-1447.
10. L. Zhang and S. M. Seitz, Parameter estimation for MRF stereo., *Proc. Computer Vision and Pattern Recognition Conf.*, 2005, pp. 288-295.

11. J. Kim, S. M. Seitz, and M. Agrawala. Video-based document tracking: unifying your physical and electronic desktops, in *Proc. Seventeenth Annual ACM Symposium on User Interface Software and Technology* (UIST) 2004, pp. 99-107.
12. A. Treuille, A. Hertzmann, and S. M. Seitz, Example-based stereo with general BRDFs, *Proc. European Conf. on Computer Vision*, 2004, pp. 457-469.
13. G. Vogiatzis, P.H.S. Torr, S. Seitz and R. Cipolla, Reconstructing relief surfaces, *Proc. 15th British Machine Vision Conference*, pp. 117-126, 2004.
14. L. Zhang, B. Curless, A. Hertzmann, and S. M. Seitz, Shape and motion under varying illumination: unifying structure from motion, photometric stereo, and multi-view stereo, *Proc. International Conf. on Computer Vision*, 2003, pp. 618-625.
15. L. Zhang, B. Curless, and S. M. Seitz, Spacetime stereo: shape recovery for dynamic scenes, . *Proc. Computer Vision and Pattern Recognition Conf.*, 2003, pp. 367-374.
16. A. Hertzmann and S. M. Seitz, Shape and materials by example: a photometric stereo approach, . *Proc. Computer Vision and Pattern Recognition Conf.*, 2003, pp. 533-540.
17. K. S. Bhat, C. D. Twigg, J. K. Hodgins, P. K. Khosla, Z. Popovic and S. M. Seitz, Estimating Cloth Simulation Parameters from Video, *Proc. ACM SIGGRAPH/Eurographics Symposium on Computer Animation*, 2003, pp. 37-51.
18. D. Maynes-Aminzade, R. Pausch, S. Seitz, Techniques for interactive audience participation, *4th IEEE International Conference on Multimodal Interfaces*, 2002.
19. A. Hertzmann, N. Oliver, B. Curless, and S. M. Seitz, Curve analogies, *13th Euro-graphics Workshop on Rendering*, 2002, pp. 233-245
20. K. S. Bhat, S. M. Seitz, J. Popovic, and P. K. Khosla, Computing the physical parameters of rigid-body motion from video, *Proc. European Conference on Computer Vision*, 2002, pp. 551-566
21. L. Zhang, B. Curless, and S. M. Seitz, Rapid shape acquisition using color structured light and multi-pass dynamic programming, *Proc. Symposium on 3D Data Processing Visualization and Transmission (3DPVT)*, 2002
22. L. Zhang, G. Dugas-Phocion, J.-S. Samson, and S. M. Seitz, Single view modeling of free-form scenes, *Proc. Computer Vision and Pattern Recognition*, 2001, pp. 24-36
23. S. M. Seitz, The space of all stereo images, *Proc. International Conference on Computer Vision*, 2001, pp. 26-33 (*Winner, David Marr Prize in Computational Vision*)
24. L. Zhang and S. M. Seitz, Image-based multiresolution shape recovery by surface deformation, *Proc. SPIE*, 2001 2000, pp. 209-218
25. F. Dellaert, S. M. Seitz, C. E. Thorpe, S. Thrun, Feature correspondence: a Markov Chain Monte Carlo approach, *Proc. Neural Information and Processing Systems*, 2000
26. J. Popovic, S. M. Seitz, M. Erdmann, Z. Popovic, and A. Witkin, Interactive manipulation of rigid body simulations, *Proc. SIGGRAPH*, 2000, pp. 209-218
27. F. Dellaert, S. M. Seitz, C. E. Thorpe, S. Thrun, Structure from motion without correspondences, *Proc. Computer Vision and Pattern Recognition Conference*, 2000, pp. 557-564
28. S. Vedula, S. Baker, S. Seitz, and T. Kanade, Shape and motion carving in 6D, *Proc. Computer Vision and Pattern Recognition Conference*, 2000, pp. 592-598
29. S. B. Kang, S. Seitz, and P.-P. Sloan, Visual tunnel analysis for camera planning and visibility prediction, *Proc. Computer Vision and Pattern Recognition Conference*, 2000, pp. 195-202
30. H. Y. Shum, A. Kalai, and S. M. Seitz, Omnivergent stereo, *Proc. Seventh International Conference on Computer Vision*, 1999

31. K. N. Kutulakos and S. M. Seitz, A theory of shape by space carving, *Proc. Seventh International Conference on Computer Vision*, 1999, pp. 307-314 (Winner, David Marr Prize in Computational Vision)
32. S. M. Seitz and P. Anandan, Implicit scene reconstruction from probability density functions, *Proc. Computer Vision and Pattern Recognition Conference*, 1999, pp. 28-34
33. S. M. Seitz and K. N. Kutulakos, Plenoptic image editing, *Sixth International Conference on Computer Vision*, 1998, pp. 17-24 (Nominated for David Marr Prize in Computational Vision)
34. S. M. Seitz and C. R. Dyer, Photorealistic scene reconstruction by voxel coloring, *Proc. Computer Vision and Pattern Recognition Conference*, 1997, pp. 1067-1073
35. S. M. Seitz and C. R. Dyer, Toward image-based scene representation using view morphing, *Proc. 13<sup>th</sup> International Conference on Pattern Recognition*, 1996, pp. 84-89
36. S. M. Seitz and C. R. Dyer, View morphing, *Proc. SIGGRAPH 96*, 1996, pp. 21-30
37. S. M. Seitz and C. R. Dyer, Physically-valid view synthesis by image interpolation, *Proc. Workshop on Representation of Visual Scenes*, 1995, pp. 18-25
38. S. M. Seitz and C. R. Dyer, Complete scene structure from four point correspondences, *Proc. Fifth International Conference on Computer Vision*, 1995, pp. 330-337
39. S. M. Seitz and C. R. Dyer, Detecting irregularities in cyclic motion, *Proc. Workshop on Motion of Non-Rigid and Articulated Objects*, 1994, pp. 178-185
40. S. M. Seitz and C. R. Dyer, Affine invariant detection of periodic motion, *Proc. Computer Vision and Pattern Recognition*, 1994, pp. 970-975
41. L. Rowe, J. Konstan, B. Smith, S. Seitz, and C. Liu, The Picasso application framework, in *Proc. ACM Symposium on User Interface Software & Technology*, 1991

### Technical Reports

1. K. N. Kutulakos and S. M. Seitz, A theory of shape by space carving, Computer Science Department Technical Report 692, May 1998
2. K. N. Kutulakos and S. M. Seitz, What do N photographs tell us about 3D shape?, Computer Science Department Technical Report 680, January 1998
3. S. M. Seitz, Image-based transformation of viewpoint and scene appearance, Ph.D. thesis and Computer Sciences Department Technical Report 1354, University of Wisconsin, Madison, October 1997
4. S. M. Seitz and K. N. Kutulakos, Plenoptic image editing, Computer Science Department Technical Report 647, University of Rochester, January 1997
5. S. M. Seitz and C. R. Dyer, Scene appearance representation by perspective view synthesis, Computer Sciences Department Technical Report 1298, University of Wisconsin, Madison, May 1996
6. S. M. Seitz and C. R. Dyer, Affine invariant detection of periodic motion, Computer Sciences Department Technical Report 1225, University of Wisconsin, Madison, June 1994
7. S. Seitz and P. Schank, The widget writer's guide, Memorandum No. UCB/ERL M90/80, College of Engineering, U.C. Berkeley, Sept. 11, 1990
8. P. Schank, J. Konstan, C. Liu, L. Rowe, S. Seitz, and B. Smith, The Picasso application framework, Memorandum No. UCB/ERL M90/79, College of Engineering, U.C. Berkeley, Sept. 1, 1990

